ABSTRACT

UNITED STATES FOREIGN ECONOMIC POLICY WITH SPECIAL REFERENCE TO LEAD AND ZINC

by Robert Harris Renshaw

This study is an attempt to evaluate various government programs using the tools of economic theory. In order to facilitate analysis, only programs that apply to the lead and zinc industries are analyzed.

1. The Problem. The task is to answer the following question: Has the government adopted a program which facilitates adjustment to changing economic conditions, and which promotes an optimum allocation of resources and economically efficient operation of the lead and zinc industries?

2. Procedure. The procedure is dual in nature. First, extensive historical and descriptive material attempts to place each government program in its proper perspective vis-a-vis economic conditions in the industry at the time of its implementation. Second, each program is considered individually with respect to a hypothetically perfectly competitive market in order to assess its impact on resource allocation. Analysis of the following programs was made: (1) depletion allowance, (2) accelerated amortization, (3) exploration allowance, (4) development allowance, (5) tariff, (6) quota, (7) stockpile purchases, (8) barter, (9) exploration subsidy,

(10) small mines stabilization subsidies, and (11) guaranteed loans. The influence of each of the programs on the following factors was analyzed, using the hypothetical model as a criterion: (1) output, (2) consumption, (3) prices, (4) government revenues or expenditures, (5) the foreign producer, (6) the distribution of income, (7) market structure, and (8) the business cycle.

3. Findings. It was found that: (1) without exception, the programs caused a misallocation of resources; (2) the programs, when taken as a pattern, were inconsistent; and (3) in some instances, such as the tariff, the program was internally inconsistent, or as in the case of the stockpile purchase program was applied at an inappropriate time.

The programs, for the most part, were adopted at times of crisis and reflect attempts to find solutions to short run problems. Nevertheless, they tend to become permanent features of government policy long after the problems that they were intended to solve disappear. Many of the programs have common roots in the escape clause investigations before Tariff Commission. Thus the escape clause investigations have wider implications than one would at first suppose.

4. Implications. Insufficient economic performance and misallocation of resources are an unavoidable consequence of the operation of the decision-making processes as presently constituted.

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# CHAPTER I

# INTRODUCTION

## Introduction

The argument for free trade is a familiar one. In capsulized form it holds that specialization and exchange allow more efficient techniques of production to be used than would otherwise be the case. In other words, countries in producing and trading according to the principle of comparative advantage make all parties concerned better off than they had been previous to the exchange.

Economists of this persuasion do not as a rule take an unqualified position in favor of immediate free trade. They normally hold that complete free trade is a long run objective to which exceptions might be made in the short run. Hence the "infant industry" argument is acceptable as rationale for erecting trade barriers. However, economists would reject the infant industry argument as a long run position. It will also be admitted that there are non-economic arguments which would qualify the argument for free trade. Nevertheless, by and large, the typical "free trade" economist would hold that elimination of trade barriers is a highly desirable objective.

This, however, brings out the problem of adjustment to changing conditions. The world that we are living in is undergoing constant change, and this change requires a constant need for readjustment. For instance, a technological innovation such as the introduction of a new and more efficient brick open hearth furnace for making high quality steel will render obsolete the previous equipment used for this purpose, and require the firms producing high quality steel to make a painful adjustment to changes in the technique of production. Nor do all the changes that require readjustment originate in the technical mode of production. The development of substitute products may cause consumers to switch from an old established product to a new product, leaving the firms producing the old product with a problem of readjustment. The advent of the automobile, for example, put the buggywhip manufacturers out of business, or forced them to change their line of operations into new endeavors.

In the above examples, although fundamental economic changes are necessitated, these are temporary in nature in the sense that once they are made the problem for the firm is solved (in the absence of further underlying economic change). Once the steel firms have adopted the new brick furnaces and can again effectively compete with the other producers of high quality steel, it is business as usual. This, however, does not mean that adjustment problems may not be severe. If, for example, new equipment is installed

which displaces a large number of workers, then these workers would be unemployed, and since labor is a relatively immobile factor of production this might constitute such a serious problem that the intervention of the government might be necessary in order to reduce the hardships involved.

These considerations, however, do not affect the wisdom of making the changes. No one would think it wise to take action to prevent the manufacture of automobiles because the buggywhip manufacturers would be injured. The automobile is a more efficient means of transportation than the horse and buggy and in the long run society benefits from its introduction. Clearly, then, in the choice of the public policy alternatives, adjustment to changed circumstances or resistance to change, the choice of adjustment proves to be the wise one, even though it has some short run problems connected with it.

Logically speaking this argument applies equally to imports of goods produced by firms outside the United States. In the long run, it always pays for the purchaser to buy at the cheapest source, whether or not the source be a domestic or a foreign one.

## Statement of the Problem

In line with some of the considerations outlined above, we shall consider some of the various policies of government with respect to the lead and zinc industries in order to assess their impact on resource allocation and adaptation to

changing conditions. We shall examine a number of programs actually adopted since 1950 in order to determine whether these programs have facilitated, impeded, or had no effect on economically efficient resource allocation. In other words, we shall test the hypothesis that the government has adopted a program which facilitates adjustment to changing economic conditions, and which promotes an optimum allocation of resources and economically efficient operation of the lead and zinc industries. It will be tested against the alternative hypothesis that the government has adopted a program which impedes adjustment to changing conditions, and which promotes a nonoptimum allocation of resources and economically inefficient operation of the lead and zinc industries.

We will examine each of eleven programs individually to see what effect they tend to have. Then we shall consider all the programs as a group to determine whether the overall government program is consistent when the full pattern of consequences is surveyed. The eleven programs that we shall consider are as follows: (1) depletion allowance, (2) accelerated amortization, (3) exploration allowance, (4) development allowance, (5) tariff, (6) quota, (7) stockpile purchases, (8) barter, (9) exploration subsidies, (10) small mines stabilization subsidies, and (11) guaranteed loans. We shall examine the impact of each on (1) output, (2) consumption, (3) prices, (4) government revenues or

expenditures, (5) the foreign producer, (6) the distribution of income, (7) market structure, and (8) the business cycle. In assessing the various programs individually and as an overall group, a note will be made when a particular program is found to be internally inconsistent. In addition, some comments will be made about the economic implications of the decision-making processes that were responsible for putting the government programs with respect to lead and zinc in their present form.

The question that perhaps may be asked is: "Why pick lead and zine for a study of this kind?" The answer is that these metals (which are always considered simultaneously by the various governmental agencies in the treatment of mineral commodities) have been subject to a very large number of governmental programs, hence provide a fertile field for investigation. What this study will attempt to do is to describe each of these programs in some detail, analyze them, and draw some conclusion using the above mentioned criteria as a measure of economic performance.

The discussion is organized in the following way: First, there is a general description of the characteristics of the industry, including a detailed description of the structure of the industry, prices, costs, employment, and wages. Second, each metal will be described by itself as to market conditions since World War II, prices, tariff status and history, output, etc. Third, the various

governmental policies will be surveyed and subsequently described in detail. Fourth, each program will be analyzed according to the methodological techniques described below and the impact of the program assessed. Finally, a general conclusion will be drawn as to the overall impact of the various government programs.

## Method

The method that will be used in analyzing the problem that we have undertaken will be that of partial equilibrium analysis. The question here concerns a single bundle of economic goods within a specified economic sector. Under these circumstances we shall take as given the prices and quantities of all other goods and services. In addition we shall make the assumption that governmental policies concerning other economic goods in other sectors of the economy have no bearing on the market for lead and zinc. In other words, the problem that we have set for ourselves is to be considered in isolation, i.e., the usual ceteris paribus assumption is to be applied with respect to other variables.

It will be made clear in the following discussion of the markets for lead and zinc that there are many different grades of these metals and a variety of products which are ultimately purchased by the consumer. For purposes of analysis we shall frequently treat the market as if there were only one good of homogeneous quality. This is purely

a simplifying assumption and could be relaxed without violence to the arguments that we shall make.

The technique of analysis to be used below will be static as opposed to dynamic meaning that we shall be concerned with stationary conditions as opposed to developmental. Of course, static analysis does not include anything about the connection between conditions at various points of time (about movements in time, increases, lags, uncertain expectations, etc.). In other words, we shall find it convenient to make the unrealistic assumption that the lead and zinc industry is contained in a society where everything repeats itself from one year to the next (at least for purposes of analysis).

The problem that we have set for ourselves is one of assessing the impact of governmental policies on the process of adaptation to changing economic conditions. But both change and adaptation to change are dynamic conditions, so the question immediately arises as to how these processes can properly be assessed using the technique of static analysis. The answer can be found in the process of adjustment itself. Complete adjustment to changed economic conditions in a free market economy implies optimum allocation of resources. Therefore, if we can show that the impact of any program results (under static assumptions) in an equilibrium (with given supply and demand conditions) with a nonoptimum allocation of resources and inefficient performance we can

say that the program in question presents a barrier to adjustment to optimum conditions (or will cause a change from optimum to nonoptimum conditions). Nonoptimum use of resources at any given moment in time, in itself is not necessarily indicative of undesirable public policies if there are substantial natural frictions existent. However, the chain of reasoning can be reversed. If it can be demonstrated that a certain government program will cause an equilibrium to be established under nonoptimum conditions, it can be said to pose a barrier to the adaptation to optimum conditions. If the program was designed to perpetuate a condition that would disappear under optimum conditions, then it can be said to pose a barrier to economic change.

In pursuing our analysis we shall be concerned solely with the problems of economic efficiency and not with the problems of economic equity. In other words, we shall consider efficiency as a criterion of desirability, the more nearly optimum the allocation of resources in the industry the more desirable the position, leaving problems of the fairness of income distribution out of the picture.

Problems such as structural changes in the economy which would ultimately prove to be more efficient, but can not be achieved through the operation of market forces are also left out of consideration. Thus we are, in effect, assuming that a position of optimum efficiency is brought about by unrestricted operation of market forces. Careful

examination of the markets for lead and zinc shows that this is an assumption that does not do violence to the facts.

In summary it can be said that the study undertaken below will use the utopian free trade argument as a criterion of economic efficiency. The desirability of various government programs will be judged in the light of whether they promote economic efficiency, i.e. pose barriers to the adjustment to optimum conditions.

# CHAPTER II

# STRUCTURAL AND HISTORICAL ASPECTS OF THE LEAD AND ZINC INDUSTRIES

## Introduction

The industries consist of two major divisions or segments--mining and milling and smelting and refining. Imports of foreign ores and metals have a very different impact on each of the segments of the industry. Imports of ores and concentrates of metal are competitive with the production of domestic mines and mills. This competition is heightened because foreign ores normally have higher metal content than domestic ores, hence have lower cost per ton of concentrates produced. Domestic smelters and refineries, however, treat both foreign and domestic ores, hence they view imported ores and concentrates as an important source of raw materials. It will be shown below that a substantial share of the lead and zinc metal produced in this country derives from the processing of foreign ores and concentrates. Thus there tends to be a fundamental conflict of interest between the two segments of the industries with respect to the desirability of lowering import restrictions. This conflict is further sharpened by the fact that the integrated smelters often have financial interests in foreign properties.

## Structure of the Industry

The major segments of the United States lead and zinc industry are the mining and milling (concentrating) of lead and zinc ore, the smelting and refining of the concentrates at primary smelters and refineries, and the recovery of lead from scrap, both old and new at secondary smelters. Lead and zinc metal that is directly produced from ore is called "primary" metal while that produced from scrap is known as "secondary" metal. Primary metal production involves the mining of crude or milling to produce concentrates, and smelting and refining to produce the refined metal.

### Mining and Milling

A relatively large number of mines is engaged in producing crude ores, in spite of the fact that the number of operative mines has been decreasing in recent years. Many small mines operate intermittently, coming into production only under favorable market conditions. Despite the large number of mines and mining concerns, the major portion of the mine output has always been supplied by a small number of large producers. For instance, of the 625 lead mines and zinc mines operating as active producers in 1956, 557 mines, or 80 per cent of the total, accounted for only 3 per cent of the annual lead and zinc production. Each of these mines produced less than 499 tons of either metal during the year. Only 37 mines reported production of recoverable metal of more than 5,000 tons during the year. These mines, however,

accounted for 73.4 per cent of the total domestic production. In 1960, 13 of the 268 active concerns accounted for about 84 per cent of the total output of each of the markets producing both lead and zinc (see Table 1).

The 42 largest mines, those that produced 3,000 or more tons of recoverable lead plus zinc, produced more than 90 per cent of the country's total mine output of each of the metals. The number of the larger mines remains relatively constant from year to year, whereas the number of smaller mines fluctuates widely, depending on prevailing metal prices.

Approximately 80 per cent of the domestic lead and zinc ores and concentrates received by U. S. smelters comes from mines that are owned or controlled by the smelting companies or their subsidiaries (see Table 2).

There are seven mining companies not owning smelters which account for an additional 7 per cent of the lead production and 18 per cent of the zinc production (see Table 3).

Therefore, the integrated companies plus these seven non-integrated producers accounted for 89 per cent of the lead and 96 per cent of the zinc produced domestically.

## Smelting and Refining

Thirteen U. S. concerns and their subsidiaries operate primary lead or zinc smelters and refineries. Three of them operate both lead and zinc smelters and refineries, though at different locations.

TABLE 1.--Summary of U. S. Production of Lead and Zinc

| Year | Number of Mines Estimated by U.S. Bureau of Mines | Material Treated (thousands of tons) | Lead Produced (thousands of tons) | Zinc Produced (thousands of tons) | Value of Lead Produced (thousands of tons) | Value of Zinc Produced (thousands of tons) | Average Price, Lead (cents) | Average Price, Zinc (cents) |
|---|---|---|---|---|---|---|---|---|
| 1948 | 1,346 | 22,876 | 388 | 629 | 139,031 | 167,852 | 17.9 | 13.3 |
| 1949 | 1,238 | 22,120 | 408 | 592 | 129,035 | 148,649 | 15.8 | 12.4 |
| 1950 | 1,069 | 24,545 | 429 | 623 | 119,604 | 178,601 | 13.5 | 14.2 |
| 1951 | 1,080 | 32,236 | 387 | 680 | 134,068 | 242,154 | 17.3 | 18.2 |
| 1952 | 987 | 27,647 | 389 | 665 | 125,425 | 222,805 | 16.1 | 16.6 |
| 1953 | 693 | 22,436 | 341 | 545 | 89,460 | 124,961 | 13.1 | 11.5 |
| 1954 | 548 | 21,192 | 324 | 473 | 88,858 | 102,089 | 13.7 | 10.8 |
| 1955 | 529 | 23,485 | 336 | 513 | 90,341 | 126,538 | 14.9 | 12.3 |
| 1956 | 625 | 23,556 | 349 | 542 | 109,858 | 148,440 | 15.7 | 13.7 |
| 1958 | 517 | 21,831 | 337 | 531 | 96,426 | 123,220 | 11.7 | 11.6 |
| 1959 | 254 | 17,032 | 254 | 425 | 58,635 | 97,750 | 11.5 | 11.5 |
| 1960 | 292 | 17,684 | 245 | 434 | 57,580 | 112,246 | 11.7 | 12.9 |

Source: Lead-Zinc Stabilization, Hearings before the Subcommittee on Minerals, Materials, and Fuels of the Committee on Interior and Insular Affairs, United States Senate, 88th Congress, 1st Session, August 14 and 20, 1963 (Washington, D.C.: Government Printing Office, 1963), p. 78.

TABLE 2.--Lead and Zinc Mine Production of Companies Owning Lead or Zinc Smelters in the United States
(Period: Lead, year ending Dec. 31, 1959;
Zinc, year ending Sept. 30, 1959)

| Company | Recoverable Mine Production of Lead Tons | Recoverable Mine Production of Zinc Tons |
|---|---|---|
| American Metal Climax, Inc. | ----- | ----- |
| American Smelting & Refining Company | 8,100 | 15,300 |
| American Zinc, Lead & Smelting Company | 2,500 | 47,000 |
| The Anaconda Co.[1] | 9,700 | 39,500 |
| Athletic Mining & Smelting Co. | ----- | ----- |
| The Bunker Hill Co.[2] | 47,600 | 39,600 |
| Eagle-Picher Co. | 2,400 | 22,500 |
| Matthiessen & Hegeler Zinc Co. | ----- | ----- |
| National Lead Co. | 4,000 | ----- |
| National Zinc Co., Inc. | ----- | ----- |
| New Jersey Zinc Co. | 7,800 | 79,200 |
| St. Joseph Lead Co. | 100,000 | 46,300 |
| United States Smelting & Mining Company | 25,300 | 25,000 |
| Total | 207,400 | 314,400 |
| Comparable U. S. Bureau of Mines U. S. Mine Production | 253,300 | 406,100 |
| Percentage of U. S. Total Mine Production | 82 | 78 |

[1]Includes United Park City Mines in which Anaconda is largest stockholder.

[2]Includes Pend Oreille Co. in which Bunker Hill is largest stockholder.

Source: Lead, Lead Industries Association Report Form E; Zinc survey made by American Zinc, Lead & Smelting Co. in connection with Tariff Commission Hearings. Printed as a table in Lead and Zinc Problems, Hearings before the Subcommittee on Minerals, Materials, and Fuels of the Committee on Interior and Insular Affairs, U. S. Senate, 87th Congress, 1st Session, May 4, 1961, p.85.

TABLE 3.--Lead and Zinc Mine Production of Seven Companies not owning Lead or Zinc Smelters
(Period: Lead, year ending December 31, 1959; Zinc, year ending September 30,1959.)

| Company | Lead--Tons | Zinc--Tons |
|---|---|---|
| New Park Mining (Utah) | 2,900 | 2,900 |
| Idarado (Colorado) | 6,300 | 10,500 |
| Shattuck Denn (Arizona) | 8,400 | 23,000 |
| Tri-State Zinc (Illinois) | ----- | 7,100 |
| U. S. Steel Corp. (Tennessee) | ----- | 12,600 |
| Cypress Copper (Arizona) | ----- | 9,000 |
| Tennessee Corp. (Tennessee) | ----- | 6,600 |
| Total | 17,600 | 71,700 |
| Per Cent of U. S. Total | 7 | 18 |

Source: Lead, Lead Industries Association Report Form E; Zinc survey made by American Zinc, Lead & Smelting Co. in connection with Tariff Commission Hearings. Printed as a Table in Lead and Zinc Problems, Hearings before the Subcommittee on Minerals, Materials, and Fuels of the Committee on Interior and Insular Affairs, U. S. Senate, 87th Congress, 1st Session, May 4, 1961, p. 85.

Lead smelting and refining.--As of May 1962 five firms operated eight primary lead smelters and refineries. Of these plants, three were smelters producing lead bullion which is refined elsewhere, two engage only in lead refining, and three concerns have both smelting and refining facilities. It was estimated at that time that these firms had a total

capacity of 512,000 short tons of refined lead. This is in comparison with the 1960 production of 387,000 (including 28,700 tons in antimonial lead) and 1961 production of 451,100 tons of refined lead (and 33,200 tons of antimonial lead). Principal raw materials (foreign and domestic) treated by the primary lead refineries are lead ores and concentrates, base bullion, and small quantities of scrap.

Since 1959, U. S. secondary lead production has substantially exceeded primary metal production. In 1960, secondary lead production totaled 470,000 tons in comparison to the primary metal production of 387,000 tons. In 1960, according to U. S. Bureau of Mines, 235 secondary smelters recovered 86 per cent of the total secondary lead; 4 primary lead smelters produced 7 per cent of the total; and the remaining 7 per cent was produced by various manufacturers, foundaries, and secondary copper smelters. The principal product of secondary smelters is antimonial (hard) lead because smelter feed is composed primarily of hard lead in the form of battery scrap.

Zinc smelting and refining.--As of May 1962, twelve concerns were engaged in primary zinc smelting and refining. They operated 14 plants (4 electrolytic plants and 10 distillation plants). The estimated total capacity of these plants ranges from 1,046,000 to 1,071,000 short tons of slab zinc compared with the production, by all the primary zinc smelters and refineries, of 843,700 tons in 1960 and

882,100 tons in 1961. The raw materials processed by primary zinc smelters and refineries, from both foreign and domestic sources are zinc ores and concentrates, zinc fume and other zinc-bearing materials, and considerable amounts of zinc-base scrap. Their products, in addition to slab zinc, are zinc oxide, zinc dust, and zinc-base alloys. About one-fourth of the total secondary zinc is produced by 10 secondary plants, and by some manufacturers of chemicals, pigments, die-casting alloys, rolled zinc, and brass. The zinc-base scrap processed includes zinc dross and skimmings, die cast alloys, old zinc articles, engravers plates, new zinc clippings, and zinc-bearing chemical residues. The products are slab zinc, zinc pigments, zinc dust, and zinc alloys.

## Other Activities of U. S. Lead and Zinc Producers

A number of the domestic firms, or their subsidiaries, that operate lead or zinc mines or primary lead or zinc smelters or refineries in the United States, operate domestic secondary lead or zinc smelters or refineries, and lead fabricating plants (producing rolled extruded, or cast products, pigments, etc.). A large number produce other metals, and some are engaged in foreign lead and zinc mining, smelting, or refining operations.

In 1960, 23 U. S. concerns and their subsidiaries operated the 25 largest lead mines and the 25 largest zinc

mines in the United States. These same firms were also engaged in other operations as follows:

In the United States--

5 firms in primary lead smelting and refining,

6 firms in primary zinc smelting and refining,

5 firms in secondary lead smelting,

2 firms in secondary zinc smelting,

6 firms fabricating lead or zinc products, and at least 15 in producing other metals.

In foreign countries--

6 in mining lead or zinc, primarily in Mexico, Canada, Peru, and Australia;

some others in exploration activities in foreign countries;

2 in smelting or refining lead or zinc in Mexico, Australia, Peru, or Argentina.

One of the large concerns is engaged in all of the foreign and domestic activities enumerated; eight others are engaged in three or more of these activities.(1)

## Price and Output Trends and Reserves

### Price and Output Trends Since the 1920's

Developments in the lead and zinc industry over the past decades will be viewed in broad outline at this point. The post World War II developments will be examined in greater detail in Chapters III and IV.

As in the case of almost everything else, the production of lead and zinc is governed by prices. One prominent characteristic of lead and zinc market prices is their relative instability. This price instability, of course, causes fluctuations in industry income, particularly in the mining and milling segment. Among the small mines and mills, there are many that cannot stand a prolonged period of low prices due to limited financial resources. In addition, price fluctuations lead to instability in the cost of raw materials for the producers of lead and zinc manufacturers. The degree of uncertainty thus engendered narrows the competitive advantage of lead and zinc over substitute materials.

Under normal circumstances lead and zinc are the lowest priced nonferrous metals and a large part of the demand for them derives from this fact. In general, where a nonferrous metal is used, and where lead and zinc are technically suited for application, management normally would not choose a more expensive metal unless there were special considerations influencing the choice. Other significant factors affecting the decision whether or not to substitute other materials

would be the cost of converting existing productive facilities to the use of other materials, the technical suitability of the substitute materials under consideration, and the possible resistance of customers to new materials with which they have not had long and extensive experience.

Prior to the decade of the 1920's, the zinc market price was normally greater than that of lead. Subsequent to that time, however, the relationship has been reversed, except in wartime, for the reason that zinc enters into military products to a greater extent than lead.

Speaking in broad terms the large cycles in the prices and output of lead and zinc have been marked by wars and severe fluctuations in the general level of economic activity. The price of zinc increased sharply during World War I, more than doubling relative to the general wholesale price index. This is to say, the increase in the price of zinc, expressed as a ratio of the later to the former year's price, was twice the rise in the wholesale price index over the period. An alternative way of saying the same thing is to divide the market price by the value of the wholesale price index for each year. The deflated price thusly computed more than doubled during World War I. This resulted in a sharp increase in U. S. mine output which was not matched in the rest of the world. The same thing happened on a smaller scale in the case of lead.

The next major cyclical movement occurred during the post World War I depression of 1921 and the great depression of the 1930's, with the bottom of the trough being reached in 1932. In the years following 1921, world and U. S. output proceeded sharply upward from the lows of that year. Output increased in spite of the fact that the deflated price of zinc was approximately 20 per cent lower than in the pre-war years. A substantial increase in the deflated price of lead in the mid-twenties stimulated the output of lead to a level 25 per cent higher than pre-war. This decade saw the extensive use of flotation techniques to the complex lead-zinc ores for the first time in the United States. The lower price of zinc is indicative of this development, although its influence on lead prices was obscured by the continuing high demand for lead, particularly in the later years of the decade.

Despite the fact that the 1920's represented difficult times for parts of the United States lead and zinc industry due to the fact that the competitive positions of the different areas were changing, this decade must be considered as a prosperous one for both U. S. and world mining. It was at this time that the mine output of lead reached and all time high in the United States and the level of zinc output reached levels only attained again during World War II. These levels of output of lead and zinc were attained under significant tariff protection. In the instance of zinc, the

tariff constituted approximately 25 per cent of the market price of slab and bullion. The tariff on lead was also substantial. The differential between the duty on metal and the duty on ore (which can be viewed as protection for the smelting and refining services) seems also to have been effective. There was a close connection between U. S. and London prices. The prices tended to move together, with the U. S. price being from one to one and three-fourths cents above the London price. The movement of metal, produced from foreign ore (which was not subject to the tariff), was from the U. S. to Europe, despite the price differential.

In the case of zinc the United States had a large export balance during the 1920's. Before late 1925, the London price of zinc exceeded the U. S. price by an amount consistent with a large export balance. Simultaneously with the establishment of the Zinc Export Association under the Webb-Pomerene Act in late 1925 the differential disappeared until early 1928, although the U. S. continued to have a net export balance. In the early months of 1928, the St. Louis price rose above the London price, suggesting, perhaps, increased effectiveness in restriction of domestic sales by members of the Zinc Export Association.

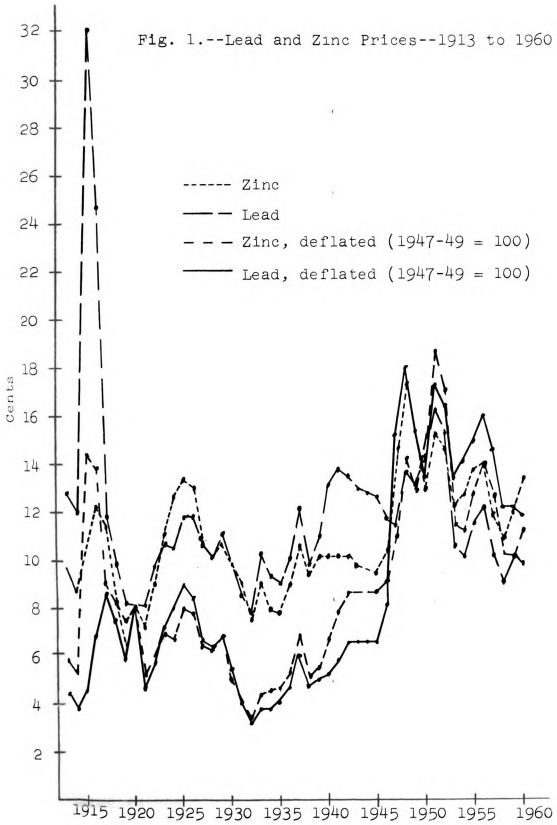
An overall long range view would seem to indicate that lead and zinc mining in the United States has been declining since the 1920's in relation to mine output in the rest of the world. For instance, the U. S. share of the world output

of zinc was 45 per cent in the 1923-29 period, declined to 30 per cent in 1936-38, increased slightly to 33 per cent in 1941-43 due to the stimulus of World War II programs, and declined to 25 per cent in 1951-52, the height of the Korean War. In 1957 and 1958, U. S. mine output was 15 and 12 per cent, respectively, of total world output.

A similar story can be told in the case of lead. U. S. mine output was 37 per cent of total world output in 1923-29, 22 per cent in 1936-38, 27 per cent in 1941-43, and 20 per cent in 1951-52. In 1957 and 1958, it was 13 and 11 per cent, respectively. It perhaps can be said in the cases of both lead and zinc that a part of the decline that has been observed is a direct result of the decline in the ad valorem equivalent of the duty (thus reducing the level of protection to domestic producers). The burden of the duties since World War II have been reduced greatly both by trade concession and by increase in prices (the duties being specific in nature). In the late 1950's, the duty on the metals was less than 10 per cent of the price of lead as compared with the 25 per cent or more in the 1920's. The decline in the relative output of both lead and zinc has been accompanied by an absolute decline in output. This has resulted in difficult problems of readjustment.

During World War II there was a decline in both U. S. and world output of lead and zinc. At the expiration of the ceiling price control program, lead prices rose very sharply

Fig. 1.--Lead and Zinc Prices--1913 to 1960



with the deflated price in 1948 being almost double that of 1945. Despite a sharp decline from 1948 to 1950, the deflated price remained more than one-third above that of 1945. While U. S. mine output increased significantly over the 1945 level as a result of the sharply higher prices, output in the rest of the world increased at a much greater rate.

The increase in the price of zinc after the war was considerably smaller and the price peak came later in 1951 and 1952. The deflated price in these years was about 25 per cent higher than 1945. (One, however, should remember that the Korean War ceiling price regulations were effective at this time.) Similar to the case of lead, U. S. zinc output increased somewhat as a result of increased prices, but here again output in the rest of the world increased more rapidly.

From 1952 to 1953, the deflated price of both lead and zinc fell sharply--by approximately 17 per cent for lead and 33 per cent for zinc. U. S. mine output also fell sharply. Lead production from domestic ores declined by about 17 per cent and within two years time zinc output had dropped some 30 per cent. The economic recovery and rising prices coming out of the recovery after the 1954 recession stimulated U. S. output somewhat, but the still lower prices of 1957-1959 resulted in new lows in U. S. mine output of both metals. To a large extent these conditions have remained up to the present time.

The events in the decade and a half following World War II have resulted in a major change in the geographic distribution of lead output. Mine output is not nearly so concentrated by country as it was immediately after the war. U. S. lead output has declined very greatly relative to the total. The same can be said to a lesser extent about the outputs of Mexico and Canada. The U.S.S.R. has increased its share of world output, but Australia has approximately the same share. A similar story can be told about zinc. Output is less concentrated, Russia has doubled its share, but Canada and Australia have held their own. Here again the most striking change is the decline of U. S. output.

## Lead and Zinc Ore Reserves

Lead and zinc deposits are widely scattered throughout the United States and the world. The deposits vary greatly in size, richness, and accessibility. Normally the sulfide minerals galena, the principal lead mineral (86 per cent lead) and shalerite, the principal zinc mineral (67 per cent zinc), are contained in the same ore, although in widely varying proportions. The zinc ores found in northern New Jersey constitute an important exception, however. Frequently, lead is associated with silver in the same ore, and zinc (with or without lead) is often found in conjunction with copper. Many of the complex ore deposits in the Western states contain appreciable quantities of silver, copper, and gold in addition to lead and zinc. These metals are all in

TABLE 4.--Lead and Zinc: Reserves of Metal in Measured and Indicated Ore in the United States and the rest of the World by Continents, as of January 1, 1950

| Area | Lead Content of Ore | | Zinc Content of Ore | |
|---|---|---|---|---|
| | Quantity (short tons) | Per Cent of World Total | Quantity (short tons) | Per Cent of World Total |
| United States | 2,800,000 | 7.5 | 8,500,000 | 12.2 |
| North America, excluding U.S. | 5,000,000 | 13.0 | 8,000,000 | 11.5 |
| South America | 2,500,000 | 6.5 | 12,000,000 | 12.3 |
| Europe | 10,000,000 | 26.0 | 19,500,000 | 28.1 |
| Asia | 2,000,000 | 5.5 | 4,000,000 | 5.7 |
| Australia | 12,500,000 | 32.5 | 14,000,000 | 20.2 |
| Africa | 3,500,000 | 9.0 | 3,500,000 | 5.0 |
| World Total | 38,400,000 | 100.0 | 69,500,000 | 100.0 |

Source: Data compiled for the National Security Resources Board by the U. S. Geological Survey, printed as Table L2-3 in Lead and Zinc Industries, United States Tariff Commission, Report on Investigation Conducted under Section 332 of the Tariff Act of 1930 pursuant to a Resolution by the Committee on Finance of the United States Senate dated July 27, 1953, and a Resolution by the Committee on Ways and Means of the United States House of Representatives dated July 29, 1953, Report No. 192, Second Series (Washington, D. C.: U. S. Government Printing Office, 1954), p. 208.

NOTE: The tabulation shows the lead and zinc content (not all recoverable) of measured or proven lead, zinc, and lead-zinc ore (that is, ore measured by sufficient development work to leave little doubt as to its limits and grade) plus indicated ore (that is, ore shown to exist by development work which, however, was not extensive enough to determine the exact size and grade of ore deposits). The statistics do not include inferred ore, which is usually estimated from preliminary development and geological work. The figures shown for lead and zinc content apply to deposits that were considered to be minable at a profit at metal prices and costs prevailing at the end of 1949.

The ore reserves given in this table should be regarded as minimum reserves that will be augmented as further exploration and development work is undertaken. Mining companies, owing to the expense involved and to other considerations, usually do not develop ore bodies to an extent greater than would be necessary to carry on mining operations for about four to five years.

greater or lesser degree compliments in production and their prices related accordingly.

Figures on estimated reserves are not as adequate as one would like. The latest estimates of known lead and zinc ore reserves in the United States and the rest of the world were estimated by the United States Geological Survey as of January 1, 1950. The estimates give the aggregate lead and zinc ore deposits that were considered minable at a profit at metal prices and costs prevailing at the end of 1949. (At that time, the U. S. market price of lead was 12 cents a pound and zinc 9-3/4 cents.) The reserve figures must be considered in light of certain qualifications so that one is not mislead. The estimates show the metal content (not all recoverable) of measured (or proven) and indicated ore. "Measured" ore is that proven by sufficient development work to leave little doubt as to its limits and grade. "Indicated" ore is that shown to exist by development work which was not extensive enough to determine the exact size and grade of ore deposits. The estimates are exclusive of "inferred" ore, the figures for which are usually estimated from preliminary development and geological work and are, therefore, not as accurate.

As of January 1, 1950, the estimated lead reserves in the United States were 2,900,000 tons, or 7.5 per cent of the world total; estimated reserves of zinc were 8,500,000 tons or 12.5 per cent of the world total. Only between 80

and 90 per cent of the lead reserves and about 75 per cent of the reserves of zinc are estimated as recoverable because of mining, milling, and smelting losses. Measured lead reserves in the United States were smaller than those in other North American countries (taken together), or in Europe, Australia, or Africa; they were larger than the lead reserves in either South America or Asia. Measured and indicated zinc reserves were not so large as those of South America, Europe, or Australia, but they were larger than those of the other North American countries combined, and larger than those in Asia or Africa.

It should be understood that these estimates of lead and zinc in ore represent only the reserves shown by development work. Mining companies normally do not develop ore bodies for more than four to five years ahead of mining because of the expense involved. In addition, the reserves are those regarded by the estimators to be minable profitably at metal prices and costs prevailing at the time the estimates were made. Therefore, the estimates depend upon the status of development work and the economic conditions prevailing at the time the estimates were made.

## Wages and Employment Sensitivity in Primary Lead and Zinc Production

### Employment

Over the last decade information on employment and wages at domestic lead and zinc mines and mills and at primary lead and zinc smelters and refineries has been collected from individual producing concerns in connection with various investigations. Comparable annual data are available for 1952, 1956, and each of the years 1958-61.(2)

In 1961, total employment in the U. S. lead and zinc mines and mills, and primary lead and zinc smelters and refineries averaged 22,647, a figure lower than the average in any other of the eight years, 1952-60, for which comparable data are available. This total includes 9,312 employees at mines and mills, and 13,335 employes at primary smelters and refineries (2,946 at lead plants and 10,389 at zinc plants).

The average number of employees in the various segments of the industry can be summarized for selected years from 1952 to 1961 in the following table. From this table it is obvious that average employment in 1961 was substantially smaller than in 1952, the first year for which data are available. Average employment a mines and mills in 1961 was about 38 per cent of the 1952 level, while employment at primary smelters and refineries was about 75 per cent as great. It should be noted, however, that 1952 can not be

considered a representative year due to the war in Korea. A more typical year that provides a better basis of comparison would be 1956. Consequently we should compare the data for 1956 with that of the period 1959-61, a period over which import quotas had been effective. Average employment during this period remained almost contant (although employment at mines and mills was 6 per cent smaller in 1961 than in 1959).

TABLE 5.--Employment in the Lead and Zinc Industry 1952-61

| Period | Total | At Mines and Mills | At Primary Smelters and Refineries | | |
|---|---|---|---|---|---|
| | | | Total | At Lead Plants | At Zinc Plants |
| 1952 | 42,171 | 24,282 | 17,889 | 4,757 | 12,132 |
| 1954 | a | 17,016 | a | a | a |
| 1956 | 34,001 | 16,845 | 17,156 | 4,853 | 12,303 |
| 1958 | 24,141 | 10,500 | 13,641 | 3,778 | 9,863 |
| 1959 | 23,201 | 9,893 | 13,308 | 2,844 | 10,464 |
| 1960 | 22,733 | 9,430 | 13,303 | 3,030 | 10,273 |
| 1961 | 22,647 | 9,312 | 13,335 | 2,946 | 10,389 |
| 1959-1961 Avg. | 22,860 | 9,545 | 13,315 | 2,940 | 10,375 |

[a]Comparable data not available.

Source: United States Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 2) under Section 332 of the Tariff Act of 1930 made pursuant to Senate Resolution 206, 87th Congress, adopted September 23, 196, Washington, May, 1962.

The average number of employees at lead and zinc mines and mills during 1959-61 was 57 per cent of that in 1956. The average number of employees at primary smelters and refineries during 1959-61 was 78 per cent of that in 1956. Average employment at primary lead smelters and refineries in 1959-61 was 60 per cent of that in 1956, and at primary zinc smelters and refineries average employment during this period was 84 per cent of that in the base year. Employment levels during 1959-61 were influenced by labor disputes as well as by general economic conditions. The unusually low level of employment at lead smelters and refineries in 1959 reflects the closure of seven plants during part of that year on account of labor disputes.

Changes in the number of production and related workers and in the man hours worked by such workers, have in general, gone hand-in-hand with changes in the total number of employees.(3) The decline in employment has been to some degree more pronounced for production workers than for all employees. In addition, the annual number of man-hours worked by production and related workers has declined somewhat more sharply than the number of such workers, reflecting less full time employment (see Appendix Table A-1).

Regional Employment at Mines and Mills

Data on the average number of employees at lead and zinc mines and mills in 1956 and 1959-61 (as reported to the Tariff Commission by individual companies) are shown by

regions in Table 6.

TABLE 6.--Regional Employment at Mines and Mills, 1956 and Average 1959-1961[a]

| Regions and States | 1956 | 1959-61 Average | | |
|---|---|---|---|---|
| | | | Per Cent from 1956 | |
| | | Number | Number | Per Cent Decline |
| States East of the Mississippi River (N.Y., N.J., Pa., Tenn, Va., Ill, and Wis.) Total | 2,450 | 2,113 | 337 | 14 |
| West Central States Total | 4,552 | 2,501 | 2,051 | 45 |
| Southeastern Missouri | 3,221 | 2,330 | 891 | 28 |
| Tri-State (Oklahoma, Southwest Missouri, Kansas) | 1,331 | 171 | 1,160 | 87 |
| Western States, Total | 9,706 | 4,896 | 4,810 | 50 |
| Colorado | 1,495 | 1,115 | 380 | 25 |
| Idaho | 2,484 | 1,563 | 921 | 37 |
| Montana | 1,976 | 396 | 1,580 | 80 |
| Utah | 1,191 | 969 | 722 | 43 |
| All other (Alaska, Arizona, California, Nevada, New Mexico, and Washington) | 2,060 | 853 | 1,207 | 59 |

[a]The data in this tabulation cover an estimated 99.2 per cent of the total employment in 1956, and 99.6 per cent of the total in 1959-61. For this reason the sums of the figures do not quite equal the U.S. totals previously shown, which included small estimates for unreported operations. However, these reported data are so nearly complete that they are indicative of the total employment changes.
Source: Same as Table 5, op. cit., p. 53.

The Western states, with an average of approximately 4,900 employees, accounted for about 52 per cent of all the employment at lead and zinc mines and mills in the United States during 1959-61. The West-Central states, with an average of about 2,500 employees, accounted for about 26 per cent, and the states East of the Mississippi River, with about 2,100 employees, accounted for the remaining 22 per cent of total employment.

Employment in 1959-61 fell from the 1956 level in all of the major producing areas. Total employment fell about 7,200, about two-thirds of the decline occurring in the Western states. Most of the remaining reduction in employees occurred in the West-Central states, particularly in the Tri-State district.

For the nation as a whole, the decline in average employment from 1956 to 1959-61 (43 per cent) was substantially greater than the decline in annual mine production of recoverable lead plus zinc (19 per cent). This disparity is attributable to the closing of the less efficient mines and concentration of production in the more efficient or more mechanized mines, the curtailment of development and exploration work, and the selective mining of higher grade ores.(4)

From the point of view of economic readjustment, many of the lead and zinc mines, particularly in the Western states, are situated in localities where other means of

livelihood are limited or non-existent. Under such circumstances mine or mill closings present a difficult readjustment problem for the worker and his family and the supporting service industries. In some areas, if the situation is prolonged, ghost towns arise with concurrent serious depreciation or total loss of real estate holdings on top of losses of worker income. The mine operator, for his part, loses skilled workmen who may be difficult to replace, should economic conditions improve sufficiently to permit renewed production.

The cessation of production at lead and zinc mines, however, does not eliminate the cost of maintainance and upkeep. Large expenditures for pumping, retimbering, and other maintenance are needed to prevent serious damage to mine equipment and installations and underground workings from flooding and cave-ins. These maintainance costs are often the sole alternative to permanent closure of the mines and loss of ore reserves, because of the high costs that would otherwise be involved in restoring the mines to production.

## Wages Paid at Mines and Primary Smelters and Refineries

The total wages paid to production and related workers at mines and mills and at primary smelters and refineries averaged $923 million during 1959-61. Making up this total were $37.6 million paid at mines and mills (5) and $54.7

million paid at the smelters and refineries (composed of $11.3 million at lead plants and $43.3 million at zinc plants).(6)

TABLE 7.--Wages Paid in the Lead and Zinc Industry 1956 and 1958-61

| Period | Total | At Mines and Mills | At Primary Smelters and Refineries | | |
|---|---|---|---|---|---|
| | | | Total | At Lead Plants | At Zinc Plants |
| 1956 | $131,133 | $66,595 | $64,538 | $18,007 | $46,531 |
| 1958 | 89,026 | 38,089 | 50,937 | 14,067 | 36,870 |
| 1959 | 89,969 | 38,008 | 51,961 | 10,017 | 41,944 |
| 1960 | 92,629 | 37,207 | 55,422 | 12,049 | 43,373 |
| 1961 | 94,336 | 37,695 | 56,641 | 11,965 | 44,676 |
| 1959-61 Average | $ 92,312 | $37,637 | $54,675 | $11,344 | $43,331 |

The total annual wages paid to production and related workers during 1959-61 declined by a somewhat smaller percentage than the number of man hours worked by such workers. Average hourly wage payments to production and related workers per man-hour actually worked at lead and zinc mines at mills increased from $2.19 in 1956 to $2.44 in 1961. Wage payments during 1961 inclusive of all hours paid for, including payments for holidays, sick leave, and vacations taken, averaged $2.31 per hour (see Appendix Table A-1).

Hourly wage payments to production and related workers at primary lead and zinc smelters and refineries for man hours actually worked increased from $2.23 in 1956, to $2.60 in 1961. The average for 1961 based on all man hours paid for was $2.43 per hour (see Appendix Table A-1).

Costs

Data on costs are unavailable. Nor can adequate cost data be derived from the information supplied by individual firms because of the substantial degree of vertical and horizontal integration. This difficulty is not crucial to the argument as no attempt is made to quantify the effects of the various government programs discussed. Cost studies have been made by the Tariff Commission but the results are confidential. Use will be made, however, of the conclusions reached by the Commission.

## Summary

The lead and zinc industries are divided into two main segments: (1) mining and milling, and (2) smelting and refining. In addition there are numerous small mine operators and a few large integrated companies, as well as as small number of independent smelters and refineries. The large integrated companies do the bulk of the business in both segments of the industry. In all 13 integrated companies and 7 non-integrated companies produce 89 per cent of the lead and 96 per cent of the zinc domestically mined.

Lead smelting and refining is concentrated in five firms operating eight primary lead smelters and refineries. Twelve firms operating 14 plants are engaged in primary zinc smelting and refining. The firms that control the bulk of the mine output also have substantial interests in lead and zinc smelting and refining, secondary lead and zinc smelting, in fabrication of lead and/or zinc products, and in mining and milling and/or smelting and refining in foreign countries.

Price instability characterized the markets for lead and zinc. There has been a substantial decline in employment at mines and mills, and smelters and refineries in the past decade, production workers declining more sharply than all employees.

Employment at mines and mills is confined to a large extent to several specific areas in the United States. The impact of declining employment has been much greater in some areas than in others. Although total wages and employment at mines and mills and smelters decreased during the period 1956-61 average wages paid per hour increased.

## CHAPTER II: FOOTNOTES

1. United States Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 2) under Section 332 of the Tariff Act of 1930 made pursuant to Senate Resolution 206, 87th Congress, adopted September 23, 1961, TC Publication 58, Washington, May 1926, p. 37.

   A more complete statement of the foreign holdings and interrelations of the lead and zinc producing companies as of June 18, 1963 can be found in Lead and Zinc, Hearings before the Subcommittee on Mines and Mining of the Committee on Interior and Insular Affairs, House of Representatives, 88th Congress, 1st Session, June 13 and 14, and July 8, 1963, U. S. Government Printing Office, Washington, 1963, p. 55 et seq.

   An even more detailed statement as well as a description of the lead industry can be found in Lead, A Materials Survey, Bureau of Mines Information Circular 8083, United States Department of Interior, 1962, Chapter VII.

2. The wage and employment statistics of the Tariff Commission for lead and zinc mines and mills consistently cover establishments engaged in the production of ores or concentrates valued chiefly for their recoverable lead-plus-zinc content. The statistics also cover lead and zinc operations that engage only in maintainance and development work and therefore produced no ore.

   Data on employment and wages at primary smelters and refineries include statistics on employment and wages in connection with their relatively small production of secondary metals as well. However, employment statistics for the many secondary plants recovering lead and zinc (and other metals) from scrap are not available. In view of the large production of secondary lead and zinc, particularly lead, employment in such secondary production is, in all likelihood, substantial.

3. The primary difference between "all employers" and "production and related workers" is that the latter category excludes officers, supervisory employees (above the working-foreman level), technical employees, salesmen, and general office workers. During 1959-61, the ratio of "production and related workers" to "all employees" was 84 per cent at mines and mills, 77 per cent at primary lead smelters and refineries, and 82 per cent at primary zinc smelters and refineries.

4. See United States Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 2) under Section 332 of the Tariff Act of 1930 made pursuant to Senate Resolution 206, 87th Congress, adopted September 23, 1961, TC Publication 58, Washington, May 1962, p. 54.

5. Figures do not include payments at unreported lead and zinc mines and mills that accounted for less than one-half of one per cent of mine production of lead and zinc.

6. Table taken from: U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26, of the Tariff Act of 1930, made pursuant to Senate Resolution 206, 87th Congress, Washington, May 1962, p. 55.

# CHAPTER III

# LEAD, HISTORICAL BACKGROUND

## Introduction

### The Approach

Lead and zinc although largely produced from the same ores, and usually acted upon simultaneously by various government programs, nevertheless, are sold in separate and distinct markets. This chapter and the next one will undertake a discussion in some detail of economic conditions. It is necessary to understand the economic conditions in the post World War II years in order to understand the government policies towards the industries. Policy decisions can not be divorced from the conditions under which they are made. Every policy that has ever been formulated by government (or any other agency or person) was implemented in response to a problem of concern at the moment of its implementation. The continuation of policies formulated under one set of economic circumstances after these circumstances have changed completely has important implications. This point will become evident as we proceed.

The description is essentially chronological because it is desirable to show the market conditions under which the various programs are instituted. Some of the programs

will be mentioned in the appropriate places in the chronological description. These programs are much too complicated to be discussed conveniently in this chapter, so that a detailed description and analysis of them will be defered to later chapters. The reader, however, will be able upon reading the description of a particular program to refer back to the chronological discussion to see under what economic conditions the program was undertaken. This, admittedly is an awkward procedure, but due to the complexity of the various programs involved, it seems to be the only feasible one. This, however, has the added disadvantage of introducing an element of duplication into the discussion as some of the same programs are mentioned twice. This, however, is preferable to lumping both together, in that the market conditions in one market can be put into a pattern without the complexity of the other market complicating exposition.

Uses of Lead

Lead is a useful basic industrial material, normally ranking fifth in quantitative order of consumption after iron, copper, aluminum, and zinc. It is utilized in the manufacture of a great number of civilian and military goods and is an important commodity in the stockpiling program of strategic and critical materials. Its widespread use can be attributed to several peculiar characteristics,

which in combination with other elements, give an almost infinite variety of industrial and defense applications, and this accounts, together with its relative cheapness, for its wide use.

Lead is the heaviest and softest of the common metals, has a high boiling point and a low melting point, and is abnormally resistant to chemical corresion (particularly from the action of sulfuric acid). It has many useful alloying and chemical properties. For instance it forms eutectics with many metals, some of them having melting points only slightly higher than the temperature of the human body. Additions of small amounts of other metals serve to harden lead and give it sufficient strength to allow it to be used in structural shapes. The impenetrability of lead to shortwave radiation makes it irreplaceable for radiation shielding in X-ray equipment and atomic energy applications. These properties in addition to the relative ease of recovery from ores and scrap, and its ease of workability account for its more important uses.

In recent years, the use of lead in the form of chemical compounds (primarily in storage battery oxides, lead pigments, and tetraethyl lead) were somewhat greater than its use in alloys (with animony, tin; copper, bismuth, etc.), and the alloy use of lead was somewhat greater than the use of unalloyed lead. Uses in connection with the transportation industry accounted for close to 50 per cent

TABLE 8.--Uses of Lead in the United States (in tons)

| Uses | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960* |
|---|---|---|---|---|---|---|---|
| White lead | 18,800 | 19,300 | 17,400 | 15,700 | 13,600 | 11,000 | 9,000 |
| Red lead and litharge | 76,500 | 87,500 | 78,000 | 78,300 | 64,900 | 74,100 | 75,600 |
| Storage batteries | 337,200 | 375,000 | 355,000 | 361,000 | 312,700 | 380,700 | 347,200 |
| Cable covering | 127,900 | 121,000 | 133,900 | 108,200 | 75,000 | 61,600 | 59,800 |
| Buildings | 53,800 | 59,700 | 60,100 | 52,200 | 48,100 | 53,000 | 48,000 |
| Tetraethyl | 160,700 | 165,100 | 193,300 | 177,000 | 159,400 | 160,000 | 163,800 |
| Ammunition | 40,200 | 46,800 | 44,200 | 42,500 | 40,200 | 45,300 | 43,600 |
| Foil | 4,400 | 5,200 | 4,600 | 4,800 | 4,600 | 3,700 | 3,700 |
| Bearing metal | 27,200 | 33,100 | 27,800 | 22,000 | 19,000 | 23,300 | 20,200 |
| Solder | 71,100 | 88,300 | 72,000 | 70,700 | 59,700 | 68,900 | 57,600 |
| Type metal | 25,700 | 25,900 | 25,000 | 28,700 | 26,700 | 28,000 | 25,800 |
| Calking | 49,900 | 58,300 | 58,000 | 65,600 | 70,800 | 80,100 | 66,700 |
| Other uses | 102,500 | 120,400 | 112,700 | 106,500 | 91,700 | 101,400 | 105,300 |
| Totals | 1,094,900 | 1,205,700 | 1,182,000 | 1,138,100 | 986,400 | 1,091,100 | 1,026,300 |

*Estimated ultimate uses of lead in the United States including primary, secondary, and antimonial lead.
Source: Compiled by the American Bureau of Metal Statistics for 1958 and prior years; beginning in 1959, estimates by Lead Industries Association based on reports issued by U. S. Bureau of Mines.

of the total lead consumption, thus its economic fortunes are closely tied to those of the automobile industry.

## Supply and Requirements

The most important change in the United States position with respect to lead in recent years as compared to the years prior to World War II is the marked increase in consumption accompanied by a sharp decline in both the absolute and relative amounts supplied by domestic producers. This necessarily was accompanied by a sharp increase in the absolute and relative amounts imported. Prior to World War II, the United States produced virtually all of the lead consumed domestically. Most of the lead that was imported was entered free of duty for smelting, refining, and export. In World War II and subsequent years domestic lead production has fallen far short of consumption requirements.

Of the total U. S. lead supply (production plus imports) in the years 1937-39, about 61 per cent came from primary domestic production (as measured by recoverable lead content of mine production)(1), approximately 32 per cent from secondary output from old scrap(2), and 7 per cent (mostly exported after treatment) from imports.(3) In the five year period, 1957-61, these sources accounted for 23 per cent, 38 per cent, and 39 per cent, respectively (see Table 9).

United States production of lead (mine production plus recovery from old scrap) during the five years 1957-61 averaged 722,000 tons (approximately) annually (primary mine

TABLE 9.--Unmanufactured Lead: U. S. Production, Stocks, Imports, Exports, Consumption, and Market Prices, Average 1937-39, Annual 1943 and 1946-61

(In short tons of zinc content, except as otherwise indicated)

| Period | Production | | | Stocks of slab zinc at end of period | | Imports for consumption 5/ | | | Domestic exports 6/ | Industrial consumption 7/ | Average price per pound 8/ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Primary (mine output) 1/ | Secondary 2/ | Total | Producers' 3/ | Consumers' 4/ | Dutiable | Free | Total | | | |
| | | | | | | | | | | | Cents |
| Average 1937-39--- | 575,624 | 150,599 | 726,223 | 108,941 | 9/ | 39,433 | 3,400 | 42,833 | 3,751 | 794,335 | 5.413 |
| Annual: | | | | | | | | | | | |
| 1943---------- | 744,196 | 368,488 | 1,112,684 | 170,606 | 90,356 | 9,888 | 598,663 | 608,551 | 97,441 | 1,243,409 | 8.250 |
| 1946---------- | 574,833 | 300,682 | 875,515 | 175,800 | 92,257 | 226,177 | 95,399 | 321,576 | 47,312 | 1,180,121 | 8.726 |
| 1947---------- | 637,603 | 310,793 | 948,401 | 68,011 | 80,049 | 244,836 | 144,704 | 389,540 | 108,074 | 1,173,733 | 10.500 |
| 1948---------- | 629,977 | 324,639 | 954,616 | 20,848 | 95,884 | 219,603 | 70,013 | 289,616 | 69,084 | 1,202,360 | 13.589 |
| 1949---------- | 593,203 | 237,813 | 831,016 | 94,221 | 81,801 | 213,702 | 82,300 | 296,002 | 63,203 | 974,515 | 12.144 |
| 1950---------- | 623,375 | 326,030 | 949,405 | 8 884 | 64,206 | 394,153 | 13,143 | 407,296 | 20,268 | 1,350,501 | 13.866 |
| 1951---------- | 681,189 | 314,377 | 995,566 | 21,901 | 50,071 | 285,618 | 48,431 | 334,049 | 44,212 | 1,326,082 | 18.000 |
| 1952---------- | 666,001 | 310,423 | 976,424 | 87,160 | 92,579 | 99,074 | 10/ 599,435 | 698,509 | 62,056 | 1,211,649 | 16.215 |
| 1953---------- | 547,430 | 294,678 | 842,108 | 180,043 | 84,863 | 653,832 | 44,064 | 697,896 | 21,811 | 1,342,389 | 10.855 |
| 1954---------- | 473,471 | 271,774 | 745,245 | 124,277 | 100,981 | 630,488 | 35,507 | 665,995 | 41,684 | 1,180,692 | 10.681 |
| 1955---------- | 514,671 | 304,775 | 819,446 | 40,979 | 123,544 | 569,639 | 33,443 | 603,082 | 39,506 | 1,469,080 | 12.299 |
| 1956---------- | 542,340 | 281,355 | 823,695 | 68,622 | 104,094 | 627,071 | 102,256 | 729,327 | 22,361 | 1,323,022 | 13.494 |
| 1957---------- | 531,735 | 264,104 | 795,839 | 166,660 | 88,188 | 881,953 | 69,394 | 951,347 | 16,262 | 1,231,593 | 11.399 |
| 1958---------- | 412,005 | 230,332 | 642,337 | 190,237 | 89,261 | 687,189 | 40,891 | 728,080 | 7,378 | 1,142,165 | 10.309 |
| 1959---------- | 425,303 | 276,254 | 701,557 | 154,419 | 99,577 | 558,993 | 43,868 | 602,861 | 22,962 | 1,278,376 | 11.448 |
| 1960---------- | 435,427 | 265,820 | 701,247 | 190,810 | 66,111 | 504,323 | 65,911 | 570,234 | 87,326 | 1,158,938 | 12.946 |
| 1961---------- | 466,576 | 267,245 | 733,821 | 151,189 | 89,314 | 482,204 | 39,446 | 521,650 | 57,625 | 1,214,016 | 11.542 |

1/ Recoverable zinc content of ores and concentrates produced, and of old tailings, mine dumps, and smelter slag dumps reclaimed.

2/ Zinc recovered in all forms from all types of scrap. Final totals for 1957-60 were distributed by quarters on the basis of preliminary monthly data for the aggregate quantity of secondary slab zinc produced and recoverable zinc content of zinc-base, copper-base, aluminum-base, and magnesium-base scrap consumed. Quarterly data for 1961 were estimated as equivalent to 96.9 percent of the quarterly aggregates of the preliminary monthly data; this is the ratio of the final to the preliminary total for 1960.

3/ As reported by the American Zinc Institute. Represents gross weight of zinc blocks, pigs, and slabs at primary and secondary smelters and refineries.

4/ Total stocks of slab zinc. Data for years prior to June 1951 not strictly comparable with data for subsequent years because of an increase in the number of consumers canvassed by the U.S. Bureau of Mines beginning with June 1951.

5/ Zinc content of zinc-bearing ores and concentrates and the gross weight of zinc blocks, pigs, slabs, scrap, dross, and skimmings. Imports of zinc fume are not included. Data for 1960 and 1961 are preliminary.

6/ Zinc content of zinc ores, concentrates, scrap, dross, and skimmings, and the gross weight of zinc blocks, pigs, and slabs. Data for 1960 and 1961 are preliminary.

7/ Slab zinc consumed, the zinc content of ores consumed directly in the manufacture of zinc pigments and chemicals, and the recoverable zinc in all forms of old and new zinc-bearing scrap (with the zinc content of redistilled and remelt zinc subtracted to eliminate duplication) as reported to the U.S. Bureau of Mines. These data do not include withdrawals for Government stockpiles. Data for 1961 are preliminary.

8/ Average price of Prime Western Zinc at East St. Louis as published by E & MJ Metal and Mineral Markets.

9/ Not available.

10/ Duty on all imports was suspended from Feb. 12 to July 23, 1952, inclusive (Public Law 258, 82d Cong.).

Source: Production, consumers' stocks, and consumption, from official statistics of the U.S. Bureau of Mines, except as noted; producers' stocks, from the American Zinc Institute; imports and exports, compiled from official statistics of the U.S. Department of Commerce; prices, from E & MJ Metal and Mineral Markets.

Printed as Table 12 in U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation 332-26 (Supplemental 2) Under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, adopted September 23, 1961, TC Publication 58, Washington, May, 1962.

production approximated 273,600 tons and secondary recovery from old scrap, 450,400 tons). This total production represents a 13 per cent increase over the average for 1937-39. In spite of the fact that U. S. production has increased 13 per cent, average mine production decreased 34 per cent, whereas the output from old scrap has increased 82 per cent. The output of secondary lead exceeded mine output in every postwar year, 1946-61.

Standing in sharp contrast to the relatively small increase in domestic lead production, average annual consumption during the 1957-61 period was 67 per cent greater than the 1937-39 average, and imports during the period 1957-61 averaged 470,300 tons per year as compared with the annual average of 49,425 in 1937-39.

## Production and Consumption Trends in the United States and the Rest of the World

Available statistics on world production and consumption of primary lead (but excluding secondary lead) provide a basis for comparison of the overall trends of consumption of lead in the United States with that in the rest of the world. Average annual mine production in the United States in 1956-60 was about 25 per cent below the average for 1937-39. The annual average mine output of lead in the world during the period 1956-60 was about 34 per cent above the average of 1937-39. Mine production outside the United States, altough sharply lower immediately after World War II,

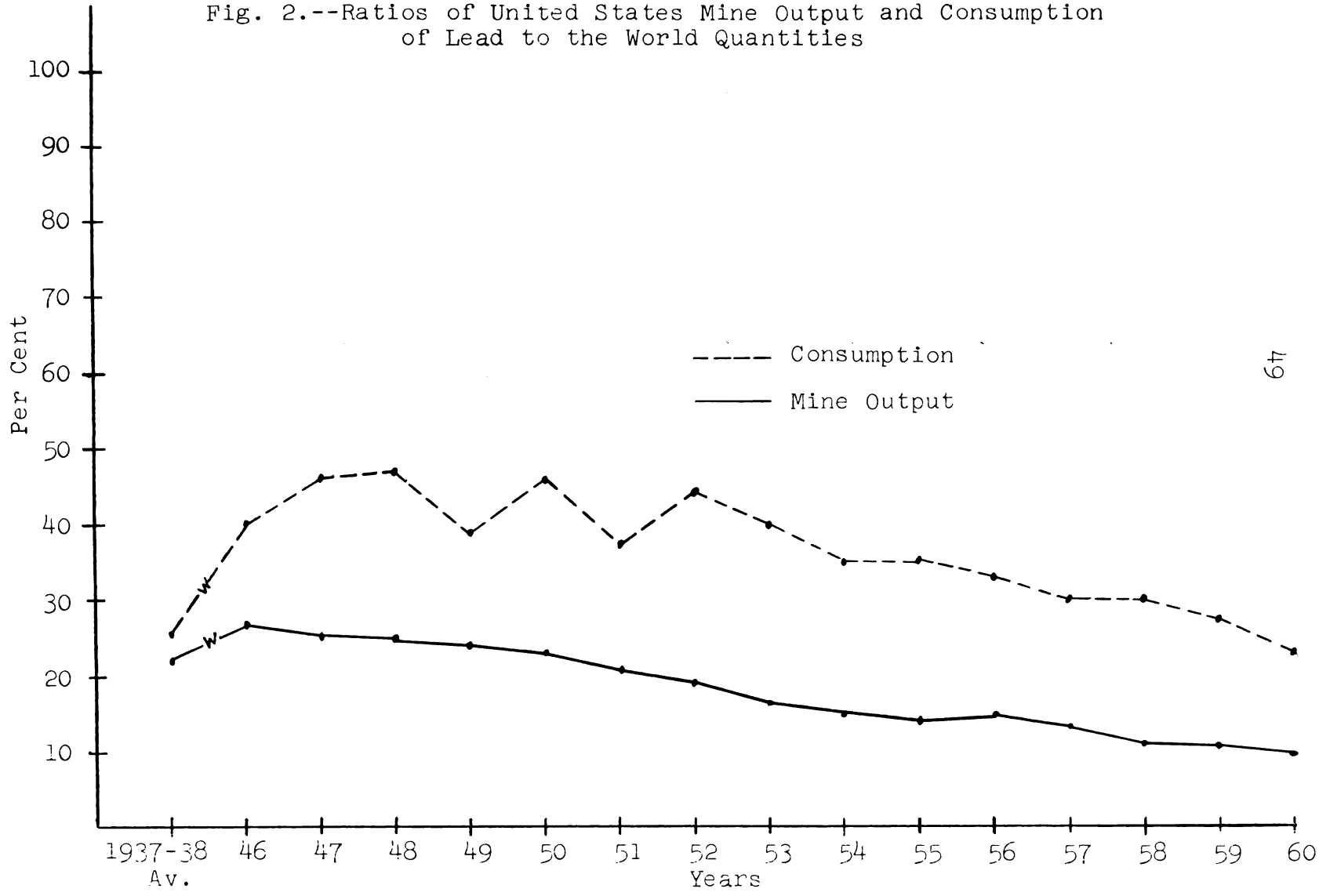
has increased steadily since then, and by the period 1956-60 stood at a level of 52 per cent above the 1937-39 average, and had by 1960 reached a level of 2,313,000 tons. Postwar U. S. mine production increased to a peak of 431,000 tons in 1950 and then declined steadily to a 1960 low of 247,000 tons.

The trend of lead consumption in the United States shows rather erratic characteristics reaching a high of 1,212,644 tons in 1955, then suffering sharp declines in 1956, 1959, and 1960. The year 1960 saw the lowest U. S. consumption of primary lead since 1949. Over the decade 1951-60 the ratios of U. S. mine output, smelter output, and consumption to corresponding world figures have been steadily declining. Comparable data on consumption of secondary lead outside the United States is unavailable, but it is known that the United States is the largest producer and consumer of secondary lead.

Supply and Demand Before 1952

During World War II imports increased greatly and accounted for the large increase in the domestic supply of lead during this period. Beginning in 1940, Canadian and Mexican lead, which previous to this time had been shipped to Europe, began flowing into the United States. Wartime conditions caused disruption in trade with Europe. The United States purchased the newly available Canadian and Mexican supplies in the expectation of increased wartime

Fig. 2.--Ratios of United States Mine Output and Consumption of Lead to the World Quantities



needs and to prevent the metal from falling into unfriendly hands. Most of the wartime imports were entered for government use, hence were duty free. The year 1942 saw the peak of wartime lead imports at 526,000 tons. By April 1943 the government stockpile, which was largely built up from imported lead, reached a total of 266,000 tons.

Supplies of lead were further augmented in the early years of the war by government encouragement of increased mine output. Mine output reached a wartime high of 496,000 tons in 1942; secondary production from old scrap reached a high of 380,000 tons in 1941.

In order to stimulate mine production, the government adopted what was known as the Premium Price Plan. Under this plan, mining companies were paid premiums for above quota production in addition to the ceiling price of 6-1/2 cents a pound for common lead, New York, fixed by the government for the duration of the war effort. The Premium Price Plan initiated on February 1, 1942 and continued until June 30, 1947. Premiums averaging 3-2/5 cents per pound were paid on approximately 42 per cent of domestic lead production during this period.(4) One of the features of this plan called for premium subsidies to be paid for production from relatively high cost mines, including some large producers as well as many whose output was small and erratic. Some of the latter were old properties that had lain idle for years, but resumed operations under the stimulus of

premium payments. The primary purpose of the plan was to increase production from submarginal ores known to exist in active mines, and in previously producing but inactive mines, in addition from the reworking of mine tailing and slag dumps.

In spite of the intensive efforts to increase production, mine output declined after 1942. After 1941, secondary production from old scrap also experienced a sharp decline and remained at a relatively low level throughout the duration of the war. Manpower, supply, and equipment shortages were the primary factors in these declines. Mine production for 1942-45 averaged 439,000 tons per year--only 12 per cent above the 1935-39 average annual output.

Lead consumption offered a sharp contrast in that it expanded greatly during the war despite use restrictions.(5) Consumption reached a wartime high of 1,119,000 tons in 1944 in comparison with the 1937-39 annual average of 631,000 tons. Government regulations were designed to restrict the use of lead for nonessential purposes but encouraged substitution of lead for metals such as tin, brass, and zinc that had more direct military uses than lead. Lead, however, found many military uses in such articles as storage batteries and bearing metals that had applications in motorized military equipment, in lead pigmented paints for military structures, in the construction of equipment for explosives plants, in tetraethyl lead for high octane gasoline, etc.

Declining production and reduced imports in conjunction with a high level of consumption caused a severe shortage of lead by 1945. Stringent controls were applied to consumption, and the government dipped into its lead stockpile to meet essential needs. The lead stockpile which had reached a high of 266,000 tons in April 1943, declined to 174,000 tons by January 1, 1944, and at 90,000 tons by the end of that year, and to a level of 68,700 tons by the end of 1945. Government stocks, which were imported duty free, were distributed to industry at 6-1/2 cents per pound, the ceiling price, without any addition for the prevailing rate of import duty.

In the first postwar year, 1946, which was a year of general reconversion from wartime to peacetime production, domestic lead production, consumption, and imports all declined. Mine output was at its lowest level since 1935 at about 335,000 tons. The 1946 was the first year that secondary output had exceeded mine output. Mine production continued in the downward trend that was begun in 1942. This fact can be attributed in part, at least, to the shortages of manpower, equipment, supplies, and materials, and in part to the lack of wartime mine exploration and development. Wartime depletion of ore reserves also was an important factor which contributed to reduced primary production in 1946, and the smaller output in subsequent years. Lead imports in 1946 were less than half of the average annual

wartime imports. During that year the government released 32,700 tons from stockpile for industrial purposes. Since the greatest part of the wartime stockpile materials accumulated by the government were from foreign sources, domestic consumption of imported lead was actually greater than 1946 import figures would indicate. The ceiling price on lead was raised from 6-1/2 cents to 8-1/4 cents a pound on June 3, 1946. Price control regulation was initially terminated at the end of June, 1946, being reestablished on July 25, 1946--reinstituting the 8-1/4 cent ceiling price--and finally being terminated on November 9, 1946.

The reconversion from war to peacetime production was largely completed by 1947. Demand for final goods containing lead was unusually high, consumption of lead reaching a record high of 1,172,000 tons. Lead prices, free of price control, rose to an average of 14.7 cents. Moreover, as the Premium Price Plan was still in effect in the first half of 1947, premiums were paid to some mining companies.

The year 1948 was characterized by usually high lead prices which averaged 18 cents a pound. Lead consumption was 1,133,895 tons, higher than any wartime year but slightly lower than the previous year. Combined production from mines and old scrap continued at high levels, only slightly lower than the previous year, although labor disputes somewhat reduced mine output. The disputes were centered mostly in Southeastern Missouri and according to trade sources reduced

production by about 25,000 tons. To help relieve the lead shortage Congress suspended tariff duties from June 20, 1948, through June 30, 1949 (Public Law 725, 80th Congress). Lead imports in 1948, about 332,000 tons, was 47 per cent higher than in 1947. It is important to notice that about two-thirds of the imports occurred during the period when import duties were suspended and lead prices were the highest.

A sudden reversal of conditions occurred in 1949 when conditions of scarcity were abruptly turned into conditions of abundance. Consequently, a series of sharp price declines ensued with a reduction of two cents coming on March 8, 1949. The reduction lowered the price from a peak of 21-1/2 cents which had prevailed since November 1, 1948. The price continued steadily downward reaching 12 cents on November 21, 1949. Trade sources, i.e. the Engineering and Mining Journal, at the time of the initial decline in prices, attributed it to the diminished demand for lead, particularly for automobile batteries, replacements of which were unusually small due to a mild winter. Batteries normally account for about one-third of lead consumption. A strong contributing factor was, however, that the greatest part of the war accumulated demand had been satiated and manufacturers had built up unusually large stocks of lead metal. Moreover, a minor business recession developed in 1949 which contributed to the declining demand for lead.

Lead consumption in 1949 was about 16 per cent below that of 1948 at 958,000 tons. It should be recognized, however, that the lessening in the consumer demand for lead was offset to some extent by government purchases of undisclosed amounts for stockpiling purposes. These stockpile acquisitions were the first of major significance in the years following World War II. The easing of labor problems resulted in more steady production throughout the year, hence mine output increased about 20,000 tons. Secondary lead production from old scrap, in contrast, declined by about 88,000 tons. Imports amounts to about 415,000 tons, about 25 per cent above the 1948 level. As in 1948, the greatest share of the lead imported was entered in the first six months when duties were suspended and lead prices were highest.

Despite low prices, domestic lead supplies increased rapidly during 1950. Output of primary lead reached a post-war peak of 431,000 tons, which was a 5 per cent increase over the previous year. Production from old scrap increased by about 17 per cent over the previous year to 482,000 tons, and imports rose to 565,000 tons, about 36 per cent greater than those of 1949. Imports were unusually high when sharp increases in lead prices occurred in the latter half of the year. Also, the expectation of a 50 per cent increase in import duties, which would become effective with the termination of a U. S.-Mexican Trade Agreement at the end of 1950

was to some extent responsible for the large imports.

Lead consumption, at a relatively low level at the end of 1949 and in early 1950, rose rapidly after June 1950 due to the outbreak of the Korean War. As a result, domestic consumption reached an all time high of 1,238,000 tons, an increase of about 25 per cent over consumption in 1949. Increased consumption was accompanied by sharply increased lead prices, rising from 10-1/2 cents on March 14 to 17 cents on October 31, 1950.

Several lead shortages characterized the domestic scene in the period from June 1950 to the end of 1951. Military requirements and needs for general industrial expansion caused increased demand for lead. Lead demand was further increased by scare buying to build up consumer stocks, which rose to abnormally high levels in the first part of 1951. In contrast, producers' stocks were limited. Purchases by the United States Government further heightened demand. Likewise, purchases for stockpile by the British Government added to the strength of demand.

One major contributing factor to the domestic lead shortage during 1951 was the 60 per cent reduction in imports. And, in addition, domestic production declined slightly; a slight increase in secondary lead production from old scrap being more than offset by a 10 per cent decline in mine output, caused primarily by work stoppages arising from labor disputes.

At the outbreak of the Korean War and accompanying metal shortages, the government immediately established price, use, and allocation controls over lead and other metals. On January 26, 1951 price controls were instituted on lead and other nonferrous metals. After this date each seller of lead in the United States was required to establish a maximum selling price equal to the highest price at which lead had been sold in the United States during the period December 19, 1950 to January 25, 1951, inclusive. Consequently a ceiling of 17 cents a pound was established for domestic lead. Imported lead, which at first had been paying a duty of 1-1/16 cents per pound, had been selling at 17 cents a pound. But, when on January 1, 1951 the import duty was raised to 2-1/8 cents a pound, the principal sellers of imported lead raised their price to 18-1/2 cents a pound and were readily able to sell considerable quantities at the increased price. But, when, on June 6, 1951, the duty was reduced to the previous rate of 1-1/16 cents a pound, there was no corresponding decline in the price at which foreign lead was sold in the United States. As a result, on October 2, 1951, the Office of Price Stabilization raised the ceiling price to 19 cents a pound and--to prevent buyers from securing lead in foreign countries in excess of the ceiling price (permitted under previous regulations)--prohibited the receipt of foreign lead at a price higher than the ceiling price. As a result of the shortage

of lead, all sales were made at ceiling prices from the beginning of 1951 to the end of April 1952.

Imports declined sharply in 1951, and this can be attributed to the fact that lead prices in foreign markets were higher than the domestic ceiling price. Consequently, imports which normally came to the U. S. were attracted to foreign markets. The greatest difference between U. S. and foreign prices appears to have been during the last 6 months of 1951. Mexican lead prices, free alongside ship in gulf ports, considered at that time to be the most representative foreign price by trade sources, rose to a peak level of 22-1/2 cents a pound, being as much as 5-1/2 cents above the ceiling price before October 2, 1951. After October 2, 1951, when the U. S. ceiling price was raised from 17 to 19 cents, Mexican prices continued to be as much as 3 cents higher than the ceiling price (insurance and transportation costs from gulf ports to New York were about one-half cent at this time).

In order to ensure the allocation of lead to highest priority users, the government imposed lead-use restrictions on May 1, 1951. The slightly lower consumption level in 1951 perhaps is indicative of the unavailability of sufficient lead supplies as well as the use of restrictions. Domestically produced primary soft lead came under a government allocation system on September 1, 1951, and on January 1, 1952 imported lead came under this system.

By January 1, 1952, the lead shortage became so critical that the President authorized the release of 30,000 tons from

the strategic stockpile of which 17,000 tons were actually released before withdrawals were terminated by government action. The shortage of lead was aggravated at this time by labor disputes which reduced mine and smelter production.

The prolonged conflict in Korea and the possibility that an extended or more widespread conflict would further aggravate the lead shortage prompted the government to initiate a program of active encouragement of lead production (as well as zinc and other critical materials) both in the United States and in foreign countries. On the domestic, the government stimulated expansion of productive capacity by allowing accelerated amortization tax write-offs on these facilities. In addition, a program of shared government-private exploration projects were undertaken where the government provided exploration funds on a matching basis. In a few cases the government gave direct assistance to provide concerns in the form of development loan and long-term purchase contracts for lead (and zinc). In addition, the United States assisted lead (and zinc) producers in 13 foreign countries with similar development loans and long-term purchase contracts at minimum prices. These government assistance programs and the stimulus provided to private investors by the high market price resulted in the initiation of numerous projects for the development of domestic and foreign production facilities. The fact that some of the long-term government sponsored assistance projects, involving

the purchase of metals at the relatively high 1951 prices, provided for delivery contracts extending to 1956 and even to 1959 suggests that the lead and zinc shortage was expected to be more prolonged than it actually was. The British Government, apparently motivated by similar considerations, made large lead purchases in 1951. In addition, private domestic concerns were induced to make large investments in development projects which would have required a market price of at least 18 cents a pound for lead and zinc in order to be profitable.

Supply and Demand Since 1951

The year 1952 was similar to 1949 in that it was one of rapid change from a period of severe scarcity to a period of abundance. The foremost factor in this changed situation was a greatly increased volume of lead imports which totaled 644,000 tons, the highest level in U. S. history and an increase of 182 per cent over the abnormally low imports of 1951. Primary production was almost the same as in 1951, and secondary production from old scrap declined about 7 per cent below the level of the previous year. Outside of the United States, lead consumption declined about 16 per cent and mine output rose 37 per cent to a new high level.

During the first four months of 1952 lead continued to be sold at the ceiling price of 19 cents a pound in U. S. markets. As was previously mentioned, the tariff on imported lead was suspended by Public Law 257 on February 12, 1952.

Included in this law was a stipulation that if the average market price for any calendar month fell below 18 cents the duty would be reinstituted. The average price of lead fell to 15.731 cents in may 1952, and the President, on being notified by the Tariff Commission of this fact, signed an order on June 5 which reestablished the tariff on imported lead effective June 26, 1952. Approximately one-half of the lead imported in 1952 entered during the period February to June 1952 when the duty was suspended.

Of all the major nonferrous metals, lead was the first to be sold at less than ceiling price. The price of lead fell to 18 cents a pound on April 29, 1952, and continued on a steady decline until it reached a level of 13-1/2 cents on October 23, 1952. In spite of the fact that the domestic lead price remained at the ceiling of 19 cents until April 29, prices in foreign markets declined prior to this time so as to suggest a change in basic supply and demand conditions. The Mexican price (free alongside ship, gulf ports) declined from 21-1/2--22 cents a pound in November, 1951, to 17-1/2 cents a pound by April 30, 1952. The latter price, after addition of the U. S. import duty of 1-1/16 cents and transportation and insurance of about 1/2 cent, was approximately the equivalent of the New York price of 19 cents a pound. After this time, prices at Mexican gulf ports and New York followed parallel downward trends.

There was a sharp decline in the domestic price on October 7, 1952. This decline reflected the sharp decline

on the London Metal Exchange occasioned by the resumption of private trading in London on October 1, after a suspension of 13 years. The London price on October 1 of 13-3/8 cents a pound after addition of transportation costs, insurance, and the United States import duty was approximately equivalent to a New York price of 15 cents a pound. This occurred at a time when lead prices in New York were 16 cents a pound. Late in October, the London price declined sharply to 10-3/8 cents a pound as the British Government sold approximately 15,000 tons of its lead stock. In November, falling prices on the London Metal Exchange stopped as the sales of the British Government were reduced.

The most significant feature of the 1952 lead situation was that while the market price of lead declined from an average of 19 cents a pound during the first four months of the year to an average of 14-1/8 cents during December, lead consumption remained at the high level of 1,130,000 tons, only 5 per cent below that of 1951. It should be noted that in this connection however, lead use restrictions were rescinded in the United States. In addition, a total of 226,000 tons of lead were acquired by the government for strategic stockpile purposes; 57,000 tons in the first half of 1952, and 169,000 in the second half. In this connection, 143,000 tons of lead pigs and bars were imported free of duty in that year.

The domestic lead supply in 1953 was below that of 1952 (production plus imports, disregarding changes in

stocks). Primary lead production declined 14 per cent, secondary production from old scrap increased by approximately 3 per cent, and lead imports declined by about 39 per cent. United States consumption of lead totaled 1,201,604 tons, somewhat higher than in the previous year. Lead acquired for the strategic stockpile in the first 6 months of 1953 amounted to 69,000 tons. (Imports free of duty, totaled 48,054 tons during 1953.)

In 1954 quantities of lead supplied were in excess of quantities demanded; this feature again highlighting the domestic scene. Total supplies, i.e. domestic mine production, secondary recovery, and imports, totaled 1,244,000 tons; 133,000 tons less than in 1953, but still 149,000 tons in excess of reported domestic consumption. Primary production was 325,400 tons, 17,000 tons less than in 1953, and the lowest since 1934. Secondary lead production totaled 480,900 tons and imports 432,200 tons during that year. In spite of the fact that imports had declined 20 per cent from 1953, they remained 35 per cent of the total supply. The scope of the stockpiling program was expanded in March 1954 when the President authorized establishment of new long-term purchase objectives. The additional quantities of materials needed to meet the new objectives were to be purchased, whenever possible, from domestic producers, and purchases were to be made over an extended period of time.

The year 1955 saw progressive improvements in economic conditions in the lead industry. The end year price was the

highest since October 1952. Concurrent with a general expansion in industrial activity, lead consumption experienced a substantial increase. Lead consumption in the last half of 1955 was 9 per cent higher than in the first half, and consumption for the whole year was 11 per cent higher than in 1954 at 1,212,600 tons. Total domestic lead supplies increased 3 per cent over 1954 at 1,281,700 tons of which 39 per cent was recovered from scrap, 35 per cent from imports, and 26 per cent from domestic mines. The Agricultural Trade Development and Assistance Act was enacted in July 1954 establishing an expanded basis for the barter program of exchanging surplus agricultural products for strategic and critical materials. During 1955, however, no lead was acquired under this program.

The year 1956 was characterized by stability of lead price, the largest refinery production since 1942, and a good overall commercial demand for lead, supplemented by government stockpile purchases. The steel strike and resulting decline in automobile production resulted in some decline in lead consumption, but overall consumption was only 0.3 per cent less than 1955 at 1,209,717 tons. Supplies of lead from all sources totaled 1,318,200 tons, 2 per cent greater than in 1955. Of this total, 352,826 tons or 27 per cent was produced by domestic mines, secondary recovery from old scrap was 506,800 tons, or 38 per cent, and imports were 459,100 or 35 per cent of the total supply. This represented

small increases of mine production and imports over 1955, and almost a constant secondary output. Despite the fact that total supplies exceeded consumption by 109,000 tons, combined producers' and consumers' stocks increased only 17,000 tons, due to continued government purchases for the national long-term stockpile. In May 1956, the Office of Defense Mobilization established the eligibility of lead and zinc for acquisition to the supplemental stockpile (under the barter program) during fiscal year 1957.

Continued supply greater than consumer needs, actual or potential decrease in United States Government stockpile acquisitions, and growing industry stocks and falling prices were the significant features of lead markets in 1957.

Lead supplies were 1,350,000 tons, 2 per cent greater than in 1956, and greater than consumption by 211,000 tons. Domestic mine production totaled 338,200 tons and secondary recovery from old scrap totaled 489,000 tons, a decline of about 3 per cent from 1956, and imports increased 14 per cent from 459,100 to 522,000 tons. A total of 100,075 tons of foreign lead acquired through barter contracts was delivered to the Government Supplemental Stockpile.

On August 1, the Office of Defense Mobilization announced that at the then current rate of acquisition the long-term objective for lead (and zinc) would be filled within a few months. In late April, the Commodity Credit Corporation announced that no additional barter contracts

would be made pending evaluation of the program. Later when barter transactions were again authorized, sharply restrictive terms were imposed. In August, the British Government announced that it would dispose of 20,000 tons of lead and 27,000 tons of zinc from its stockpile. Prices reacted sharply downward to these announcements.

In 1958, the quantity of lead supplied was very much greater than the quantity demanded resulting in a rapid build up in private stocks and sharply lower prices. Lead consumption was 13 per cent below the 1957 level at 986,387 tons. Primary mine production was 267,400 tons, the lowest since 1899, and 21 per cent below 1957 production. Secondary lead recovered from old scrap totaled 402,000 tons, the lowest since 1946, and a decrease of 18 per cent from 1957. Lead imports totaled 577,081 tons, an increase of 9 per cent over 1957.

On October 1, 1958 quotas were instituted on lead imports into the United States by President Eisenhower. The United Nations through the U. N. Coordinating Committee on International Commodity Agreements, held talks in September in London which investigated areas of possible agreement among interested nations to effect stabilization of the world lead-zinc supply. The barter program was liberalized considerably in that the restrictions passed in 1957 were somewhat relaxed.

In 1959, the domestic industry was highlighted by a sharply lower supply of metal than in preceding years, an

increase in consumption, and a decrease in stocks of lead at refineries. Consumption totaled 1,091,149 tons, 11 per cent above 1958 but approximately 12 per cent below the peak year of 1950. The domestic mine output of 255,600 tons of recoverable lead was the lowest in 60 years, and was 4 per cent below 1958. Secondary lead recovered from old scrap totaled 451,400 tons, a 12 per cent increase over 1958. Lead imports, now subject to quota restrictions, dropped 29 per cent in 1959 to 410,953.

The innaugeral meeting of the Lead and Zinc Study Group was held at United Nations Headquarters, New York, May 4 to 6, 1959. No surplus-agricultural-product barter contracts for lead were executed during 1959 by the Commodity Credit Corporation as lead had been removed from the list of materials eligible for barter late in December 1958. No government purchases for the National Stockpile were made during 1959 as the government porcurement program had terminated at the end of 1958.

Mines in the United States produced 262,000 tons of recoverable lead in 1961. This was 8,000 tons less than in 1900 and about 6 per cent above the 1960 production. Secondary lead recovered from old scrap totaled 452,792 tons slightly lower than 1960. General imports of lead were 14 per cent greater than in 1960 at 391,200 tons.

Surplus agricultural barter contracts were negotiated with Canada for 55,000 tons of lead and Australia for 50,000

tons by the Commodity Credit Corporation. These contracts were made in exchange for agreements by producers in those two countries to curtail lead production in 1961. No acquisition of lead were made for the National Stockpile.

The International Lead and Zinc Study Group met for its third session in Mexico City on March 20-24 and for its fourth session in Geneva on October 18-24. The Study Group continued its efforts to find generally acceptable means to bring free world production and consumption more nearly into balance. At year end, it was evident that few of the announced restrictions in lead production had been effected; free world lead production increased substantially over that of 1960, while consumption rose only slightly, thus leaving a substantial increase in stocks.

## Origins of United States Imports of Lead

United States imports of unmanufactured lead in the past have come principally from Mexico, Canada, Peru, and Australia, and since World War II from such new sources as Yugoslavia, the Union of South Africa, and French Morocco. The following table will suffice to show the origins of U. S. imports.

TABLE 10.--Unmanufactured Lead: U. S. Imports for Consumption, by Principal Sources, 1952-61

| Country | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 1/ | 1961 1/ |
|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity (short tons of lead content) | | | | | | | | | |
| Peru | 74,403 | 73,000 | 54,312 | 67,087 | 92,480 | 86,070 | 135,062 | 68,183 | 59,033 | 58,815 |
| Mexico | 134,205 | 137,905 | 73,347 | 108,887 | 96,172 | 114,546 | 128,041 | 88,896 | 77,671 | 78,572 |
| Australia | 98,415 | 77,495 | 83,564 | 76,772 | 118,497 | 142,547 | 113,252 | 76,821 | 66,921 | 75,174 |
| Canada | 120,336 | 61,538 | 123,484 | 88,589 | 51,410 | 62,969 | 74,437 | 73,715 | 59,926 | 90,014 |
| Yugoslavia | 54,709 | 51,929 | 38,575 | 35,659 | 38,901 | 40,262 | 36,789 | 32,376 | 30,159 | 30,130 |
| Bolivia | 22,103 | 2,912 | 16,955 | 9,131 | 19,771 | 16,323 | 22,681 | 10,939 | 10,581 | 10,496 |
| Union of South Africa | 16,370 | 11,631 | 48,796 | 28,008 | 36,409 | 66,166 | 41,386 | 28,939 | 30,785 | 29,849 |
| Morocco | 6,670 | 11,888 | 17,555 | 5,593 | 5,428 | 9,018 | 9,760 | 5,032 | 6,480 | 4 |
| Spain | 5,509 | - | 5,580 | 11,080 | 6,700 | 3,119 | 9,505 | 11,270 | 6,388 | 8,786 |
| Guatemala | 4,893 | 5,419 | 2,765 | 2,940 | 5,644 | 12,129 | 4,944 | 158 | 1,520 | 5,538 |
| Chile | 6,320 | 5,356 | 3,307 | 5,654 | 2,957 | 1,758 | 422 | 113 | 27 | 400 |
| United Kingdom | 4,792 | 1,765 | 2,519 | 187 | 294 | 2,809 | 8,556 | 1,048 | 150 | 57 |
| West Germany | 6,107 | 4,006 | 856 | 499 | 538 | 1,718 | 3,286 | 2,693 | 655 | 911 |
| Denmark | 334 | 1,738 | 4,277 | 3,036 | 3,293 | 3,189 | 2,188 | 625 | 319 | 208 |
| Honduras | 763 | 34 | 1,330 | 699 | 3,044 | 6,108 | 3,811 | 3,649 | 4,457 | 4,803 |
| All other | 2/ 88,288 | 10,442 | 5,601 | 9,553 | 7,620 | 6,076 | 3/ 13,775 | 8,802 | 5,683 | 1,023 |
| Total | 644,217 | 457,058 | 482,823 | 453,374 | 489,158 | 574,807 | 607,895 | 413,259 | 360,755 | 394,780 |
| | Foreign value (1,000 dollars) | | | | | | | | | |
| Peru | 23,156 | 18,790 | 12,615 | 16,330 | 24,671 | 22,470 | 28,430 | 13,207 | 12,121 | 10,153 |
| Mexico | 45,884 | 35,378 | 18,938 | 30,960 | 28,872 | 31,445 | 27,184 | 18,339 | 16,743 | 16,908 |
| Australia | 31,213 | 17,093 | 19,310 | 19,244 | 31,999 | 35,857 | 21,069 | 13,986 | 12,763 | 11,994 |
| Canada | 38,558 | 16,139 | 30,864 | 22,385 | 13,934 | 15,776 | 15,531 | 15,262 | 11,901 | 16,076 |
| Yugoslavia | 18,480 | 13,753 | 10,602 | 10,644 | 12,386 | 11,660 | 7,865 | 7,745 | 7,402 | 6,202 |
| Bolivia | 6,699 | 720 | 4,107 | 2,274 | 5,465 | 4,208 | 5,126 | 2,101 | 2,274 | 1,760 |
| Union of South Africa | 6,136 | 3,293 | 13,050 | 8,358 | 11,195 | 20,260 | 10,229 | 6,475 | 7,203 | 6,712 |
| Morocco | 2,255 | 2,797 | 4,344 | 1,507 | 1,561 | 2,421 | 2,125 | 1,058 | 1,118 | 1 |
| Spain | 2,094 | - | 1,360 | 2,796 | 1,777 | 779 | 1,613 | 2,347 | 1,135 | 1,469 |
| Guatemala | 476 | 583 | 365 | 514 | 993 | 1,996 | 620 | 39 | 246 | 1,123 |
| Chile | 2,912 | 1,125 | 702 | 1,208 | 568 | 348 | 132 | 15 | 7 | 63 |
| United Kingdom | 1,391 | 475 | 623 | 76 | 94 | 739 | 1,595 | 240 | 40 | 15 |
| West Germany | 1,886 | 920 | 247 | 136 | 284 | 403 | 813 | 745 | 154 | 149 |
| Denmark | 109 | 474 | 1,086 | 933 | 1,377 | 1,371 | 690 | 280 | 108 | 64 |
| Honduras | 283 | 9 | 355 | 193 | 838 | 1,819 | 953 | 896 | 957 | 906 |
| All other | 2/ 25,498 | 2,474 | 1,149 | 2,195 | 1,999 | 1,384 | 3/ 2,394 | 1,923 | 1,144 | 133 |
| Total | 207,030 | 114,023 | 119,717 | 119,753 | 138,013 | 152,936 | 126,369 | 84,658 | 75,316 | 73,728 |

1/ Preliminary.
2/ Includes 76,346 short tons, valued at 21,991 thousand dollars, from France.
3/ Includes 5,276 short tons, valued at 793 thousand dollars, from Greenland, and 4,684 short tons, valued at 925 thousand dollars, from Belgium.

Source: Compiled from official statistics of the U. S. Department of Commerce. Printed as Table 61 in U. S. Tariff Commission, Lead and Zinc, Report to Congress on Investigation No. 332-26 (Supplemental 2) Under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

## Summary

The most important change in the United States position with respect to lead in recent years as compared with the years prior to World War II is the marked increase in consumption accompanied by a sharp decline in both the absolute and relative amounts supplied by domestic producers. Over the decade 1951-60 the ratios of U. S. mine output, smelter output, and consumption to corresponding world figures have been steadily declining.

Canadian and Mexican lead began to flow into the United States in large quantities for the first time in 1940. In the early years of World War II, the government succeeded in building up a substantial stockpile in spite of wartime demands. In spite of intense efforts to increase production through such programs as the Premium Price Plan, both mine output and secondary production declined sharply in 1942 and remained at relatively low levels for the duration of the war. Consumption, however, expanded rapidly and as a result there was a severe shortage by 1945, which caused the government to dip into its stockpile accumulations.

Wartime depletion of ore reserves was an important factor which contributed to reduced primary production in the immediate postwar years. The premium price plan remained in effect until July, 1947.

Sudden reversals of economic conditions characterize the lead market. An example is the change from a period of

lead shortage to conditions of abundance in the years 1948-49. This was followed by severe shortages in 1950-51, a condition in part caused by the imposition of price controls. In spite of the shortage, only relatively small quantities were withdrawn from stockpile. The government at this time adopted a number of long-range programs to increase output. Conditions again reversed themselves at the end of 1952, so that conditions of abundance again made themselves prevalent inspite of the fact that high levels of consumption were maintained.

Lead consumption decreased sharply in 1954 and caused a sharp deterioration in market conditions. In March, the President instituted the long-term stockpile purchase program for lead.

Even though conditions improved in 1955, the stockpile program was continued not withstanding the fact that consumption was at a high level. These conditions were, in general, continued throughout 1956. The barter program was made effective during this time.

The lead market experienced a slump beginning in the latter part of 1957 which continued through 1958. The barter program of lead acquisitions was sharply reduced and the stockpile purchase program was terminated during this period. Quotas on imports were established on October 1, 1958.

The years 1959 and 1960 saw some recovery but depressed conditions continued. The government participated in the

newly established International Lead and Zinc Study Group and made barter transactions with Canada and Mexico as a result. Main sources of U. S. imports are Mexico, Canada, Peru, and Australia.

## CHAPTER III: FOOTNOTES

1. Primary domestic production may be measured also, with practically the same result, by adding to the quantity of refined lead produced from domestic ores and base bullion, the lead content of antimonial lead produced from domestic ores and base bullion, and the lead content of lead pigments produced directly from domestic ores and concentrates.

2. In the five year period 1948 to 1952 the quantity of lead recovered from old scrap constituted 87.2 per cent of the total quantity recovered from both old and new scrap. Lead recovered from new scrap is not included in this accounting of annual supply in order to avoid duplication. Such scrap consists of clippings and trimmings or of lead drosses or skimings obtained in the process of fabricating or manufacturing lead articles. Annual figures on lead recovered from such scrap represent more or less a duplication depending upon the number of times in the course of a year the same metal reappears as lead recovered from new scrap.

3. Data on imports used throughout the Tariff Commission reports represent imports for consumption rather than general imports, and, as we are heavily dependent on information from the Tariff Commission, we shall follow the same procedure. The two measures do not give the same results in some periods. For the definitions of imports for consumption and general imports and for a comparison of monthly data for each, see United States Tariff Commission, Lead and Zinc Industries, Report on Investigation Conducted under Section 332 of the Tariff Act of 1930 pursuant to a Resolution by the Committee on Finance of the United States Senate dated July 27, 1953 and a Resolution by the Committee on Ways and Means of the United States House of Representatives dated July 29, 1953, Report No. 192, Second Series, Washington, 1954, Appendix Table 14.

4. U. S. Bureau of Mines, History of Premium Price Plan for Copper, Lead, and Zinc 1942-47, Information Circular 2536, January 1950.

5. Consumption figures are somewhat of a problem for the analyst of lead markets. The figures for U. S. lead consumption are "reported" consumption figures as

reported by individual consumers. These statistics have been published by the United States Bureau of Mines since 1947. Prior to 1948 these statistics were published by the American Bureau of Metal Statistics. One should realize that the consumption figure does not include quantities going into government or private stocks. Another figure for "supply" or "apparent consumption" might be calculated by summing imports and production and subtracting exports. Reported consumption is a report of the quantity of lead actually used by consumers in the United States during a given year, whether from that year's supply or from stocks accumulated in previous years. "Apparent" consumption, as mentioned above, indicates supply in a given year arising from domestic production and imports available for distribution for consumption, and government or private stockpiling. There is yet another figure for consumption, that for "industrial consumption." The data on industrial consumption relate to lead and zinc in all forms put into process, as reported to the U. S. Department of Mines. It is this latter figure that we shall use.

# CHAPTER IV

# ZINC, HISTORICAL BACKGROUND

## Introduction

### Approach

This chapter attempts to do the same thing for zinc that the previous chapter did for lead. The government programs are included in somewhat more detail in this chapter than they were in the previous chapter, although for the most part they apply to both lead and zinc. This reduces some of the duplication. However, a certain amount of duplication is unavoidable.

For purposes of market analysis, zinc is completely different than lead, although there is a certain degree of similarity in the market histories of the two metals, just as there is some degree of similarity over the cycle of many commodities.

The following discussion is more complete than the previous one in that it treats stocks of zinc and imports free of duty in some detail. A similar discussion could have been undertaken with respect to lead, but in order not to lengthen further an already long discussion, it was not.

Although understanding of zinc market conditions after World War II is essential to an understanding of the

governmental policies with respect to zinc. It is for this reason that this discussion is undertaken. Included is a summary of market conditions during World War II. This has been undertaken for two reasons (1) the year 1940 marks a significant turning point in the market history of zinc and provides the soil in which much of the present policies are rooted and (2) it allows the reader to make somewhat of a comparison between the situation during the war and that of the postwar period. This attempts to avoid the usual tendency of dismissing the war period as abnormal without so much as an after thought.

Uses of Zinc

Zinc is one of the more commonly and widely used of the nonferrous metals. Normally, the domestic consumption of zinc approximates that of lead and is exceeded only by that of iron and steel, copper, and aluminum.

The commercial importance of zinc is derived from its properties as a corrosion inhibitor. The largest single use of zinc--galvanizing--normally employes about 40 per cent of the total slab zinc consumed. Zinc-coated steel products include roofing and siding sheets, wire and wire products for outdoor exposure, articles fabricated from sheet steel (such as range boilers, pails, cans, tanks, hardward for outdoor use, pipe and conduit, and exposed structural steel.

The most startling development in slab zinc consumption in recent years has been its increased use in zinc

based alloys for die-castings--the technique for producing castings in quantity by forcing molten alloy into steel dies or molds. Because of their excellent properties zinc base alloys are used for die cast parts and assemblies for pumps, carburetors, radiator grills, etc. in the automobile industry. In addition, zinc die castings are used in a wide range of items such as vacuum cleaners, washing machines, gasoline pumps, recording machines, and hardware. Zinc base alloys accounted for the second largest commercial use of zinc in the postwar period.

Another use of slab zinc is in the manufacture of brass products. This is particularly significant in wartime. During World War II, consumption of zinc for brass, principally for cartridge and shell cases and other military articles, composed almost one-half of the total slab zinc consumed. Developments in weapons and ammunition have lessened the probable wartime requirements for brass in future wars, but a multitude of civilian and military uses still remain.

Another large use of slab zinc is in sheet or rolled zinc. For this use zinc is given the desired properties through alloying such uses include dry cells, jar caps, weather stripping, photoengraving plats, and roofing, as well as in heavy plats for cathodic protection of steam boilers, ship hulls, and pipe lines.

Zinc pigments and chemicals, most important of which are zinc oxide and leaded zinc oxide, lithopone, zinc

chloride, and zinc sulfate, have literally hundreds of uses.

Table 11 indicates the various uses of zinc and their relative importance.

## Supply and Requirements

### United States and World Trends of Production and Consumption

In 1952 world mine production reached a total of approximately 2.8 million tons, which was the highest production up to that time and reflected a steady upward growth in postwar years. Since 1952, the steady growth has continued in every year except 1958 and 1959 and reached a high of 3,500,000 tons in 1960. Although the United States is still the world's largest producer of zinc in ore, its share of the world output has shown a generally downward long-term trend. In the years 1937-38, the United States accounted for 29 per cent of the world mine output of zinc, in 1951 the proportion had decreased of 27 per cent and by 1961 to approximately 12 per cent.

Mine output of zinc in Canada, Mexico, and Peru, the principal sources of the United States imports of zinc shows substantial gains in the immediate postwar years as compared with the immediate postwar period. In 1952, Canada ranked second to the United States as a producer of zinc in ore, followed by Mexico, Australia, and the U.S.S.R. In 1960,

TABLE 11.--Zinc: 1/ U. S. Industrial Consumption, by Uses, 1952, Average 1953-57, and Annual 1958-61

(In short tons of zinc content)

| Use | 1952 | 1953-57 average | 1958 | 1959 | 1960 | 1961 |
|---|---|---|---|---|---|---|
| Total consumption | 1,211,648 | 1,309,355 | 1,142,165 | 1,278,376 | 1,158,938 | 2/ 1,214,016 |
| Slab zinc consumed, total 3/ | 852,783 | 986,890 | 868,327 | 956,197 | 877,884 | 2/ 908,916 |
| Galvanizing, total 4/ | 377,688 | 413,699 | 381,229 | 361,027 | 371,589 | 368,773 |
| Sheet and strip | 185,875 | 183,699 | 194,196 | 175,691 | 196,057 | 209,606 |
| Wire and wire rope | 48,645 | 43,312 | 35,638 | 35,602 | 35,262 | 36,696 |
| Tubes and pipe | 82,043 | 84,053 | 67,318 | 59,830 | 56,680 | 51,653 |
| Fittings | 10,366 | 10,409 | 8,904 | 10,239 | 9,258 | 5,707 |
| Other | 90,759 | 92,226 | 75,173 | 79,665 | 74,332 | 65,111 |
| Brass products, total | 155,608 | 133,817 | 101,375 | 129,278 | 99,023 | 126,707 |
| Sheet, strip, and plate | 71,706 | 64,748 | 46,967 | 61,234 | 45,870 | 59,463 |
| Rod and wire | 49,831 | 39,633 | 32,568 | 40,286 | 29,971 | 40,828 |
| Tube | 17,057 | 14,235 | 9,645 | 11,808 | 8,504 | 10,231 |
| Castings and billets | 7,262 | 6,663 | 4,423 | 4,967 | 4,699 | 3,190 |
| Copper-base ingots | 8,223 | 7,360 | 7,094 | 10,276 | 9,412 | 12,065 |
| Other copper-base products | 1,529 | 1,178 | 678 | 707 | 567 | 930 |
| Zinc-base alloy, total | 236,689 | 353,129 | 316,830 | 389,331 | 338,373 | 308,903 |
| Die castings | 225,877 | 341,464 | 309,408 | 383,358 | 331,112 | 304,965 |
| Alloy dies and rod | 9,235 | 9,444 | 5,400 | 3,745 | 3,442 | 1,568 |
| Slush and sand castings | 1,577 | 2,221 | 2,022 | 2,228 | 3,819 | 2,370 |
| Rolled zinc, total | 51,318 | 48,471 | 40,616 | 42,949 | 38,696 | 39,948 |
| Zinc oxide, total | 17,205 | 20,280 | 13,331 | 18,248 | 15,593 | 17,580 |
| Other uses, total | 14,275 | 17,494 | 14,946 | 15,364 | 14,610 | 15,905 |
| Wet batteries | 1,396 | 1,354 | 846 | 1,244 | 1,152 | 5/ |
| Desilverizing lead | 2,370 | 2,718 | 2,521 | 1,949 | 2,521 | 5/ |
| Light-metal alloys | 3,266 | 4,748 | 3,657 | 3,363 | 3,181 | 5/ |
| Other 6/ | 7,243 | 8,674 | 7,922 | 8,808 | 7,756 | 5/ |
| Zinc ores consumed directly in the manufacture of chemicals and pigments, total | 109,277 | 111,865 | 94,938 | 108,070 | 88,275 | 86,500 |
| Estimated zinc contained in new and old scrap consumed in the form of alloys, dust or chemicals, total | 249,588 | 210,600 | 178,900 | 214,109 | 192,779 | 218,600 |
| In zinc-base alloys | 9,875 | 14,085 | 17,683 | 17,611 | 13,738 | 5/ |
| In brass and bronze alloys | 184,935 | 136,089 | 99,641 | 120,032 | 107,422 | 5/ |
| In aluminum-base alloys | 1,120 | 4,517 | 2,941 | 3,964 | 3,277 | 5/ |
| In magnesium-base alloys | 161 | 184 | 143 | 179 | 191 | 5/ |
| In zinc dust | 22,292 | 24,972 | 26,010 | 32,119 | 30,144 | 5/ |
| In chemical products | 31,205 | 30,753 | 32,482 | 40,204 | 38,007 | 5/ |
| Recapitulation: | | | | | | |
| Total consumption in all forms, by uses | 1,211,648 | 1,309,355 | 1,142,165 | 1,278,376 | 1,158,938 | 2/ 1,214,016 |
| Galvanizing | 377,688 | 413,699 | 381,229 | 361,027 | 371,589 | 368,773 |
| Brass and bronze | 340,543 | 269,906 | 201,016 | 249,310 | 206,445 | 5/ |
| Zinc-base alloys | 246,564 | 367,214 | 334,513 | 406,942 | 352,111 | 5/ |
| Rolled zinc | 51,318 | 48,471 | 40,616 | 42,949 | 38,696 | 39,948 |
| Light-metal alloys | 4,547 | 9,449 | 6,741 | 7,506 | 6,649 | 5/ |
| Chemicals, compounds and pigments | 157,687 | 162,898 | 140,751 | 166,522 | 141,875 | 5/ |
| Other uses | 33,301 | 37,718 | 37,299 | 44,120 | 41,573 | 5/ |

1/ Represents all unmanufactured zinc from primary and secondary sources consumed (put into process by industrial consumers), including slab zinc, zinc in ores consumed directly in the manufacture of zinc pigments and chemicals, and the recoverable zinc content in old and new scrap that went directly into fabricated products and chemicals.

2/ Includes 31,100 short tons of estimated undistributed consumption.

3/ Excludes zinc used by some small consumers, probably not more than 4 percent of the total consumption of slab zinc shown. Includes remelt zinc.

4/ Includes zinc used in electrogalvanizing and electroplating, but excludes that used in sherardizing.

5/ Not available.

6/ Includes zinc used in making zinc dust, bronze powder, alloys, chemicals, and castings, and that employed in miscellaneous uses not elsewhere mentioned.

Source: Compiles from official statistics of the U. S. Bureau of Mines. Data for 1961 are preliminary. Printed as Table 9 in U. S. Tariff Commission, Lead and Zinc, Report to Congress on Investigation No. 332-26 (Supplemental 2) under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

the order was changed to the United States, Canada, the U.S.S.R., Australia, and Mexico.

The position of the United States as a producer of zinc metal, unlike its position as a producer of zinc ore, increased in relative importance in the postwar years up to 1952. Since 1952, however, the U. S. position has declined somewhat. Nevertheless, in 1960, U. S. primary metal production was approximately 25 per cent of the world total, compared with 37.5 per cent in 1952 and 29 per cent during the year 1937-39.

World smelter output of primary zinc increased steadily in the immediate postwar years, and in 1952 it was 38 per cent greater than the annual average output in 1937-38. World smelter production in 1960 was about 33-1/3 per cent greater than 1952 production increasing in every eary since 1958. Smelter output of primary zinc in the United States was 80 per cent larger in 1952 than average output in the years 1937-39. Domestic output in 1960 was about 11 per cent greater than the 1937-39 average.

In 1952, Canada was second in relative importance to the United States as a producer of zinc metal, followed by Belgium, the U.S.S.R., and West Germany. In 1960, the order of relative importance was the United States, the U.S.S.R., Belgium, Canada, and Japan.

Not only is the United States the world's largest producer of primary zinc, it is also the world's largest

TABLE 12.--Zinc: Mine Output, Smelter Output of Primary Metal, and Consumption of Primary Metal in the United States, Outside the United States, and in the World, Average 1937-1938 Annual 1946-1960

| Period | Mine output | | | Primary smelter output | | | Consumption of primary metal | | | Ratio of United States to world-- | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | United States 1/ | Outside United States | World 2/ | United States 3/ | Outside United States | World 4/ | United States 5/ | Outside United States | World 6/ | Mine output | Smelter output | Consumption |
| | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | Percent | Percent | Percent |
| Average 1937-38 | 572 | 1,364 | 1,936 | 502 | 1,256 | 1,758 | 514 | 1,216 | 1,730 | 29.5 | 28.6 | 29.7 |
| Annual: | | | | | | | | | | | | |
| 1946 | 575 | 1,170 | 1,745 | 728 | 806 | 1,534 | 801 | 896 | 1,697 | 33.0 | 47.5 | 47.2 |
| 1947 | 638 | 1,312 | 1,950 | 802 | 961 | 1,763 | 786 | 1,055 | 1,841 | 32.7 | 45.5 | 42.7 |
| 1948 | 630 | 1,418 | 2,048 | 788 | 1,093 | 1,881 | 818 | 1,078 | 1,896 | 30.8 | 41.9 | 43.1 |
| 1949 | 593 | 1,512 | 2,105 | 815 | 1,197 | 2,012 | 712 | 1,123 | 1,835 | 28.2 | 40.5 | 38.8 |
| 1950 | 623 | 1,747 | 2,370 | 844 | 1,326 | 2,170 | 967 | 1,222 | 2,189 | 26.3 | 38.8 | 44.2 |
| 1951 | 681 | 1,919 | 2,600 | 882 | 1,478 | 2,360 | 934 | 1,338 | 2,272 | 26.2 | 37.5 | 41.1 |
| 1952 | 666 | 2,184 | 2,850 | 904 | 1,556 | 2,460 | 853 | 1,311 | 2,164 | 23.4 | 36.7 | 39.4 |
| 1953 | 547 | 2,393 | 2,940 | 916 | 1,684 | 2,600 | 986 | 1,396 | 2,382 | 18.6 | 35.2 | 41.4 |
| 1954 | 473 | 2,457 | 2,930 | 802 | 1,898 | 2,700 | 884 | 1,709 | 2,593 | 16.1 | 29.7 | 34.1 |
| 1955 | 515 | 2,685 | 3,200 | 964 | 1,966 | 2,930 | 1,120 | 1,831 | 2,951 | 16.1 | 32.9 | 38.0 |
| 1956 | 542 | 2,888 | 3,430 | 984 | 2,116 | 3,100 | 1,009 | 1,854 | 2,863 | 15.8 | 31.7 | 35.2 |
| 1957 | 532 | 2,908 | 3,440 | 986 | 2,204 | 3,190 | 936 | 1,992 | 2,928 | 15.5 | 30.9 | 32.0 |
| 1958 | 412 | 2,908 | 3,320 | 781 | 2,209 | 2,990 | 868 | 2,071 | 2,939 | 12.4 | 26.1 | 29.5 |
| 1959 | 425 | 2,935 | 3,360 | 799 | 2,291 | 3,090 | 956 | 2,258 | 3,214 | 12.6 | 25.9 | 29.7 |
| 1960 | 435 | 3,075 | 3,510 | 804 | 2,416 | 3,220 | 861 | 2,454 | 3,315 | 12.4 | 25.0 | 26.0 |

1/ Recoverable content of ores and concentrates produced.
2/ Partly estimated; data represent principally zinc content of ores and concentrates produced.
3/ Primary slab zinc from both domestic and foreign ores.
4/ Partly estimated; includes some production from scrap.
5/ Represents consumption of slab zinc, beginning in 1946, as reported by the U.S. Bureau of Mines.
6/ Partly estimated; includes some consumption of secondary slab zinc.

Source: Mine and smelter output, compiled from official statistics of the U. S. Bureau of Mines; consumption, from American Bureau of Metal Statistics, except as noted. Printed as Table 22 in United States Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 2) under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

consumer. In contrast to the declining relative importance of U.S. production of zinc in ore, U.S. consumption of primary zinc compared with world consumption increased in the immediate postwar years. In the period 1937-38, the United States consumed about 30 per cent of the total world consumption, and about 29 per cent of world mine output. In 1952, consumption was 39 per cent, mine output 24 per cent of world totals. In 1960, consumption was 26 per cent and mine output was 12 per cent of world totals.

United States' 1952 consumption of primary metal showed an increase of 39 per cent over 1937 as compared with an increase in the consumption of all other countries of 9 per cent. Total world consumption increased 19 per cent over 1937 consumption. In 1960, United States consumption was 40 per cent higher than in 1937, consumption in all other countries had increased 105 per cent over 1937, and world consumption had increased 83 per cent over 1937.

## Supply and Demand Prior to 1952

United States imports of zinc prior to World War II accounted for only a small fraction of the total domestic supply. Net imports of zinc in the years 1937 to 1939 accounted for only about 6 per cent of the total supply (domestic production plus net imports). Starting in 1940, sharply increased domestic demands to meet increasing military and industrial requirements caused a large volume of imports. The United States Government considered domestic mine

TABLE 13.--Unmanufactured Zinc: U. S. Production, Stocks of Slab Zinc, Imports, Exports, Consumption, and Market Prices, Average 1937-39, Annual 1943 and 1946-61

(In short tons of lead content, except as otherwise indicated)

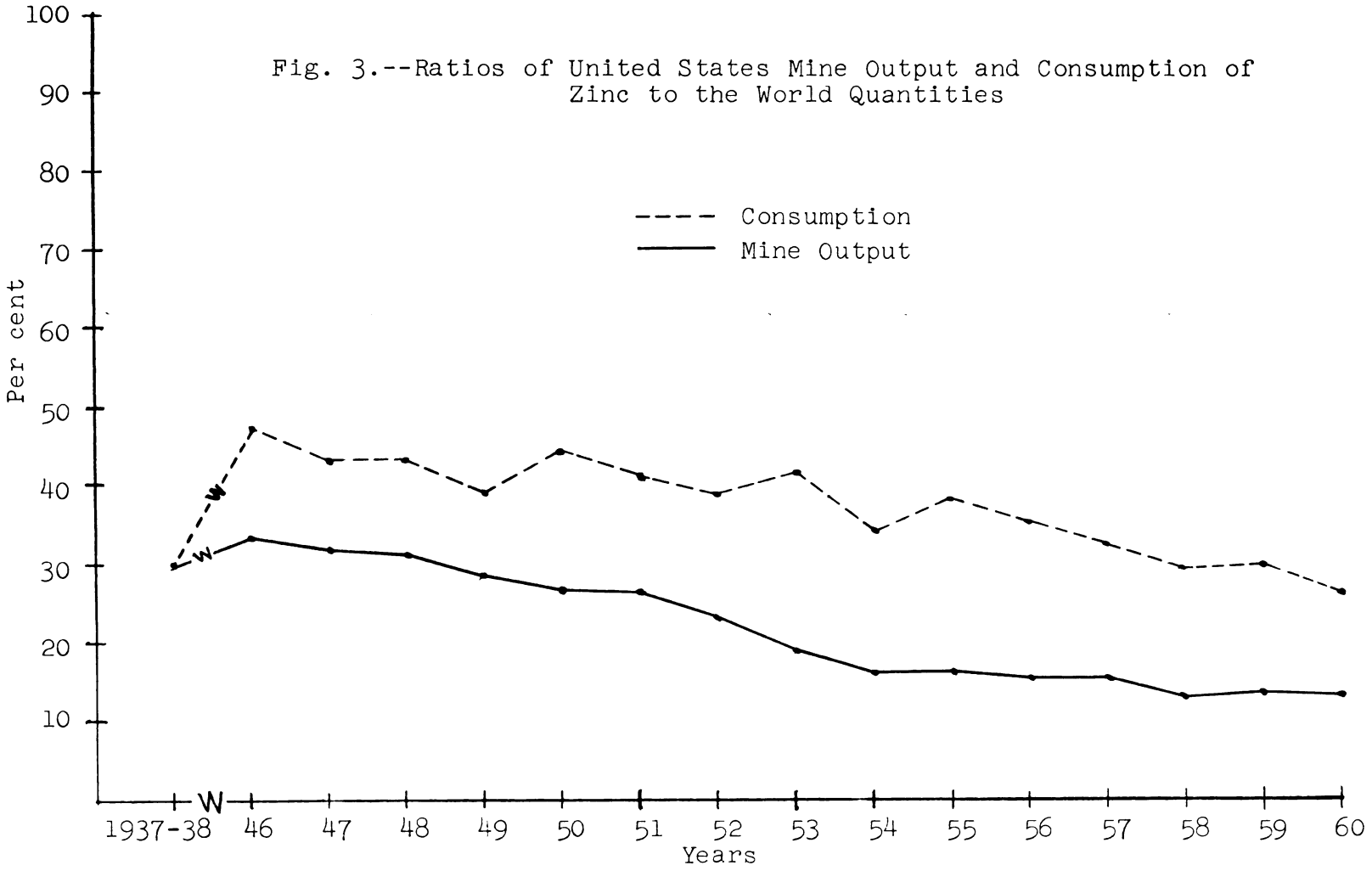
| Period | Production | | | Stocks at end of period | | Imports for consumption 5/ | | | Domestic exports 6/ | Industrial consumption 7/ | Average price per pound 8/ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Primary (mine output) 1/ | Secondary 2/ | Total | Producers' 3/ | Consumers' 4/ | Dutiable | Free | Total | | | |
| | | | | | | | | | | | Cents |
| Average 1937-39 | 416,199 | 247,167 | 663,366 | 148,079 | 9/ | 12,315 | 37,160 | 49,475 | 46,783 | 630,567 | 5.267 |
| Annual: | | | | | | | | | | | |
| 1943 | 453,313 | 342,094 | 795,407 | 129,540 | 9/ | 21,861 | 314,112 | 335,973 | 3,611 | 1,100,000 | 6.500 |
| 1946 | 335,475 | 392,787 | 728,262 | 188,829 | 9/ | 18,541 | 118,292 | 136,833 | 2,157 | 956,000 | 8.109 |
| 1947 | 384,221 | 511,970 | 896,191 | 127,954 | 91,344 | 180,267 | 45,538 | 225,805 | 4,707 | 1,172,000 | 14.673 |
| 1948 | 390,476 | 500,071 | 890,547 | 146,754 | 119,198 | 98,944 | 10/ 232,850 | 331,794 | 1,279 | 1,133,895 | 18.043 |
| 1949 | 409,908 | 412,183 | 822,091 | 201,526 | 97,267 | 116,538 | 10/ 298,542 | 415,080 | 4,396 | 957,674 | 15.364 |
| 1950 | 430,827 | 482,275 | 913,102 | 137,669 | 139,884 | 514,954 | 50,332 | 565,286 | 5,343 | 1,237,981 | 13.296 |
| 1951 | 388,164 | 518,110 | 906,274 | 124,080 | 102,760 | 191,649 | 36,657 | 228,306 | 3,473 | 1,184,793 | 17.500 |
| 1952 | 390,161 | 471,294 | 861,455 | 149,778 | 122,530 | 179,600 | 10/ 464,617 | 644,217 | 3,665 | 1,130,795 | 16.467 |
| 1953 | 342,644 | 486,737 | 829,381 | 196,340 | 113,763 | 409,004 | 48,054 | 457,058 | 5,118 | 1,201,604 | 13.489 |
| 1954 | 325,419 | 480,925 | 806,344 | 201,850 | 124,641 | 460,197 | 22,626 | 482,823 | 5,227 | 1,094,871 | 14.054 |
| 1955 | 338,025 | 502,051 | 840,076 | 150,822 | 117,458 | 424,413 | 28,961 | 453,374 | 4,234 | 1,212,644 | 15.138 |
| 1956 | 352,826 | 506,755 | 859,581 | 159,259 | 123,995 | 420,005 | 69,153 | 489,158 | 7,975 | 1,209,717 | 16.013 |
| 1957 | 338,216 | 489,229 | 827,445 | 207,912 | 129,310 | 512,289 | 62,518 | 574,807 | 7,021 | 1,138,115 | 14.658 |
| 1958 | 267,377 | 401,787 | 669,164 | 303,316 | 122,900 | 561,263 | 46,632 | 607,895 | 3,386 | 986,387 | 12.109 |
| 1959 | 255,586 | 451,387 | 706,973 | 230,328 | 126,496 | 368,449 | 44,810 | 413,259 | 4,121 | 1,091,149 | 12.211 |
| 1960 | 246,669 | 469,903 | 716,572 | 305,841 | 97,268 | 357,541 | 3,214 | 360,755 | 5,843 | 1,021,172 | 11.948 |
| 1961 | 260,348 | 440,000 | 700,348 | 312,402 | 95,968 | 354,365 | 40,415 | 394,780 | 11,733 | 1,022,300 | 10.871 |

1/ Recoverable lead content from ores and concentrates produced, and from old tailings, mine dumps, and smelter slag dumps reclaimed.
2/ Lead recovered in all forms from all types of scrap. Quarterly data for 1960-61 are estimated from preliminary monthly data.
3/ Lead in ore and matte and in process at smelters; lead in base bullion at smelters and refineries, in transit to refineries, and in process at refineries; refined pig lead; and antimonial lead.
4/ Lead in refined soft lead, antimonial lead, unmelted white scrap, percentage metals, copper-base scrap, drosses, residues, and so forth. Data for years prior to 1951 not strictly comparable with data for subsequent years because of an increase in the number of consumers canvassed by the U.S. Bureau of Mines beginning in January 1951. Beginning with January 1956, data also include secondary smelter metal stocks.
5/ Lead content of lead-bearing ores and concentrates, flue dust, and mattes; lead bullion or base bullion; lead pigs and bars; type metal and antimonial lead; and reclaimed lead, lead scrap, and lead dross. Data for 1960 and 1961 are preliminary.
6/ Lead content of lead ores, concentrates, mattes, and base bullion; and the gross weight of lead pigs, bars, anodes, lead scrap, and type metal and antimonial lead prior to 1958. Beginning in 1958, exports of type metal and antimonial lead are not separately available and are not included. Data for 1960 and 1961 are preliminary.
7/ As reported to the U.S. Bureau of Mines; represents all unmanufactured lead from primary and secondary sources consumed (put into process by industrial concerns) including lead in lead-containing alloys, lead in ores consumed directly in the manufacture of lead pigments and salts, and lead that went directly (without remelting) from scrap to fabricated products. These data do not include withdrawals for the Government stockpiles. Data for 1961 are preliminary.
8/ Average price of common lead at New York.
9/ Not available.
10/ Duty on all imports was suspended from June 20, 1948, to June 30, 1949, inclusive (Public Law 725, 80th Cong.) and also from Feb. 12, 1952, to June 25, 1952, inclusive (Public Law 257, 82d Cong.).

Source: Production, consumers' stocks, and consumption, from official statistics of the U.S. Bureau of Mines, except as noted; producers' stocks, from the American Bureau of Metal Statistics; imports and exports, compiled from official statistics of the U.S. Department of Commerce; prices, from E & MJ Metal and Mineral Markets.

Printed as Table 16 in U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 2) under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

Fig. 3.--Ratios of United States Mine Output and Consumption of Zinc to the World Quantities



production of zinc, which averaged 576,000 tons annually in 1937-39, inadequate to meet U. S. civilian and military requirements. It was further thought that domestic smelter and refining capacity was too small to meet the domestic demand. The United States Government, therefore, undertook measures to increase imports, especially of ore, to expand smelter capacity, to establish a stockpile, and to control consumption and exports. Agreements were made with certain allied countries to expand U. S. imports. These agreements included purchase agreements, and agreements to divert to the United States a portion of the exports from Canada and Australia which up to this time had normally gone to the United Kingdom and Belgium.

On February 1, 1942, the government put the Premium Price Plan into effect. This plan was to extend to June 9, 1947. The plan was primarily intended to increase production from marginal or low grade ores and to stimulate the reworking of old tailings. Under the provisions of the plan, premiums for above-quota production were paid to mining companies. These premiums were in addition to the ceiling price of 8-1/4 cents a pound for Prime Western Zinc, f.o.b. East St. Louis, which was fixed by the government during the war. Some of the mines which were thusly activated were old properties which had been idle for many years. During the duration of the plan premiums averaging 4.067 cents per pound were paid on about 58 per cent of the zinc produced by domestic mines.

Mine output of zinc reached a wartime high of 768,025 tons in 1942, but declined thereafter to 614,358 tons in 1945. Domestic zinc smelter capacity had reached a total slightly greater than one million tons by the end of 1943, and production of slab zinc reached a total of 942,000 tons.

Imports of unmanufactured zinc increased to 608,551 tons in 1943, which amounted to 74 per cent of the domestic production of 828,000 tons (domestic mine output plus secondary zinc recovered from old scrap). Reported consumption represented additions to government stockpile and increased stocks in private hands. As was mentioned above, most of the wartime imports of zinc were entered duty free for the use of the government.

By the end of World War II, the government had accumulated over 400,000 tons of zinc (of which half was in the form of metal, the other half in the form of ore). Subsequently, some of the metal was sold to private industry in sales that extended through June 1948. Most, however, was put in the stockpile of strategic and critical materials.

In the first year after the war, 1946, domestic consumption of zinc remained at the high level of one million tons, an amount only less than the wartime consumption of 1943.(1) Mine production, however, continued the decline that had been started in the years following 1943, and was at a level about equal to the annual average of the prewar period 1937-39. This was the result of a number of factors. The most

important was the prolonged work stoppages resulting from strikes. A second factor was the continuing general shortages of manpower, equipment and supplies, and the necessity to devote more attention to mine development, which was to a considerable extent suspended during the war. A third factor was the release to private industry by government of war accumulated stocks of zinc. In 1946, about 14 per cent of total zinc imports were entered free for U. S. Government use.

The price situation during the first six months of the year was also a factor, the ceiling price of 8-1/4 cents being in effect. The ceiling price was removed on June 30 and almost immediately reestablished on July 25, 1946. This price was continued until October 14, 1946, when it was increased to 9-1/4 cents. Ceiling prices were completely removed on November 9, 1946, with the result that the price immediately increased to 10-1/2 cents where it stayed until the end of 1947.

At the beginning of 1946 producers' stocks of slab zinc were at the high level of 259,000 tons. By the end of the year, producers' stocks had been reduced to 176,000 tons.

Better labor-management relations resulting in few strikes together with an increased labor supply in mines and mills, and the highest annual price for Prime Western Zinc since the World War I year of 1917, accounted for the 11 per cent increase in mine production in 1947 over 1946 to

638,000 tons. Consumption of zinc declined slightly to 1,173,733 tons during 1947, and imports increased to 390,000 tons, of which approximately 6 per cent were imported duty-free for government use (compared with 14 per cent in the preceding year). Duty-free imports for smelting, refining, and export amounted to about 30 per cent of total imports. Producers' stocks of slab zinc declined from about 176,000 tons at the beginning of 1947 to 68,021 tons at the end of the year.

The year 1948 saw an increase in zinc consumption to 1,202,360 tons, and mine output was nearly as large as 1947 at 629,077 tons. Imports, however, declined to 289,616 tons, thus declining 26 per cent from the 1947 rate. Net imports accounted for 19 per cent of the total domestic supply in this year. Duty-free imports for United States Government use declined to less than 7,000 tons, about 2 per cent of total imports in 1948. Imports of duty-free zinc for smelting, refining, and export were approximately 63,000 tons or about 18 per cent of total imports. Stocks of producers declined from 68,011 tons to 20,848 tons during the course of the year.

A zinc shortage, which had been growing, became sharply evident toward the end of 1948. The government discontinued the release of war accumulated zinc stocks in the second half of 1948, which heightened the shortage. Consequently, during the last half of 1948, the price of zinc increased sharply to

17-1/2 cents in November (the price having been 10-1/2 cents on January 1, of that year).

Zinc consumption, reflecting general business conditions in the 1949 recession, declined to 974,515 tons, a decline of 19 per cent from the 1948 level. Mine production declined to 593,204 tons, approximately 6 per cent less than in 1948. Imports increased to 296,000 tons, approximately 2 per cent greater than in 1948. Approximately 28 per cent of the imports were free of duty. Of the total imports approximately 7 per cent were entred free for government use, and 19 per cent were duty free for smelting, refining, and export. Zinc supplies were at a surplus over consumer needs during the greater part of the year, and as a result producers' stocks of slab zinc rose from 20,848 tons to 94,221 tons. Zinc prices declined very sharply from 17-1/2 cents on March 22, 1949 to 9 cents on June 15, and remained at relatively low levels throughout the remainder of the year.

A six week steel strike was part of the cause of the reduced demand for zinc in the latter part of the year, affecting, of course, needs for zinc for galvanizing purposes. In December 1949, consumption of slab zinc turned upward.

As a result of increased requirements for National Defense purposes concomitant with the outbreak of the Korean War, mine output increased approximately 5 per cent to 623,375 tons during 1950. Total consumption rose sharply to 1,350,501 tons, an increase of 36 per cent over 1949.

Imports increased to 407,296 tons, approximately 38 per cent greater than in 1949; net imports constituting about 36 per cent of the total domestic zinc supply. No imports free for government use were recorded; imports free for smelting, refining, and export were approximately 3 per cent of total imports. Socks of slab zinc held by producers declined from 94,221 tons to 8,884 tons during the year. A shortage of zinc developed during 1950 despite the high level of imports, the gains in domestic production, and the use of stockpiled zinc.

At the end of 1950, the government issued orders restricting the use of zinc for civilian products and limiting consumers' inventories in order to assure an adequate zinc supply for military and essential civilian uses. Zinc prices, responding to greatly expanded industrial needs rose sharply from an average of 9.763 cents in January 1950 to 17-1/2 cents at the end of the year. Foreign zinc prices increased even more sharply so that at the end of the year ordinary brands of Mexican zinc, free alongside ship, were quoted at 22 cents a pound and higher. Imports of zinc declined toward the latter part of the year.

The General Ceiling Price Regulation went into effect on January 26, 1951 and under its provisions price controls were imposed on zinc and other metals. This price ceiling remained effective until February 12, 1953. For each seller the highest price at which he had sold zinc in the United

States during the period from December 19, 1950 to January 25, 1951 inclusive, was set by the Office of Price Stabilization as the ceiling price at which he could sell zinc beginning on January 26, 1951. This regulation had the effect of setting the domestic price of zinc at 17-1/2 cents a pound and the price of foreign zinc sold in the United States from 18-1/4 to 18-3/8 cents. The Office of Price Stabilization increased the price ceilings by 2 cents a pound on October 2, 1951, and, in order to prevent purchases at higher prices in foreign countries (as had been permitted previously), prohibited any person in the United States from receiving foreign zinc at a delivered cost in excess of the ceiling price. The ceiling prices immediately became the market prices at which zinc was sold in the United States due to the strong demand for zinc.

In 1951, mine output reached its highest level since 1943, at 681,189 tons an increase of about 9 per cent over 1950. Total imports declined to 334,049 tons, 18 per cent less than the previous year. Consumption decreased slightly from 1950 to 1,326,082 tons. Imports free for government use were less than 500 tons during the year; imports free for smelting, refining, and export totaled approximately 48,000 tons or about 14 per cent of total imports.

The U. S. zinc shortage remained critical during 1951. The 18 per cent decline in supplies from foreign countries in the last 6 months of 1951 greatly aggravated the situation.

This decline can be largely attributed to the fact that zinc was selling in foreign markets at substantially higher prices than the U. S. ceiling price. This disparity became more pronounced after June 1950 and became the greatest in the last six months of 1951 when ordinary brands of Mexican zinc, free alongside ship, gulf ports, considered by the trade to be representative of the uncontrolled foreign prices at this time, were as much as 13-1/2 cents per pound above the domestic ceiling price. Even after the U. S. ceiling price was raised by two cents on October 2, 1951, the foreign price remained as much as 11 cents above the U. S. price. In December of 1951, this disparity began to decline as declining demand reduced uncontrolled foreign prices, although the disparity was not completely eliminated until May 1, 1952.

On August 1, 1951 the United States Government instituted allocation controls on slab zinc supplies. The world wide shortage of slab zinc led to international cooperation in the distribution and use of the free world supplies of primary zinc. The International Materials Conference was formed in early 1951 to examine the critical situation in certain essential raw materials. The Conference made recommendations of international allocation of zinc for the fourth quarter of 1951 and the first two quarters of 1952. International zinc allocations were discontinued in May 1952 when it became apparent that the shortage was rapidly being

reduced. According to the reports of the International Materials Conference, the recommended allocations were for the most part complied with by member countries.

The continued fighting in Korea and the possibility that the fighting might become more widespread with further aggravation to the shortage led the government into a program of active encouragement of production of both lead and zinc and other critical materials both in the United States and in foreign countries. Domestically, the government attempted to stimulate the expansion of productive facilities by allowing for tax purposes, accelerated amortization of investments in such facilities; by making long-term purchase contracts for lead and zinc at fixed prices; by making loans for the expansion of productive facilities; and by sharing in the expense of exploration projects for lead and zinc. The government also provided assistance to lead and zinc producers in 13 foreign countries, both with development loans and with long-term contracts for purchases of lead and zinc at floor prices. The long-term nature of some of the government assistance projects, involving the purchase of relatively high 1951 prices with provision for delivereies extending into 1956 and 1959 suggests that the lead and zinc shortage was expected to be more prolonged than it actually was.

Supply and Demand Since 1951

By the spring of 1952 the shortage of zinc had considerably eased. Although the President had in January 1952 authorized the release of 15,000 tons of zinc from the strategic stockpile, no zinc was actually so released. By May 1, 1952, Mexican prices, free alongside ship, which had been 30-31 cents a pound in November 1951, had declined to the same level of 19-1/2 cents a pound as Prime Western zinc, East St. Louis. On May 15, 1952, zinc use and allocation controls were discontinued and inventory restrictions were liberalized. On June 27, 1952 inventory controls were entirely removed.

United States imports were greatly stimulated in 1952 due to the disappearance of the disparity between U. S. and foreign prices and the suspension of the import duties on zinc ore and slab zinc from February 12, to July 23, 1952 (Public Law 258, 82nd Cong.). Zinc imports more than doubled over the previous year, reaching 698,509 tons the highest level in history up to that time. Imports free for government use were less than one per cent of total imports, and imports free of duty for smelting, refining, and export accounted for 6 per cent. Total imports free of duty amounted to 599,435 tons, the bulk of which were for consumption during the period when duties were suspended. Mine output declined by about 2 per cent to 666,001 tons. Net zinc imports constituted approximately 40 per cent of the total supply of zinc during this period.

Producers' stocks of slab zinc rose during 1952 from 21,901 tons at the beginning of the year to 87,160 tons at the end. Stocks of zinc at smelters also increased about 38 per cent during the year. In addition to domestic accumulations zinc stocks outside the United States also rose. Stocks in the United Kingdom(which were mostly stocks of the British Government), rose from 44,000 tons to 186,000 tons at the end of 1952. These increases in stocks were indicative of the general world wide increase in supplies relative to demand and deliveries of zinc purchased in large quantities from overseas suppliers in earlier periods.

The decline in consumption of 114,434 tons during the year can be partially attributed to the steel strike, which reduced steel production for that year.

The price of Prime Western zinc, East St. Louis, dropped below the ceiling price for the first time on June 2, 1952. By June 18, prices had dropped to 15 cents a pound. Initially the price declines were caused by the two month steel strike which shut down the United States steel industry beginning on June 2. At the time of the strike settlement, it was evident that the demand for zinc for galvanizing purposes, which normally accounts for one-third of the normal consumption of zinc would be greatly curtailed. The demand for zinc was further reduced by the slackening in automobile output caused by the steel shortage. Thus, by the end of 1952, zinc had declined to 12-1/2 cents a pound.

In conclusion then it might be said that the year 1952 saw a transition from a zinc shortage to an abundance of zinc.

In 1953, zinc consumption was 1,342,389 tons, a record high up to that time and a 11 per cent increase over the previous year. Imports were only slightly lower than the record high level of the previous year at 697,896 tons, a decline of 1/10 of one per cent. Stocks of zinc held by producers increased from 87,160 tons at the beginning of the year to 180,843 tons, the highest level since 1945. The average selling price for 1953 was the lowest since 1947 and reflected substantial over production. Domestic mine production totaled 547,430 tons a decline of 17.8 per cent over the previous year and represented the smallest mine output since 1938. Of the imports 3 per cent were imported free for government use and 2 per cent for smelting, refining, and export.

As a consequence of widespread closing of mines with the resulting high rate of unemployment in both zinc and lead mining, consideration was given to tariff revision, either through new legislation or by invoking the "escape clause" of the Reciprocal Trade Agreements Act. Various other proposals were made to provide direct or indirect aid to the domestic industry.

The price controls imposed on January 26, 1951 under the General Ceiling Price Regulation were abolished on

February 12, 1953. The last government control over domestic use which required periodic reports on the quantity of slab zinc stocked and consumed, was revoked in June 1953. Export licenses continued to be required for exports to all countries but Canada.

Exploration contracts and amendments to existing contracts continued to be made by the Defense Materials Exploration Administration under the provisions of the Defense Production Act of 1950. But in conformity with a directive issued by the Office of Defense Mobilization no applications were accepted for lead and zinc exploration projects after May 15, 1953 (due to plentiful lead and zinc supplies).

The Defense Materials Procurement Agency program with respect to lead and zinc was curtailed in early 1953 as the supply-requirement ratio increased, and the production expansion programs put in force in 1951 and 1952 were coming to fruition.

The year 1954 was characterized by a continued oversupply of zinc in the domestic market which caused the average price of zinc to be almost as low as it as in 1953 and caused many mines idle in 1953 to remain idle and some additional mines to shut down. Domestic mine production decreased for the third consecutive year to 473,471 tons, 14 per cent below the output of the previous year. The supply of zinc again exceeded consumption, nevertheless producers' stocks declined from 180,843 tons at the beginning of the

year to 124,277 at the end due to the expanded government purchases of zinc (and lead) for the stockpile. Imports declined by about 5 per cent to 655,985 tons of which about 2 per cent was imported free for government use and 4 per cent duty-free for smelting, refining, and export. Consumption declined about 12 per cent from the previous year to a level of 1,180,692 tons.

In April, 1954, the Tariff Commission submitted a report in five parts on its general investigation of the lead and zinc industry. A second report of the Tariff Commission in May on the "escape-clause" provision of the Trade Agreements Extension Act of 1951 recommended that import duties on lead and zinc materials be increased 50 per cent above those in effect on January 1, 1945. However, the President did not accept the Tariff Commission recommendations, but on August 23, 1954, outlined an expanded stockpiling program for lead and zinc. Monthly purchases were made on this program from June to December.

The Defense Minerals Exploration Administration program to encourage exploration and to increase domestic reserves of strategic and critical materials was continued throughout 1954. However, since lead and zinc were not on the list of metals eligible for the program from May 15, 1953 to March 23, 1954, only four new contracts for lead and zinc were executed during the year.

Direct financial assistance by the government to foreign countries for the development of zinc resources was negligible in 1954.

The general rise in industrial activity in 1955 included the zinc industry. Production and consumption of slab zinc reached all time highs, and mine output increased by 8.7 per cent. Consumption increased by 24.4 per cent over the previous year total of 1,469,080 tons. Producers' stocks declined from 124,277 tons at the beginning of the year to 40,979 at the end. Imports were 603,082 tons, a decrease of 9.4 per cent over the previous year. Of the total imports, about 2 per cent were free of duty for government use and 3.8 per cent free for smelting, refining, and export. The price of Prime Western slab zinc, East St. Louis, was 11.50 cents a pound as of January 1, 1955, rising slowly to 13 cents on September 6 and remaining there the rest of the year. Purchases for the National Stockpile helped sustain the price in the face of continued excess of overall zinc supply over commercial demand, although the quantity of zinc offered monthly for stockpiling declined as industrial demand improved during the year.

On January 21, 1955, President Eisenhower signed legislation extending the Reciprocal Trade Agreements Act for 3 years. The Defense Production Act with Amendments was extended to June 30, 1956. Also Defense Mobilization

Order OD-LS 416, dated August 11, 1955, closed expansion goals and hence the issuance of certificates of necessity for a number of minerals, including lead and zinc.

The Defense Materials Exploration Administration program to encourage exploration of strategic and critical minerals and metals was continued throughout 1955. The government participated in 23 such projects with an authorized maximum government participation of $691,972 matched by an equal amount of private capital.

The General Services Administration undertook stockpile procurement and administration, procurement under foreign-aid programs (as agent of the Foreign Operations Administration), and administration of Defense Production Act programs, including domestic purchase programs, during 1955. Purchases of domestically produced zinc from ore were made against the long-term stockpile objectives in each month of 1955, but the quantity tendered sharply decreased after March. No transactions were carried out on the barter program, nor were any new contracts under the Defense Production Act of 1955 negotiated.

A steady price, record high production of slab zinc, a fairly sharp decline in slab zinc consumption, a sharp increase in producers' sotcks and increases in mine production and imports of zinc were features of 1956 zinc market. Mine output increased 5 per cent over the previous year to 542,340 tons. Consumption declined to 1,323,022 tons, a

decline of 10 per cent from the previous year. Of these imports, 11.1 per cent were duty free for government use and 3 per cent duty free for smelting, refining, and export. Producers' stocks of zinc increased from 40,979 tons at the beginning of the year to 68,622 tons at the end.

In May 1956, the Office of Defense Mobilization established the eligibility of lead and zinc for acquisition to the Supplemental Stockpile under the barter program for fiscal year 1957. Provisions of the Defense Production Act of 1950, as amended, with respect to exploration continued to be carried out by the Defense Materials Exploration Administration which negotiated 22 contracts with a total expenditure of $2,325,791 in government and private funds.

The domestic zinc industry was characterized by peak smelter output of slab zinc, an all time high in zinc imports, a substantial increase in stocks, a moderate decline in consumption and sharp price reductions in 1957. Prices dropped from 13.5 cents to 10.0 cents a pound between May 6 and July 1, 1957, a partial result of government announcements of modification and impending suspension of stockpile purchases.

Mine output declined 2 per cent over 1956 to 531,735 tons. Consumption was 1,231,593 tons a decline of 7 per cent from the previous year. Producers' stocks of zinc increased from 68,022 tons at the beginning of the year to 166,660 tons at the end. Imports reached an all time high

of 951,347 tons, an increase of 30 per cent over the previous year.

Of total imports, 7 per cent were imported free for government use and 3/10 of one per cent were for smelting, refining, and export.

The Defense Materials Exploration Administration executed 15 new contracts for lead and zinc exploration which totaled $3,244,844 of government and private capital. The government barter program was continued during the year with the Commodity Credit Corporation contracting for 109,584 tons of zinc. On April 30, the Department of Agriculture ceased making new barter arrangements pending an evaluation of the program. The barter program was resumed on May 28 with restrictions providing that agricultural commodities traded would not displace cash sales.

In 1958, the pertinent characteristics in the zinc industry were an oversupply of metal, cessation of government stockpiling of domestic metal, and lower metal prices. Industrial consumption declined by 7.3 per cent to 1,142,165 tons. Government acquisitions also markedly decreased. Stocks of producers increased from 166,660 tons to 190,237 tons despite sharply curtailed smelter output. The United Nations held meetingsin Geneva and London to consider solutions to the continuing problem of world overproduction. On October 1, the United States imposed quotas on imports of lead and zinc, designed to give domestic industry a larger

proportion of the home market. Imports during 1958 declined 24 per cent to 728,080 tons of which 5.2 per cent were entered duty-free for government use and 0.4 per cent were duty-free for smelting, refining,and export. The price of Prime Western slab zinc was 10 cents a pound from January 1, to October 1, rising somewhat after that date, so that the average for the year was 10.31 cents a pound.

The Defense Minerals Exploration Administration continued to encourage exploration for zinc and other materials until June 30, 1958, when its authorizing legislation expired. During the first 6 months of 1958, 15 contracts providing for $681,825 in government participation were approved. The Office of Minerals Exploration was created August 21, 1958, under Public Law 701 (85th Congress). The new agency continued the mineral exploration functions of the old, but no new contracts were entered into during the remainder of 1958 as administrative details were not fully established. The barter program was continued as were purchases for stockpile against the long-term stockpile objectives.

Salient features of the zinc industry in 1959 were increased consumption and continuation of import quotas. The strengthening of the market position of zinc was reflected in an increase in price from 11.5 to 12.5 cents by the end of the year. Consumption increased 12 per cent to 1,278,376 tons and mine output 3 per cent to 425,303 tons. Imports declined 17 per cent to 602,861 tons, of which 5.1 per cent

was imported free for government use and 2.2 per cent duty-free for smelting, refining, and export. Producers' stocks of zinc declined from 190,237 tons at the beginning of the year to 154,419 tons by year's end.

A United Nations sponsored conference on lead and zinc in late April and early May resulted in the voluntary acceptance of specific restrictions of production by various countries, which tended to reduce the surplus at year's end. The conference also established an International Lead and Zinc Study Group on a permanent basis.

Import quotas adopted by President Eisenhower, effective October 1, 1958, remained in effect throughout 1959. On August 22, the U. S. Senate formally ordered the Tariff Commission to conduct an investigation of the lead-zinc situation and report findings by March 31, 1960.

The Office of Minerals Exploration continued to encourage exploration of strategic and critical materials and during 1959 awarded five contracts for a total government participation of $88,935. The barter program in zinc also continued in 1959. Some purchases were also made against the maximum stockpile objective in 1959.

In 1960, the domestic zinc industry experienced slightly larger mine and smelter production, but output was hampered by labor disputes during May through December. Consumption was relatively high during the first 6 months, but declined considerably in the last 6 months and totaled

8 per cent less than in 1959 at 1,158,938 tons. Imports declined 5 per cent at 570,234 tons, of which 1/10 of one per cent were imported free of duty for use of the government and 11 per cent were imported duty-free for smelting, refining, and export. Producers' stocks of zinc increased from 154,419 tons at the beginning of the year to 190,810 tons at the end.

The import quotas were in effect throughout the year. The International Lead and Zinc Study Group held meetings in Geneva during January 27-February 3, and September 12-15, but decided to take no action. Small quantities of foreign zinc were received as part of the barter program. Enabling legislation to provide subsidy payments to small lead and zinc producers passed Congress but was vetoed by the President. The Office of Minerals Exploration awarded 7 contracts totaling $27,285 in government participation.

In 1961, the domestic zinc industry saw a 5 per cent increase in consumption to 1,214,016 tons, producers' stocks declined from 190,810 tons at the beginning of the year to 151,189 tons at the end. Imports declined 9 per cent to 482,204 tons, of which 4/10 of one per cent were imported free of duty for government use and 7 per cent were duty-free for smelting, refining, and export. Prices declined from 12 cents to 11-1/2 cents in early January and returned to 12 cents on December 1.

Import quotas remained in effect throughout 1961. Authorizing legislation was passed, but no funds were appropriated for subsidy payments to begin in 1962 for small lead and zinc producers. Those qualifying would receive payment for the difference between the market price of zinc and 14-1/2 cents a pound. Zinc was not included on the Commodity Credit Corporation list for barter during 1961. The Office of Minerals Exploration awarded 5 contracts for exploration assistance with total government participation being $175,205.

## Sources of United States Imports

The greatest part of U. S. imports of unmanufactured zinc comes from Canada and Mexico, with additional tonnages coming from a number of other countries, primarily Peru, Bolivia, the Union of South Africa, Spain, and Guatamala.

During the years 1953-57 imports of zinc in zinc bearing ores averaged 426,800 tons. During both periods Canaca, Mexico, and Peru were the principal sources of such imports, together accounting for 90 per cent of the total during 1953-57 and for 88 per cent of the total during 1959-61. During this latter period there were individual quotas for imports of zinc-bearing ores from Canada, Mexico, and Peru.

Imports of zinc metal (blocks, pigs, slabs, scrap, dross, and skimmings) averaged 221,400 short tons during 1953-57, and 138,100 tons during 1959-61. In the former

period, Canada, Belgium and Luxembourg, Mexico, and the Belgian Congo were the major sources of such imports, together accounting for about 77 per cent of the total. In the latter period the four largest sources, Canada, the Belgian Congo, Belgium and Luxembourg, and Peru, accounted for 77 per cent of the total. The U. S. has established individual quotas for imports of zinc metal from these countries (and in addition individual quotas were established for imports from Mexico and Italy). (See Appendix Table A-1 for further particulars.)

## Summary

The United States' share of the world output and consumption of zinc has shown a generally downward long-run trend, particularly since 1952. World production of primary zinc has shown a steady increase throughout the postwar years.

Beginning in 1940, the United States began importing large quantities of zinc, although prior to that time zinc imports had been relatively small. The large imports continued throughout the postwar years.

During World War II the government had accumulated a large stockpile of zinc some of which was sold to private industry after the war, the remainder was put into the stockpile of strategic and critical materials.

Zinc is subject to sharp fluctuations in market conditions as evidenced in the ups and downs of the years 1948-50.

The Korean War brought sharply increased demands for lead and zinc and an extensive series of government programs, not all of which helped alleviate the scarcity. The International Materials Conference was established and proceeded to set up an international system for the allocation of zinc (in late 1951 and early 1952).

In the postwar years 1946-52, very substantial imports came in free of duty, though subsequently such imports were greatly reduced. After 1952, conditions in the zinc market changed as metal supplies increased. Consumption in 1953 was the highest in history up to that time, but available supplies were so great that prices declined causing mines to shut down with resulting unemployment.

The conditions continued in 1954, the year in which the stockpile purchase program was initiated. The high level of consumption in history marked 1955. Stockpile purchases, however, continued in the face of improving conditions.

Market conditions softened somewhat in 1956; this tendency continued in 1957 with a sharp decline in price in that year. The barter program with respect to lead and zinc was activated for the first time in fiscal 1957. The industry saw depressed conditions in 1958. Import quotas were imposed during the year and the United Nations held meetings to consider the problems of the industry. Some recovery was evident in 1959. Under United Nations auspices

voluntary acceptance of specific restrictions on production were effected. Poor market conditions for zinc were continued through 1960 and 1961.

The main source of United States imports of zinc are Canada, Mexico, and Peru.

## CHAPTER IV: FOOTNOTES

1. Zinc consumption as it is used in this discussion is "reported" consumption, in that it is consumption based largely on reports of individual consumers (and published by the American Bureau of Metal Statistics for the years 1937-39 and by the U. S. Bureau of Mines for 1943 and the years beginning in 1946). Consumption in this sense is exclusive of amounts going into government or private stocks. Reported consumption thusly differs from the "supply" or "apparent" consumption that might be calculated by adding imports to production and subtracting exports. Reported consumption for a given year is an estimate of the quantity of zinc actually used by domestic consumers in that year whether from that year's supply or from stocks accumulated in previous years. "Apparent consumption" or "supply" is an estimate of supply in a given year, made available from that year's domestic production and imports, for distribution, in the United States for consumption, government use, or for private stockpiling. As in the case of lead, we find it convenient to use "industrial consumption" in our discussion.

# CHAPTER IV

# LEGISLATION AND GOVERNMENT PROGRAMS CONCERNING LEAD AND ZINC

## Introduction

The government programs with respect to lead and zinc are set forth in broad general terms by various legislative acts. However, the nature and significance of the programs can not be completely understood from the statutes themselves. There is a considerable degree of flexibility involved and the verious programs are tempered by the social, industrial-economic, and defense outlook of the government in the different situations in which it finds itself. The objective of this chapter is to provide the reader with a general survey of some of the programs affecting the lead and zinc industries. In some instances these programs are too complicated to be conveniently discussed here. Therefore, a more complete discussion will be deferred to a later chapter.

The discussion will be broken down under two main headings (1) programs stemming from legislation designed to obtain tax revenue from the lead and zinc industry, and (2) the industry-government relationship established by the body of law and philosophy designed to control the lead and zinc producers.

The programs presented in this chapter by no means constitute all, nor even all of the most important of the government programs with respect to lead and zinc. The programs discussed, however, can be taken to be sufficiently representative to allow a fair assessment to be made of the overall program. A comprehensive treatment of all the programs relating to lead and zinc is a vast undertaking which time and space limitations preclude.

## Tax Laws

### Depletion Allowance and Accelerated Amortization

An important aspect of the tax law relating to lead and zinc mining is the depletion allowance. Generally speaking, there are two ways to figure the depletion deduction: (1) the cost method (or general rule). This method applies to all types of property that are subject to depletion. Under this rule, the basis of property value is the same as that for determining a gain on the sale of the property, and may be more or less than cost. The basis is divided by the number of units (tons of ore, barrels of oil, thousands of cubic feet of natural gas, etc.) to arrive at the depletion unit. The depletion deduction for a tax year is the depletion unit multiplied by the number of units sold within such a year. (2) The percentage method which provides, subject to maximum and minimum limitations, for a deduction of a percentage of gross income from the property during the

tax year. This method can be applied to oil and gas wells, local mines, metal mines, and certain other deposits, but not to timber. In instances of properties to which the percentage method applies, the deduction is to be figures under both the cost and percentage methods and the larger deduction taken.

Depletion allowance applied to ores from foreign mines. The depletion allowance was originally provided for in section 114(b)(4) of the Revenue Act of 1932 (47 Stat. 169). This statute provided for a deduction of 15 per cent of gross income, defined as the value of the crude product less any rents or royalties paid or incurred. The originial provision made no distinction between domestic and foreign operations. Section 613 of the Internal Revenue Code of 1954 continued the 15 per cent depletion allowance for operations outside the United States, but increased the allowance to 23 per cent for operations within the United States.

Depletion allowance and depreciation. The concept of depletion allowance arises from the nature of the income derived from mining ventures. The statute in its definition and application to mining operations included the proceeds from the sale of part of the ore reserves, which are capital assets. Hence the depletion allowance is designed to adjust income to compensate the mine owner for the reduction in his ore body. One should exercise particular care in order not

to confuse the depletion allowance with depreciation, the latter involving the allowance by which the mine operator is compensated for using up part of his capital equipment concurrent with production of his income.

Accelerated amortization. The Revenue Act of 1950 (64 Stat. 939) provided for accelerated amortization for purposes of taxes on facilities certified as necessary for the national defense during the emergency period. The Act authorized issuance of certificates of necessity by the Office of Defense Mobilization. These certificates permitted the write off of 60 per cent of the value over a 5 year period on lead and zinc facilities valued at $58,000,000. Of this amount, $30,000,000 consisted of facilities principally used for mining and $28,000,000 for facilities used exclusively for smelting and refining. The greater part of these certificates were granted in 1951 and 1952, but one (for a zinc smelter) was granted as late as 1955. In August 1955, the Office of Defense Mobilization announced that as facilities or capacity for production were then sufficient to meet defense needs, no further applications for certificates on lead and zinc producing facilities would be issued.(1)

## Deductions for Exploration

Expenditures made to determine the existence, location, extent, or quality of any deposit of ore or other mineral

(other than oil or gas) before the development stage has begun are deductible in one or two ways: (1) the expenditures can be deducted in the year paid up to $100,000. This yearly $100,000 limitation applies to all such expenditures, and is not therefore a total amount allowable for each separate mine or deposit owned by the taxpayer, or (2) any such expense up to $100,000 can be deducted ratably as the ore or mineral is sold (deferred expense). Any election under the latter alternative is not binding on future years.

Either alternative is available to the taxpayer (including each individual partner) for a period up to four years, up to a maximum of $100,000 a year. The taxpayer may, of course, capitalize those expenditures which he does not choose to deduct or defer. But after the taxpayer, and in some cases his predecessor, has availed himself of the deductions in either (1) or (2) for any four year period, additional exploration expenditures are not deductible and must be capitalized. Amounts so capitalized are recovered through depletion. For example, a taxpayer who makes his return on a calendar year basis, if he elects to defer them to be deducted ratably as the mineral is sold, in each of the years 1961, 1962, 1963, and 1965, will not be entitled to any deduction for 1966 or any subsequent tax year. This would remain true even in instances where the amount of his deduction taken in each year is less than the $100,000 annual ceiling.

It is significant, however, that the above mentioned limitations do not apply in instances where exploration projects fail to encounter a commercial ore deposit. The expenditures for unsuccessful explorations are deductible as losses because the law provides that "exploration" deductions do not apply to expenditures that are allowable deductions for the taxable year under any other provision of the law. More simply stated, if exploration costs can be considered a loss they do not belong in the "exploration" category. If the taxpayer elects he may treat this kind of expenditure as deferred expenses and recover such amounts at rates commensurate with the rate of exhaustion of any mineral deposits discovered as a consequence of such explorations. It should be noted that this right to deduct exploration expenditures does not extend to any expenditures for tangible depreciable property used in the business of exploring, as these costs are recoverable through depreciation or loss if the exploration is unsuccessful.

Development Expenditures

Expenses incurred by lead and zinc producing corporations in the development of an ore deposit are fully deductible from current gross income as follows: (1) they can be deducted in the year paid and incurred, or (2) the taxpayer, with reference to any such expenses, irrespective of when paid or incurred, may choose to deduct them ratably as the ore or mineral benefited by them is sold (deferred

expense). While the mine or deposit is in the development stage, this choice is limited to the development expenses in excess of net receipts from production within the tax year. (The amount of such expenditures not in excess of such receipts is deductible in full.)

It is frequently the case that tax liability varies with the category into which expenditures can be placed--"exploration" or "development." For instance, if either the limitation on explorations to $100,000 annually or the limitation of four years is applicable, the firm's tax bill would be lower if the expenditures can be placed in the "development" category. In the case of a "mine or other natural deposit" (other than an oil and gas well), exploration ends and development begins "after the existence of ores or minerals in commercially marketable quantities has been disclosed."(2)

It can readily be seen that the determination of the exact time when exploration stops and development begins is difficult if not impossible to determine, so that there is a period where the firm has its choice as to under which category it will charge off a particular expense. Another problem that is somewhat related is that if cases of a discovery of a body of commercially marketable mineral ore is found and the mine passes into the development stage, then further excavations beyond the original vein structure can not clearly be classified as exploration or development.

Another thing to be kept in mind is the effect on depletion allowances. If the expenditures for "exploration" are not charges against "gross income from the property" in determining the limitation to 50 per cent of taxable income, but "development" expenses are deductible, it could conceivably be feasible (in situations of legal discretion) to classify these expenditures as "exploration" expenditures.(3)

In conclusion it might be said that no clear body of rules can be established to cover all eventualities and that due to the ambiguities in the law it is natural that the taxpayer will attempt to interpret the rules so as to escape as much of the tax burden as possible.

## Regulatory Laws and Programs

### The Tariff

The duties currently in force on lead and zinc are those established by the Tariff Act of 1930, as amended by various trade agreements that have been concluded with other countries. The Tariff Act of 1930 took effect on June 18, 1930 and with reference to lead and zinc the established schedules were essentially the same as those established under the previous act (1922).

Perhaps the greatest changes in the schedules pertaining to lead and zinc as originally established by the Tariff Act of 1930 have come about as a result of the trade concessions made under the General Agreement on Tariffs and Trade

(GATT). These concessions became effective on June 6, 1951, and have continued to the present time. Under GATT, duty on the more important lead and zinc items were reduced by 50 per cent of the 1930 rates. The 1951 Trade Agreements Extension Act was extended in June 1955 by the Reciprocal Trade Agreements Act. In 1958 a similar law extended the GATT concessions to July 1, 1962. Discussion of the specific application of the tariff to lead and zinc articles will be undertaken in the next chapter.

Import Quotas

In September 1957, the Emergency Lead-Zinc Committee, representing domestic mining groups, petitioned the U. S. Tariff Commission for restrictive regulation of imports, claiming that concessions made by the United States under the GATT agreements had caused serious injury. Pursuant to the resulting escape clause investigation under the authority of the Trade Agreements Extension Act of 1951, as amended, the Commission announced its findings, unanimously agreeing that injury was evident but differing 3 to 3 in the appropriate remedial measures to be recommended to the President.

Action on the Tariff Commission's report was deferred pending Congressional consideration of the Administration's proposed Minerals Stabilization Plan. The bill was not enacted, and on September 22, 1958, President Eisenhower issued a Proclamation imposing quotas on imports of lead and

zinc ores, intermediate smelter products, and refined lead and zinc metal. These quotas, effective October 1, 1958, were established at 80 per cent of the United States average annual competitive import rate in the five year period, 1953-57. Allocations were on a quarterly basis, and major exporting countries received individual quota allowances.

A more complete discussion of import quotas will be undertaken below as it is too complicated to be discussed fully in this general survey.

## U. S. Government Purchase and Assistance Programs

Since World War II the lead and zinc industries in the United States and in foreign countries have been greatly affected by a variety of U. S. Government programs designed to provide an adequate strategic stockpile for use in national emergencies, to help assure adequate supplies of lead and zinc for military and industrial use, to encourage and assist exploration and development of mineral resources, and to aid domestic producers financially and in other ways.

U. S. Government purchases. The most important of the government programs in terms of the effect on foreign and domestic production of lead and zinc, and upon market prices, has been the government purchases of lead and zinc. In the period since World War II, the U. S. Government has acquired large quantities of lead and zinc from both domestic and foreign sources under the Strategic and Critical Materials

Stock Piling Act (60 Stat. 596), approved July 23, 1946; under the Defense Production Act of 1950 (64 Stat. 798); and, in exchange for surplus agricultural commodities exported from the United States, under the Agricultural Trade Development and Assistance Act of 1954 (68 Stat. 459). U. S. Government purchases in the postwar period, 1945-59, amounted to about 1.3 million tons of lead--about 611,000 tons of domestic lead (according to trade sources, with data for 1946-48 missing) and about 651,000 tons of foreign lead (according to official data). Postwar government purchases of zinc amounted to almost 1.5 million tons--about 1,027,000 tons of domestic zinc (according to trade sources) and about 466,000 tons of foreign zinc (according to official statistics). Government purchases varied from year to year; for the entire postwar period, 1946-59, they were equal to 7-8 per cent of total U. S. supplies of each metal. A more thorough discussion will be undertaken below under the chapter on stockpiling.

Purchases for the strategic stockpile. Purchases under the Strategic and Critical Materials Stock Piling Act, approved January 23, 1946, were ordinarily on a short-term basis, at prevailing market prices. A more detailed discussion of the acquisitions under the Act will be a subsequent chapter. It will suffice to say that purchases under this Act account for by far the greater part of the total acquisitions of lead and zinc by the U. S. Government. The lead

and zinc acquired under this act may not be disposed of without the express approval of Congress, except in time of war or during a national emergency with respect to the common defense, at which time they may be released by the President. A national emergency with respect to the common defense was proclaimed December 16, 1950, and never has been officially terminated. Lead and zinc have been released from the government stockpile on only a few occasions during past periods of severe shortages of supplies, and quantities released have been small.

The initial (minimum) purchases objective for the strategic stockpile of lead and zinc had been largely met by mid-1954. However, new long-term stockpile objectives were established, and government purchases, limited for the first time to metal from newly mined domestic ore, were resumed in the latter half of 1954 as a part of the program "to assist in maintaining the domestic component of the mobilization bases" for lead and zinc.(4)

Under the new program the President authorized the purchase for stockpiling in the fiscal year ending June 30, 1955, of up to 200,000 tons of lead and 300,000 tons of zinc. In the fiscal year ending June 30, 1955, industrial consumption of both lead and zinc increased. Purchases for the government stockpile in that year, accordingly, fell short of the authorized amount. Industry offers to the government in 1955 remained small through December, but in 1956 they

were again of consequence, and by May 1957, they greatly exceeded the quantities of land and zinc that could be purchased in accordance with Office of Defense Mobilization directives. Monthly purchases for the stockpile continued through December 1957. In March 1958, however, the Office of Defense Mobilization announced that no further purchases of zinc for the strategic stockpile would be authorized, and this was followed in May 1958 by a similar announcement with respect to lead. Further discussion of purchases for the strategic stockpile will be discussed in greater detail in a subsequent chapter.

Purchases under the Defense Production Act. Purchases under the Defense Production Act of 1950 were designed to expand productive capacity and supply. Contracts ordinarily provided for delivery over a 5 or 6 year period, and were negotiated at the terms necessary to achieve a scheduled objective. Contracts for lead and zinc under the program were issued from 1950 to 1953. Although no new contracts were issued, deliveries under existing contracts continued on a diminishing scale from 1953 until 1959, when they ended. Total purchases of lead under this Act amounted to 43,859 tons, valued at $15,389,000; total purchases of zinc amounted to 77,757 tons valued at $28,952,000 tons.(5) Most of the lead and about half of the zinc included in these purchases was resold to industry, and the remainder went into the government stockpile.

TABLE 14.--Government Inventories and Objectives of Stockpile Grade Lead and Zinc as of June 30, 1962

| | Lead | | Zinc | |
|---|---|---|---|---|
| | Dollars | Short Tons | Dollars | Short Tons |
| Quantities and Acquisition Cost[1] | | | | |
| Inventory | 396,671,000 | 1,367,319 | 443,767,400 | 1,580,051 |
| On Order | 3,244,400 | 18,868 | 173,500 | 738 |
| Total | 399,915,400 | 1,386,007 | 443,940,400 | 1,580,789 |
| Per Cent of Inventory and On Order to Objectives | | | | |
| A. 3-year Maximum--Objective | --- | 286,000 | --- | 178,000 |
| Per cent | --- | 484.6 | --- | 888.1 |
| B. Last 5-year long term--Objective | --- | 1,154,000 | --- | 1,256,000 |
| Per cent | --- | 120.1 | --- | 125.8 |
| C. Highest--Objective | --- | 1,154,000 | --- | 1,500,000 |
| Per cent | --- | 120.1 | --- | 105.4 |
| Total Inventory and On Order | | | | |
| National Stockpile | 319,298,100 | --- | 364,349,400 | --- |
| Defense Production Act | 3,035,800 | --- | --- | --- |
| CCC | 18,905,100 | --- | --- | --- |
| Supplemental | 58,676,400 | --- | 79,591,500 | --- |
| Excess Inventory and On Order | | | | |
| National Stockpile | 232,358,000 | --- | 312,744,900 | --- |
| Defense Production Act | 3,035,800 | --- | --- | --- |
| CCC | 18,905,100 | --- | --- | --- |
| Supplemental | 58,676,400 | --- | 79,591,500 | --- |
| Total | 312,975,300 | --- | 392,336,400 | --- |

[1]Acquisition cost includes the purchase price of materials, transportation to first storage location, and estimated price or value assigned to commodities acquired through intragovernmental transfers, and beneficiating and processing cost of up graded materials.

Source: Twelfth Annual Report of the Activities of the Joint Committee on Defense Production, Washington, 1962.

TABLE 15.--Summary of Defense Production Act Inventory--Total Purchases, Inventory, and Operating Costs, December 1950 through June 30, 1962 with Reference to Lead and Zinc

| COMMODITY | TOTAL PURCHASES | INVENTORY OF COST | SALES FROM INVENTORY | | | OPERATING EXPENSES | NEW OPERATING PROFIT OR LOSS | JUNE 30, 1962 MARKET VALUE OF INVENTORY |
|---|---|---|---|---|---|---|---|---|
| | | | RECEIVED FROM SALES | GOVERNMENT COST | GAIN OR LOSS | | | |
| LEAD | $15,134,331.98 | 3,035,797.98 | 11,810,183.90 | 12,098,534.00 | (288,350.10) | 253,393.20 | (541,743.30) | 1,523,000 |
| ZINC | $27,718,031.63 | 0 | 21,668,892.72 | 27,718,031.53 | (6,049,138.91) | 93,434.56 | (6,142,573.47) | --- |

Source: Twelfth Annual Report of the Activities of the Joint Committee on Defense Production, Washington, 1961, p. 46.

The barter program. Since the passage of the Agricultural Trade Development and Assistance Act of 1954, section 303, the United States Department of Agriculture has put increased emphasis on the trade of perishable surplus agricultural products for lead and zinc as well as for all other commodities of foreign origin. In the earlier years of the barter program, the Office of Defense Mobilization, following certain defense criteria, prescribed the eligible barter commodities. In May 1956, the Office of Defense Mobilization certified the eligibility of lead and zinc. In June 1956, the Commodity Credit Corporation, the bartering agent for the Department of Agriculture, began contracting for deliveries, and soon after metal deliveries under barter agreements were made. Procurement was limited to lead and zinc of foreign origin, but included metal recovered at domestic smelters from foreign ores.

On April 30, 1957, the Department of Agriculture suspended negotiations for new barter agreements pending evaluation of the program. On May 28, 1957, bartering was resumed under restrictions to assure that agricultural commodities so traded were in fact in addition to sales that would take place on a dollar basis. Relatively few barter contracts were consumated under the modified program.

Changes in barter regulations announced during 1958 liberalized considerably the restrictions relating to country of origin and kinds of material eligible. Barter contractors

were relieved of the burden of proof that the bartered farm products would increase the net exports of that commodity. However, it was intended that the new rules contain adequate measures to protect export markets and prevent substitution of bartered commodities for dollar sales.

A more complete discussion of this program will be undertaken in the chapter on barter.

The Government Exploration Program

The Defense Minerals Administration was established in 1950 by provision of the Defense Production Act to stimulate the production of critical minerals and metals needed for national defense. In 1951, the Defense Minerals Administration was succeeded with respect to exploration activities by the Defense Minerals Exploration Administration, which in turn was ultimately succeeded by the Office of Minerals Exploration. The objective of the Defense Materials Exploration Administration was to encourage mineral exploration and thereby increase the productive capacity of the nation in minerals adjudged to be critically in demand or strategic in character. Under the program, the government loans of 50 per cent of the total cost of approved exploration projects submitted by industrial organizations or competent individuals. Contracts provided for repayment to the government only in the event production resulted from the exploration. By this provision, the government shared equally the high risk of desirable exploratory programs.

The transition from apparent scarcity to obvious plenty in lead and zinc supplies in late 1952, and the accumulation of stocks in the United States and other countries in 1953, prompted the Office of Defense Mobilization to issue a directive restraining the Defense Materials Exploration Administration from making new contracts for lead and zinc. Lead and zinc were restored to the eligible list on March 23, 1954, owing to a redefinition of the government's objectives relating to these commodities.

The Defense Materials Exploration Administration program was in operation from 1951 to mid-1958. During this period, 272 contracts were executed that obligated the United States to participate in lead and zinc exploration ventures to a maximum expense of $13.3 million.

Public Law 701 was enacted in 1958 by the 85th Congress to establish the Office of Minerals Exploration under the Department of the Interior. The new Office of Minerals Exploration assumed the function and obligations of the Defense Materials Exploration Administration which legally expired June 30, 1958. The object of the new organization was the same as that of its predecessor--to share the financial risk with private industry in exploratory ventures deemed to be in the best interest of the United States. The new law, however, was considerably more restrictive than that under which the Domestic Materials Exploration Administration functioned. Applications for loans were required to

furnish evidence that funds were not obtainable from commercial sources at reasonable interest rates, and government participation in any one contract was limited to a $250,000 maximum.

Loans to Increase Production

The Defense Production Act of 1950 authorized loans to increase the production of lead and zinc in the United States and in foreign countries. This authority has been used to a limited extent. As of September 30, 1959, no loans under this act had been made to increase the production of lead, and loans of only $1,300,000 had been made to increase the production of zinc. Of the total amount the greater part loaned was on properties within the United States and a single loan, amounting to $337,500, was made on properties elsewhere. This loan, made by the Export-Import Bank on a zinc-processing plant in Mexico, was approved in June 1952, but it was repaid by the end of September 1956.

Larger loans than those under the Defense Production Act of 1950 have been extended by the Export-Import Bank, under its general authority, to producers in Peru, Guatamala, and Yugoslavia, and pursuant to the mutual security program, to producers in Spain. These loans were as follows:

1. To Peru, primarily for expansion of a zinc refinery, under a credit approved in August 1950, $19,250,000

was advanced, of which $51,750,000 remained outstanding in February 1960;

2. To Guatamala, for use in the development of a lead mine, under a credit approved in March 1955, $500,000 was advanced, all of which was repaid by the end of January 1959;

3. To Yugoslavia, credit aggregating $55,000,000 were extended during 1949 and 1950, of which $6,235,000 was used for lead and zinc facilities, most of this credit was still outstanding in February 1960;

4. To Spain, under loans approved in 1951 and 1952, $1,667,000 was advanced, of which $1,415,000 remained outstanding in February 1960.(6)

Domestic Mines Stabilization Program

The most recent government assistance program to the mining segment of the domestic lead and zinc industry is provided for in Public Law 87-347, approved October 3, 1961. The Act provides for limited payments of government funds to eligible producers over a 4-year period ending in 1965. Aggregate payments may not exceed $4.5 million during each of the calendar years 1962 and 1963, $4 million during 1964, and $3.5 million during 1965.

The law provides for so-called stabilization payments by the Secretary of Interior to eligible producers on their sales of lead and zinc ores and concentrates mined subsequent

to the approval of the Act. Subject to specified limitations in the law, the rate of payments for the lead content (as determined by assay) of the ores and concentrates is fixed at 75 per cent of the difference between 14-1/2 cents per pound and the average market price of lead (common grade, New York) for the month in which the sale occurs; and for zinc content (as determined by assay), the rate of payments is fixed at 55 per cent of the difference between 14-1/2 cents per pound and the average market price of zinc (Prime Western, East St. Louis).(7)

Eligible producers are those that had not produced or sold ores or concentrates with a combined recoverable lead and zinc content of more than 3,000 tons during any 12-month period between January 1, 1956 and August 1, 1961.

According to an estimate by the U. S. Department of the Interior (near the beginning of 1962), some 500 producers might be expected to apply for stabilization payments covering the production of 50,500 tons of recoverable lead and 83,000 tons of recoverable zinc in 1962 and 1963.(8) Such subsidies, of course, would not cause U. S. mine output of lead and zinc to increase by this amount. It has been estimated that if subsidy payments were to be made for 50,500 tons of lead and 83,000 tons of zinc, they would amount to about $6.5 million (on the basis of 10 cents per pound for lead and 12 cents for zinc). With lower prices, the estimated total cost of payments for the above quantities

of lead and zinc would, of course, be higher. Since the law limits payments in each of the first 2 years to only $4.5 million, that amount would be insufficient to pay subsidies on the aforementioned quantities. As of May 1962, however, no funds to pay the subsidies had been appropriated by Congress.

## CHAPTER V: FOOTNOTES

1. Executive Office of the President, Office of Defense Mobilization, Press Release ODLS, No. 416, August 11, 1955.

2. See Section C.6 of the Internal Revenue Code of 1954, as Amended.

3. William F. Connally, et al. (ed.), Prentice-Hall, 1961 Federal Tax Course (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1961), paragraph 1843.

4. As stated in the Stockpile Report to Congress, July-December, 1954, Executive Office of the President, Office of Defense Mobilization.

5. United States Tariff Commission, Lead and Zinc. Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930, Washington, March 1960.

6. U. S. Tariff Commission, Lead and Zinc. Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 16 , 86th Congress, adopted August 21, 1959, Washington, March 1960, p. 59.

7. Recoverable content, for purposes of the act, is computed as 95 per cent of the lead content of ores and concentrates and 85 per cent of the zinc content of ores and concentrates.

8. U. S. Congress, House Committee on Appropriations, Department of the Interior and Related Agencies Appropriations for 1963, Hearings before a Sub Committee (Sub-Committee on Department of Interior and Related Agencies), 87th Cong., 2nd Session, 1962, p. 763.
   The Tariff Commission was informed on May 9, 1962, that no applications for stabilization payments had been received by that date, although numerous inquiries from possible applicants had been received.

# CHAPTER VI

# TARIFF TREATMENT OF LEAD AND ZINC

## Introduction

This chapter contains a detailed description of the import duties on led and zinc articles as provided by the relevant sections of the Tariff Act of 1930, as amended. This detailed and perhaps unexciting discussion is undertaken for two main reasons. First, an analysis of tariff policy requires a thorough understanding of the provisions of the law pertaining to import duties. Second, the tariff provisions are one of the main battle grounds of economic policy makers and it is here that the various economic and potential interests clash. Government policy is not formulated by legislation alone, but also by the Tariff Commission and the President who attempt to modify the rates of duty provided by the statute as provided in the appropriate Trade Agreements Extension Act. The exact relationships involved will be spelled out in more detail as the various Government programs and their origins are discussed.

In addition to this, there are certain features of the tariff law itself that merit discussion. For example, the structure of the duties and their specific character come in for some comment as we proceed. A comparison between the burden of present duties as compared with the burden imposed

by the original Tariff Act of 1930 along with a brief history of the application of the duties in the post World War II years is included. This is necessary in order to show that the tariff program is not inflexible, but is modified in the face of changing conditions. Therefore the application of the tariff to lead and zinc articles can not be divorced from actual market conditions, i.e., the history of the application of the tariff has to be considered in conjunction with the market history of these metals. The following sections of this chapter attempt to present some of the various aspects of tariff policy with respect to lead and zinc.

## Lead Articles by Customs Treatment

Escape-clause investigations and subsequent decisions of the Tariff Commission, and other policies of government have not been universal in application to all lead articles, but have greatly affected some items, and have had little or no effect on others, thus having a differential effect on the output mix. Thus it will be necessary to discuss in some detail the various items produced. The easiest and most convenient way to do this is by customs treatment. The major focus of government policy has been on "unmanufactured lead." The term "unmanufactured lead" refers to the lead bearing ores and metal dutiable under paragraph 391 of the Tariff Act of 1930, nd to such other items as lead pigs and bars, lead dross, reclaimed lead, scrap lead, type metal, antimonial

lead, antimonial scrap lead, and alloys or combinations of lead not specifically provided for, which are classifiable under paragraph 392.

Description of Lead Articles by Section of the Tariff Act of 1930

The various investigations of the Tariff Commission have been primarily concerned with unmanufactured lead articles of various kinds, with particular reference to lead in lead bearing ores and lead pigs and bars. In the past some attention was also given to closely related manufactured articles, such as lead pigments.

Paragraph 72 of the Tariff Act of 1930 is concerned with lead pigments, including litharge, orange mineral, red lead, white lead, and all pigments containing lead, dry or in pulp, or ground in or mixed with oil or water, not specifically provided. Large quantities of litharge are used in storage battery manufacturing. Other important uses are in glassmaking, ceramics, color and paint manufacturing, oil refining, and rubber and insecticide production. The chief uses of red lead are in storage batteries, metal protective paints, and ceramics. White lead and sublimed lead has long been used, either alone or blended in exterior paints, pottery glazes, enamels, and putty. Suboxide of lead is mainly used in storage batteries.

Paragraph 391 deals with lead bearing ores, flue dust, and matters of all kinds. The item of greatest importance

from the standpoint of imported lead is lead-bearing ore, which is primarily composed of lead concentrates. In 1952, the imported lead-bearing ores and concentrates averaged about 55 per cent lead, of which about 96 to 98 per cent was recoverable by smelting and refining. Flue dust and mattes are intermediate furnace products with varying percentages of lead content. It should be noted that all the materials in paragraph 391 require further processing to recover the metal contained, although some ores and concentrates are directly used in making some lead pigments.

Paragraph 392 deals with several articles, including intermediate materials requiring further processing before use, refined metal, important alloys of lead, and lead fabricated forms. The most important of these items is lead pigs and bars. Most of the refined lead that is imported into the United States is of corroding grade, containing a minimum of 99.94 per cent lead. Corroding grade lead normally commands a premium of 1/10 cent per pound over common grade lead (at least 99.73 per cent pure), the grade for which market prices are normally quoted.

Lead or base bullion is the product of primary lead smelting; it contains approximately 97 to 99 per cent lead in addition to silver, gold, and various impurities.

Lead dross is an intermediate product of smelting, refining, or manufacturing processes, and like scrap lead and antimonial scrap lead requires treatment to recover its metal content.

Type metal, as its name suggests, is used in printing. It is an alloy of lead, antimony (2 to 23 per cent), and small amounts of tin.

Antimonial lead usually contains approximately 6 to 8 per cent antimony. The antimony imports hardness and stiffness to the alloy, which, for that reason, is frequently referred to as hard lead.

All the above mentioned articles in paragraphs 391 and 392, in addition to some miscellaneous alloys of lead ore collectively referred to as "unmanufactured lead" by the Tariff Commission. In addition paragraph 392 covers babbitt metal, lead sheet and pipe, lead shot, and lead wire and glazier's lead.

Relative Importance of Imports of of Lead Articles

Only a few of all the lead articles covered by paragraphs 72, 391, and 392 account for the bulk of U. S. lead imports. We can use the year 1961 as a typical year for purposes of comparison. During that year, imports of unmanufactured lead, by quantity, amounted to 94.7 per cent of the total lead imports. The corresponding figure in terms of value was 80 per cent. Of the total quantity of lead imported, 59.3 per cent was in the form of pigs and bars and 32.9 per cent as lead bearing ores. The corresponding figures in terms of foreign value were 49.8 per cent and 26.5 per cent, somewhat lower than the relative quantities

expressed by weight (because the influence of prices on various lead articles, i.e., a high price gives a relatively small quantity of lead a greater weight when relative amounts are expressed in terms of value). Unmanufactured lead articles are the only ones in which imports are large in proportion to U. S. production (see Appendix Table A-2).

## The Tariff Status of Lead Articles

### Rates of Duty Currently in Effect

Since 1930, the United States has applied rates of duty as prescribed under the Tariff Act of 1930, as amended, paragraphs 72, 391, and 392. These are shown in the table.

The specific duties of the most important lead pigments--litharge, orange mineral, red lead, and white lead--are in cents per pound applicable to gross weight. The currently affective rates of duty are: 1-1/4 cents on litharge; 2 cents on orange mineral; 1-7/8 cents on white lead. When compared with the 1930 rates these duties reflect deductions brought about by tariff concessions of the following amounts: 50 per cent for litharge, 33-1/2 per cent for orange mineral, 32 per cent for red lead, and 58 per cent for white lead.

Rates of duty on lead articles dutiable under paragraphs 391 and 392 are normally applied to the lead content of such articles. However, the duty on lead sheets, pipe, etc. is applied to gross weight, but metal other than lead (principally antimony) comprises only a small percentage of their

total weight. The currently effective rates of duty are 3/4 cent per pound on the lead content of lead bearing ores, flue dust, and mattes, 1/16 cents per pound on the lead content of lead bullion, lead pigs and bars, lead dross, reclaimed lead, scrap lead, type metal, antimonical lead, babbitt metal, solder, and miscellaneous alloys of lead. These rates of duty were made on June 6, 1951 pursuant to concessions granted by the United States in the General Agreement on Tariffs and Trade (G.A.T.T.). The present rates represent a 50 per cent reduction from the statutory rates prescribed in the Tariff Act of 1930. The present rates are the same as those which were in effect from June 30, 1943 through December 31, 1950, pursuant to a trade agreement with Mexico. When that agreement was terminated at the end of 1950 the rates had reverted to the statutory rates of 1930.

The present duty on lead sheets, pipe shot, glazier's lead, and lead wire is 1-5/16 cents per pound. This rate which was made effective June 6, 1951, pursuant to GATT, is 45 per cent below the rate provided in the Tariff Act of 1930.

Comparison of the Rates of Duty on Lead-Bearing Ores and Pigs and Bars

The present duty applicable to the lead content of lead-bearing ores, flue dust, and mattes (3/4 cent per pound on the lead content) is equal to 71 per cent of the current

TABLE 16.--Lead Articles: United States Rates of Duty Imposed Under the Tariff Act of 1930, in Specified Years 1930 to Date

| Item | Tariff rate in— | | | | |
|---|---|---|---|---|---|
| | 1930 | 1945 | 1948 | 1951 | 1954 to Date |
| | Cents per pound; percent ad valorem | | | | |
| PARAGRAPH 72 | | | | | |
| Lead pigments: | | | | | |
| Litharge | 2½ cents | 2¼ cents [1] | 2¼ cents [2] | 1¼ cents [2] | 1¼ cents. |
| Orange mineral | 3 cents | 2½ cents [4] | 2 cents [2] | 2 cents | 2 cents. |
| Red lead | 2¾ cents | 2¼ cents [1] | 1⅞ cents [2] | 1⅞ cents | 1⅞ cents. |
| White lead | 2½ cents | 2 1/16 cents [5] | 2 1/16 cents [2] | 1 1/16 cents [5] | 1 1/16 cents. |
| All pigments containing lead, dry or in pulp, or ground in or mixed with oil or water, n. s. p. f.: | | | | | |
| In chief value of suboxide of lead | 30 percent | 3 cents, 15 percent minimum, 30 percent maximum. [6] | 3 cents, 15 percent minimum, 30 percent maximum. [2] | 3 cents, 15 percent minimum, 30 percent maximum. | 3 cents, 15 percent minimum, 30 percent maximum. |
| Other | 30 percent | 20 percent [1] | 20 percent [2] | 20 percent | 20 percent. |
| | Cents per pound of lead content | | | | |
| PARAGRAPH 391 | | | | | |
| Lead-bearing ores, flue dust, and mattes of all kinds | 1½ cents | 3/4 cent [7] | 3/4 cent [8] | 1½ cents [9]<br>3/4 cent [3] | 3/4 cent. [10] |
| PARAGRAPH 392 | | | | | |
| Lead bullion or base bullion, lead pigs and bars, lead dross, reclaimed lead, scrap lead, type metal, antimonial lead, and antimonial scrap lead | 2½ cents | 1 1/16 cents [7] [11] | 1 1/16 cents [8] [11] | 2¼ cents [9] [11]<br>1 1/16 cents [3] [11] | 1 1/16 cents. [10] |
| Babbitt metal and solder | 2½ cents | 1 1/16 cents [7] | 1 1/16 cents | 2¼ cents [9]<br>1 1/16 cents [3] | 1 1/16 cents. |
| Alloys or combinations of lead, n. s. p. f. | 2½ cents | 1 1/16 cents [7] | 1 1/16 cents | 2¼ cents [9]<br>1 1/16 cents [3] | 1 1/16 cents. |
| | Cents per pound | | | | |
| Lead in sheets, pipe, shot, glazier's lead, and lead wire | 2½ cents | 2¼ cents | 2¼ cents | 1 5/16 cents [3] | 1 5/16 cents. |

[1] Trade agreement with the United Kingdom, effective Jan. 1, 1939, through Dec. 31, 1947.
[2] General Agreement on Tariffs and Trade (GATT) (Geneva), effective Jan. 1, 1948.
[3] GATT (Torquay), effective June 6, 1951.
[4] Trade agreement with France, effective June 15, 1936, through Dec. 31, 1947.
[5] Trade agreement with Belgium, effective May 1, 1935, through Dec. 31, 1947.
[6] Trade agreement with Switzerland, effective Feb. 15, 1936.
[7] Trade agreement with Mexico, effective Jan. 30, 1942, through Dec. 31, 1950.
[8] Duty suspended from June 20, 1948, to June 30, 1949, inclusive (Public Law 725, 80th Cong.).
[9] Trade agreement with Mexico terminated, effective Jan. 1, 1951; the rate of duty reverted to the statutory rate provided under the Tariff Act of 1930.
[10] Duty suspended from Feb. 12, 1952, to June 25, 1952, inclusive (Public Law 257, 82d Cong.).
[11] Duty on scrap lead was suspended for practically the entire period from Mar. 14, 1942 to June 30, 1952, inclusive (Public Law 497, 77th Cong.; Public Law 384, 80th Cong. Public Law 613, 80th Cong.; Public Law 869, 81st Cong.; Public Law 66, 82d Cong.).

Source: Printed as Table L-2 in U. S. Tariff Commission, Lead and Zinc Industries, Report on Investigation conducted under Section 332 of the Tariff Act of 1930 Pursuant to a Resolution by the Committee on Finance of the U. S. Senate, dated July 27, 1953, and a Resolution by the Committee on Ways and Means of the U. S. House of Representatives, dated July 29, 1953, Report No.192, Second Series, Washington, 1954.

rate of duty on the lead content in lead pigs and bars (1-1/16 cents per pound on the lead content). Trade concessions have reduced both of these rates of duty to one-half the rate prescribed by the Tariff Act of 1930.

The differential between the rates of duty on the lead content of ores and on lead metal (based both on the 1930 and the present rates) is more than sufficient to compensate for metallurgical loss in transforming the ore to refined lead metal. Both the 1930 and the present rates of duty on lead in ores are 71 per cent of the rates of duty on lead pigs and bars. On the average approximately 98 per cent of the total lead content of ores and concentrates imported into the United States is reocvered as lead metal by smelting and refining. Of the total difference in the rates of 0.3125 cent between the present duty on lead in lead pigs and bars (1.0625 cents), and that on the lead content of lead-bearing ores, flue dust, and mattes (0.75cent), only 0.0255 cent represents compensation for metal lost in smelting operatings and the remainder, 0.287 cent, is the element in the differential which is protective of the processing operations.

1930 and Present Duties

The ad valorem equivalents (based on the foreign value of imports) of present duties for lead articles are approximately as follows (depending, of course, on current market prices): 8.4 per cent on lead bearing ores, 11.2 per

cent on lead pigs and bars, and 10.0 per cent for total unmanufactured lead. The corresponding figures on July 1, 1934, under the original duties imposed by the Tariff Act of 1930 were 57.8 per cent on lead bearing ores, and 62.4 per cent on total unmanufactured lead (no lead pigs and bars were imported in 1934). It can readily be seen that the average ad valorem equivalents of the current rates of duty, based on present day values, are less than one-sixth of the original rates imposed by the Tariff Act of 1930 (and were still in effect in 1934) when based on the value of imports in 1934. The reduction of ad valorem equivalents of the duties largely reflects the substantial rise in the prices of lead and zinc.

Non Dutiable Lead Imports

Table A-1 reproduced in the Appendix shows that more than 50 per cent of the United States imports in terms of the lead content of unmanufactured articles in 1938 and 1939, during World War II, and in the postwar years 1946, 1948, 1949, and 1952 were entered free of duty. After 1952 the proportion of imports free of duty to dutiable imports declined. One characteristic of the figures that must be taken into account is that the figures include imports free of duty for smelting, refining, and export. A large part of the imports prior to World War II were entered free of duty for smelting, refining, and export. Since World War II, however, such imports have been small.

During the World War II years the greatest part of the greatly expanded imports (more than 90 per cent of the total quantity in 1942 and 1943) were entered duty free of the use of the U. S. Government (i.e., for stockpiling and distribution to consumers).

The government continued to import lead free of duty during 1946. In that year, 86 per cent of the total quantity imported came in outside the duty. During 1948, 1949, and 1952, more than 70 per cent of the unmanufactured lead imported was duty free chiefly because duties were suspended at various times. In order to stimulate lead imports Congress suspended import duties on lead from June 20, 1948 to June 30, 1949, inclusive (Public Law 725, 80th Cong.), and again from February 12, 1952 to June 25, 1952, inclusive (Public Law 257, 82nd Cong.)(1). The duty on lead scrap was suspended by a series of public laws for practically the entire period from March 14, 1942, to June 30, 1952. After World War II imports of lead were also entered free for government use, to a lesser extent for smelting, refining, and export, and as a product of the Republic of the Philippines (in accordance with the Philippine Trade Act of 1946). During the 8 year period, 1946 through 1953, 43 per cent, by weight, of total unmanufactured lead imports were free of duty.

Lead and Trade-Agreement Commitments

The present duties on all unmanufactured lead articles are the reduced rates brought about by Presidential proclamations following from trade agreement concessions granted by

the United States in the General Agreement on Tariffs and Trade. These trade agreement concessions are subject to the escape clause of GATT. This provision permits the withdrawal or modification of trade-agreements concessions under conditions specified in section 7 of the Trade Agreements Extension Act of 1951 (Public Law 50, 82nd Cong.). This section established the escape clause procedure whenever a product upon which a trade-agreement concession has been granted is, as a result, in whole or in part, of the duty or other customs treatment reflecting such concession, being imported into the United States in such quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive products.(2)

The table on the following page portrays the maximum rates of duty that could be imposed following from an escape clause action with respect to lead articles. To facilitate comparison the rates of duty established by the Tariff Act of 1930 and the present rates of duty are also included. In the last column the maximum increase in rate is shown as a percentage of the current rate. Any changes in the tariff treatment of imports now subject to commitments would contravene the international treaty obligations of the United States unless done in such a way as not to conflict with the GATT.

The biggest lead exporters to the United States, Canada, Peru and Australia would perhaps as signatories to

TABLE 17.--Lead Articles: Rates of Duty in the United States Under the Tariff Act of 1930 and under Trade Agreements, and the Maximum Rates Possible as a Result of "Escape Clause" Action

| Lead article | Average imports, 1946-52 | Rate of duty under Tariff Act of 1930 | Rate of duty under trade agreements | | | Maximum rate possible as result of "escape clause" action | |
|---|---|---|---|---|---|---|---|
| | | | Rate in effect on Jan. 1, 1954 | | Rate of duty "existing on Jan. 1, 1945" [1] | Specific rate [2] | Increase over rate in effect on Jan. 1, 1954 |
| | | | Specific rate | Reduction from 1930 rate | | | |
| Par. 72: | | | | | | | |
| Lead pigments: | *Short tons* | | | *Percent* | | | *Percent* |
| Litharge | 583 | 2½ cents per pound | 1¼ cents per pound | 50 | 2¼ cents per pound | 3⅜ cents per pound | 170 |
| Red lead | 90 | 2¾ cents per pound | 1⅜ cents per pound | 32 | do | do | 80 |
| Orange mineral | [3] | 3 cents per pound | 2 cents per pound | 33⅓ | 2½ cents per pound | 3¾ cents per pound | 87½ |
| White lead | 611 | 2½ cents per pound | 1½o cents per pound | 58 | 2½o cents per pound | 3½oo cents per pound | 200 |
| Suboxide of lead | 38 | 30 percent ad valorem | 3 cents per pound [3] | 50 | 3 cents per pound [3] | 4½ cents per pound [4] | 50 |
| Lead pigments, not specially provided for | 9 | do | 20 percent ad valorem | 33⅓ | 20 percent ad valorem | 30 percent ad valorem | 50 |
| Par. 391: Lead-bearing ores, flue dust, and mattes (lead content). [5] | 67,100 | 1½ cents per pound | ¾ cent per pound | 50 | 1½o cents per pound | 1½o cents per pound | 140 |
| Par. 392: | | | | | | | |
| Lead bullion or base bullion, lead pigs and bars, lead dross, reclaimed lead, scrap lead, type metal, antimonial lead, antimonial scrap lead, and alloys or combinations of lead, not specially provided for (lead content). [5] | 296,647 | 2½ cents per pound | 1½o cents per pound | 50 | 1½o cents per pound | 2½½oo cents per pound | 140 |
| Babbitt metal and solder (lead content) [5] | 342 | do | do | 50 | do | do | 140 |
| Lead sheets, pipe, shot, glazier's lead, and lead wire. | 132 | 2½ cents per pound | 1½o cents per pound | 45 | 2½ cents per pound | 3⅜o cents per pound | 171 |

[1] The rate "existing on Jan. 1, 1945" for the purpose of sec. 350 (a), Tariff Act of 1930, as amended (for determining the maximum rate possible as a result of "escape clause" action), is not necessarily the actual rate assessed on that date. For rates actually in effect at that time see table L-6.

[2] Rate "existing on Jan. 1, 1945" plus 50 percent of that rate.

[3] But not less than 15 percent ad valorem nor more than 30 percent ad valorem.

[4] But not less than 22½ percent ad valorem nor more than 45 percent ad valorem.

[5] Import duty is applied on the lead content.

Source: Printed as Table L-4 in U. S. Tariff Commission, Lead and Zinc Industries, Report on Investigation conducted under Section 332 of the Tariff Act of 1930 Pursuant to a Resolution by the Committee on Finance of the U. S. Senate, dated July 27, 1953, and a Resolution by the Committee on Ways and Means of the U. S. House of Representatives, dated July 29, 1953, Report No. 192, Second Series, Washington, 1954.

GATT be the countries principally concerned by changes in current trade restrictions. Concerning Mexico and Yugoslavia, the United States has no specific treaty obligations with regard to tariff treatment of unmanufactured lead and zinc. However, inasmuch as they are major exporters of lead and zinc to the United States, they would certainly have an interest in U. S. tariff policy.

Concerning possible tariff rate revisions that might be made under the provisions of GATT, action can be taken under provisions other than that of the standard "escape clause" (Art. XIX). More specifically, Article XXI of GATT provides that any signatory may take "any action which it considers necessary for the protection of essential security interests . . . taken in time of war or other emergency in international relations." Therefore, increased duties or other restrictions imposed by the United States and declared to be necessary for the protection of its essential security interests would not be contrary to the provisions of GATT.

Therefore, if increased import restrictions were accompanied by a statement to the effect that restrictions contained in the legislation were essential for protection of the security interests of the United States, such restrictions thusly imposed could not contravene U. S. commitments under GATT. Clearly it would be advisable or even necessary that this type of statement should be predicated in good faith, i.e., it should actually be necessary to protect the

essential security interests of the United States and upon the existence of an actual emergency in international relations as stipulated by Article XXI.

## Zinc Articles by Customs Treatment

### Description of Zinc Articles by Section of the Tariff Act of 1930

The Tariff Commission investigations and other facets of governmental policy have principally been concerned with unmanufactured zinc articles of various sorts, particularly zinc in zinc-bearing ores and zinc blocks, pigs, or slabs provided for in paragraphs 393 and 394 of the Tariff Act of 1930. Some attention, however, has been paid to related manufactured zinc articles such as lithopone and zinc oxide covered in paragraph 77 and some additional manufactured articles also covered in paragraph 394.

Paragraph 77 is concerned with lithopone and other combinations or mixtures of zinc sulfide and barium sulfate, and zinc oxide and leaded zinc oxide containing not over 25 per cent lead. Lithopone is a white pigment made by co-precipitating barium sulfate and zinc sulfate and is used primarily as an ingredient of interior paints and in smaller measure as a filler in linoleum and textiles. It also has applications as a filler in rubber goods and paper and in the manufacture of printing ink.

Zinc oxide is a white pigment primarily used in the production of rubber tires and other rubber products and of

paints and enamels, as a filler in floor coverings and textiles, and in ceramic products.

Paragraph 393 is concerned with zinc-bearing ores of all types, except pyrites containing 3 per cent or less zinc. The most important imported material, from the viewpoint of zinc content is zinc bearing ore, which is chiefly zinc concentrates (most of the waste materials having been removed by milling). In 1952, according to reports from smelters which accounted for approximately 60 per cent of the total receipts of zinc in ore in that year, the zinc-bearing ores and concentrates imported into the United States for smelting averaged about 55 per cent zinc, of which close to 90 per cent was recoverable by the smelters processing this foreign ore.

Paragraph 394 deals with zinc in blocks, pigs, or slabs, zinc dust, zinc sheets, and zinc scrap, dross and skimmings. From the standpoint of imports, zinc blocks, pigs, and slabs are by far the most important item dealt with in this paragraph.

Slab zinc normally contains about 98 to 100 per cent zine and is usually produced and marketed in the U. S. in six standard grades as follows:

| Name | Minimum Per Cent Zinc Content |
|---|---|
| Special High Grade . . . . . | 99.99 |
| High Grade . . . . . | 99.9 |
| Intermediate . . . . . | 99.5 |
| Brass Special. . . . . | 99.0 |
| Selected . . . . . | 98.75 |
| Prime Western. . . . . | 98.32 |

The greatest part of the Special High Grade Zinc consumed in the United States is used in the production of zinc die castings, the remainder being used by other industries, especially brass manufacture and electro-galvanizing. The less pure grades of zinc usually are not suitable for the manufacture of zinc die castings. Normally a large part of imports consist of Special High Grade Zinc.

Regular High Grade zinc finds its most common use in the manufacture of brass and rolled zinc, and in electro-galvanizing. Intermediate, Brass Special, and Selected zinc are generally used in the production of rolled zinc, in galvanizing, and in brass manufacture. Prime Western zinc is used primarily in galvanizing. This latter grade provides the great bulk of the zinc requirements in galvanizing. Prime Western is the principal grade used in the hot-dip process; the more pure grades that are used for galvanizing are used chiefly in the electrogalvanizing process.

Zinc dust containing from 85 to 98 per cent, is used in metal primers and other metal-protective paints, in speradizing (a process for coating metal surfaces), as a deoxidizing agent in chemical manufacture, and for other purposes.

Zinc sheet which is produced from slab zinc is used for dry-cell battery containers, fruit-jar caps, photo-engraving plates, and for other purposes. Zinc scrap is derived from a variety of sources such as zinc clippings,

engraving plates, discarded die castings, and dry-cell battery cases. Zinc dross is the sludge recovered from galvanizing pots, and skimmings, and impurities removed from the surface of the molten zinc during galvanizing operations. Secondary zinc metal is recovered by remelting and refining or by redistilling scrap, dross, and skimmings. Dross and skimmings are also used directly in the manufacture of pigments and zinc dust.

Of the above names articles, zinc bearing ores (in par. 393), zinc blocks, pigs, or slabs, and zinc scrap, dross, and skimmings (in par. 394) are normally termed as unmanufactured zinc.

An item of special interest is that of zinc fume (sometimes called "deleaded zinc fume") and "zinc flue dust" which are in reality the same product--an impure form of zinc oxide recovered from slag produced by smelting operations. Zinc fume is not specifically provided for under the Tariff Act of 1930 but is classifiable under paragraph 214 as "earthy or mineral substances wholly or partly manufactured." Zinc fume is used in the same manner as zinc concentrates, i.e. mostly for the production of zinc metal by smelting and to a smaller extent for the production of zinc pigments and zinc sulfate. Although zinc fume is an unmanufactured zinc material similar to zinc concentrates, it had not been included in the statistics of the Tariff Commission prior to 1960 and it is not subject to the zinc import quotas that were established on October 1, 1958.

U. S. imports for consumption of zinc fume began in 1952 and recently became sizable. This is indicated by data compiled from reports received by the Commission from importers. Imports of zinc fume rose to 36,000 tons of zinc content in 1958 and to an estimated 63,000 in 1959, a year in which imports of zinc concentrates were restricted by import quotas. Imported zinc fume, coming almost entirely from Mexico, contains about 77 per cent zine and 0.5 to 1.0 per cent lead.

Production of zinc fume in the United States and abroad has substantially increased in the postwar period. In 1960 it was being produced in five U. S., one Mexican, and one Canadian plant. All long-established lead smelters in the above mentioned countries and in others, particularly Australia, have substantial quantities of slag containing 12 per cent or more of zinc. For economic reasons, zinc-fuming plants usually treat a mixture of about two-thirds hot slag from current operations and one-third slag from old slag dumps.

## Relative Importance of Imports of Zinc Articles

Of all the articles covered by paragraphs 77, 214, 393, and 394, unmanufactured zinc articles (zinc ore, zinc blocks, pigs or slabs, and zinc scrap, dross, and skimmings) are by far the most important in terms of quantity and value. In 1961, unmanufactured zinc articles accounted for 93.6 per

cent of the total volume by weight and 92.5 per cent of the total value of imports provided for under these paragraphs. Zinc bearing ores constituted 70.8 per cent of the total by weight, zinc blocks, pigs or slabs for another 22.5 per cent. Imports of zinc articles other than unmanufactured zinc have increased somewhat in recent years, but as of 1961 constituted only 6.4 per cent of imports by weight and 7.5 per cent by value. Imports of zinc articles other than unmanufactured zinc have been small in relation to domestic articles but have recently been increasing, although exports normally are in excess of imports (see Table A-7).

## The Tariff Status of Zinc Articles

### Rates of Duty Currently in Effect

Rates of duty in effect since the passage of the Tariff Act of 1930 on zinc articles are shown in Table 18. Zinc articles are dutiable under paragraphs 77, 393, and 394 of that act (and zinc fume is dutiable under paragraph 214 at a rate under the original act of 30 per cent ad valorem, but presently dutiable at 15 per cent ad valorem).

The specific rates of duty on the zinc articles provided for in paragraph 77 are in cents per pound of gross weight. The current rate of duty on zinc oxide and leaded zinc oxide and leaded zinc oxides containing not more than 25 per cent lead, if in any form of dry powder, is six-tenths cent per pound (representing a reduction brought

TABLE 18.--Zinc Articles: United States Rates of Duty Imposed Under the Tariff Act of 1930, in Specified Years 1930 to Date

| Item | Tariff rate in— | | | | |
|---|---|---|---|---|---|
| | 1930 | 1945 | 1948 | 1951 | 1954 to Date |
| | Cents per pound; percent ad valorem | | | | |
| Par. 77: | | | | | |
| Zinc oxide and leaded zinc oxides containing not more than 25 percent of lead: | | | | | |
| In any form of dry powder | 1¾ | 1 1/10 [1] | 9/10 [2] | 9/10 | 9/10. |
| Ground in or mixed with oil or water. | 2¼ | 1½ [1] | 1 [2] | 1 | 1. |
| Lithopone, and other combinations or mixtures of zinc sulfide and barium sulfate: | | | | | |
| Containing by weight less than 30 percent of zinc sulfide. | 1¾ | 1½ [3] | ⅞ [3] | ⅞ | ⅞. |
| Containing by weight 30 percent or more of zinc sulfide. | 1¾+15 percent. | 1¾+15 percent. | ⅞+7½ percent. [3] | ⅞+7½ percent. | ⅞+7½ percent. |
| | Cents per pound of zinc content | | | | |
| Par. 393: Zinc-bearing ores of all kinds, except pyrites containing not more than 3 percent zinc. | 1½ | ¾ [1 4] | ¾ [3] | 9/10 [5] | 9/10. [6] |
| | Cents per pound | | | | |
| Par. 394: | | | | | |
| Zinc blocks, pigs, or slabs | 1¾ | ⅞ [1 4] | ⅞ [3] | 7/10 [5] | 7/10. [6] |
| Old and wornout zinc, fit only to be remanufactured, zinc dross, and zinc skimmings. | 1½ | ¾ [1 7] | ¾ [3 7] | ¾ [7] | ¾. [7] |
| Zinc dust [8] | 1¾ | ⅞ [1 4] | ⅞ [3] | 7/10 [5] | 7/10. |
| Zinc sheets | 2 | 1 [1] | 1 [2] | 1 | 1. |
| Zinc sheets coated or plated with nickel or other metal (except gold, silver, or platinum), or solutions. | 2¼ | 1⅛ [1] | 1⅛ [3] | 1⅛ | 1⅛. |

[1] Trade agreement with Mexico, effective Jan. 30, 1943, through Dec. 31, 1950.
[2] General Agreement on Tariffs and Trade (GATT) (Geneva), effective Jan. 1, 1948.
[3] Trade agreement with the Netherlands, effective Feb. 1, 1936, through Dec. 31, 1947.
[4] Rate previously reduced in the trade agreement with Canada, effective Jan. 1, 1939, through Dec. 31, 1947, to 1⅛ cents per pound of zinc content on zinc-bearing ores, and to 1⅜ cents per pound on zinc blocks, pigs, and slabs, and on zinc dust.
[5] GATT (Torquay), effective June 6, 1951.
[6] Duty suspended from Feb. 12, 1952, to July 23, 1952, inclusive (Public Law 258, 82d Cong.).
[7] Duty on metal scrap suspended for practically the entire period from Mar. 14, 1942, to June 30, 1953, inclusive (Public Law 497, 77th Cong.; Public Laws 384 and 613, 80th Cong.; Public Law 869, 81st Cong.; and Public Laws 66 and 535, 82d Cong.).
[8] Since the enactment of Public Law 497 (77th Cong.), effective Mar. 14, 1942, and subsequent amendments (see note 7 above), providing for temporary suspension of duties on metal scrap, quantities of zinc dust have been entered free of duty under this law. No information is available as to the distinction between the zinc dust which has entered free of duty and that which has entered as dutiable.

Source: Printed as Table Z-2 in U. S. Tariff Commission, Lead and Zinc Industries, Report on Investigation conducted under Section 332 of the Tariff Act of 1930 Pursuant to a Resolution by the Committee on Finance of the U. S. Senate and a Resolution by the Committee on Ways and Means of the U. S. House of Representatives, dated July 29, 1953, Report No. 192, Second Series, Washington, 1954.

about by trade agreement concessions amounting to 65.7 per cent from the 1930 rate), and if ground in or mixed with oil or water, one cent per pound (a reduction of 55.6 per cent); on lithopone, and other combinations or mixtures of zinc sulfide and barium sulfate, if containing by weight less than 30 per cent zinc sulfide, seven-eights cent per pound (a reduction of 50 per cent), and if containing by weight 30 per centum or more of zinc sulfide, seven-eights cent per pound plus 7-1/2 per cent ad valorem (a reduction of 50 per cent).

The current import duty on zinc-bearing ores and concentrates (dutiable under par. 393) is six-tenths of a cent per pound of zinc content, and that on zinc blocks, pigs or slabs (dutiable under par. 394) is seven-tenths cent per pound of gross weight. These rates (which constitute a 60 per cent reduction from the 1930 rates) were established under the General Agreement on Tariffs and Trade negotiated at Torquay, England, and became effective on June 6, 1951.

Public Law 535 (82nd Congress) suspended the import on zinc scrap, dross and skimmings until June 30, 1953. Law 535 was the last in a series of laws which had suspended the duty on zinc scrap, dross, and skimmings from March 14, 1942 to June 30, 1953. The current rate of duty is 3/4 cent per pound of gross weight. This rate, which is half the rate established by the Tariff Act of 1930, was established by the Trade Agreement with Mexico and bound at Geneva in 1948.

The currently effective rate of duty on zinc dust (dutiable under par. 394) is seven-tenths cent per pound of gross weight. This reflects a reduction of 60 per cent from the 1930 rate, and became effective June 6, 1951, pursuant to a concession in the General Agreement on Tariffs and Trade (Torquay).

The current rate of duty on zinc sheets coated or plated with nickel or other metal (except gold, platinum, or silver), or solutions (dutiable under par. 394) is 1-1/8 cents per pound of gross weight. This rate is one-half of the 1930 rate and became effective January 30, 1943, pursuant to the trade agreement with Mexico, and was bound at Geneva in 1948.

The rate of duty currently in effect on other zinc sheets (dutiable under par. 394) is one cent per pound of gross weight. This rate is one-half of the 1930 rate also became effective January 30, 1943, pursuant to the trade agreement with Mexico, and was bound at Geneva in 1948.

Differential Between the Rates of Dutyon Zinc-Bearing Ores and Zinc Blocks, Pigs, or Slabs

The currently effective rate of duty on zinc bearing ores is six-tenths of a cent per pound on the zinc content and the effective rate of duty on zinc blocks, pigs, or slabs is seven-tenths of a cent per pound. This, in effect, means that the rate of duty on zinc bearing ores is about 86 per cent of the current rate of duty on zinc blocks, pigs,

and slabs, and reflects the differential established by the Tariff Act of 1930 in which the duty on zinc-bearing ores was 1-1/2 cents per pound on the zinc content, or about 86 per cent of the duty on zinc blocks, pigs, or slabs of 1-3/4 cents per pound.

When the Tariff Act of 1930 was enacted, the 86 per cent differential approximately compensated for the metallurgical losses in converting ore to slab zinc, being about equal to the average metallurgical losses in converting zinc ore to slab zinc at U. S. smelters and refineries. However, the 1953 investigation of the Tariff Commission showed that approximately 91 per cent was the average rate of recovery of zinc from zinc ores (in a study considering the quantities of zinc in ores imported by the various zinc smelters and refineries and their approximate recovery experience.) Technological improvements thus have caused the burden of the tariff to be reduced on zinc ores as opposed to zinc metal. This differential discriminates against domestic refining and smelting processes.

An Additional Factor Concerning Rates of Duty on Zinc Scrap, Dross, and Skimmings

The original rates of duty under the Tariff Act of 1930 on (1) zinc-bearing ores and (2) zinc scrap, dross, and skimmings were 1-1/2 cents per pound for both. However, the rate on ores was applicable to zinc content, while the duty on zinc scrap, dross, and skimmings was applicable to gross

weight. The 1930 rate on scrap, dross, and skimmings, applicable to the gross weight of these articles, has been reduced by one-half the original rate by tariff concession. The duties on zinc-bearing ores and on zinc blocks, pigs, or slabs have been reduced 60 per cent. Consequently the duty on zinc scrap, dross, and skimmings--i.e., crude raw materials--now exceeds that on zinc blocks, pigs, or slabs by about 7 per cent.

The import classification "zinc scrap dross and skimmings" includes articles that vary widely in zinc content. It is for this reason that no specific rate of duty per pound of gross weight on imports of zinc scrap, dross, and skimmings could be established that would have a uniform relationship to the recoverable zinc content of these materials, or to duties on zinc metal and zinc ores. A rate of duty on zinc scrap, dross, and skimmings based on the zinc content and related to the duties on zinc ore or on zinc metal would reduce the potential inequality in the tariff structure.

1930 and Present Duties

The ad valorem equivalents of the current duties on unmanufactured zinc articles mentioned above based on the foreign value of 1961 imports were as follows: 13.5 per cent on zinc-bearing ores, and 6.4 per cent on zinc blocks, pigs, or slabs. The average ad valorem equivalents of the current rates of duty based on present-day values, as less

than one-sixth of the ad valorem equivalents of the rates of duty that were originally contained in the Tariff Act of 1930 (which were still in effect in 1934), when based on the value of imports in 1934 (see Table 19). A significant part of the reduction in the ad valorem equivalents of the duties reflects the rise in prices of zinc since 1934 (see Appendix Table A-12).

Non Dutiable Zinc Imports

Of the total imports of unmanufactured zinc during the period 1937-39, only 8 per cent (representing principally zinc ore for smelting, refining, and export) were free of duty (see Table A-6 in the Appendix). During World War II, however, when imports had expanded greatly, the greatest part (98 per cent in 1943) were entered free of duty, largely for United States Government use (for stockpiling and for distribution to consumers). During the postwar years 1946-51, duty free imports declined greatly from the wartime level. Nevertheless they accounted for 22 per cent of the total imports during these years. Of the total amount of zinc imported during this period, imports entered free for government use were approximately 5 per cent, duty-free imports of ore for smelting, refining, and export accounted for 16 per cent, and duty-free scrap for about one per cent. One should recognize that the duty on zinc scrap was suspended by a series of Congressional enactments for almost the whole period from March 14, 1942, to June 30, 1953. In order to stimulate

imports, duties on zinc ore and slab zinc were suspended from February 12, 1952 to June 23, 1952 (Public Law 258, 82nd Cong.).(3) During 1953 the imports free of duty again sharply declined constituting only 6 per cent of total imports of unmanufactured zinc. These imports were primarily for government use and for smelting, refining, and export.

During 1959-61, annual imports free of duty, excluding fume, averaged 49,700 tons and were about 9 per cent of total imports. Of the duty-free imports, almost 80 per cent were in the form of ores and the remaining 20 per cent was in various forms of zinc metal. About 78 per cent of all duty-free imports were entered under bond for smelting, refining, and export. The remaining 22 per cent were of U. S. Government use.

Zinc and Trade-Agreement Commitments

The present duties on zinc articles were put into effect by Presidential proclamation following from concessions granted under the General Agreement on Tariffs and Trade. These concessions are subject to the escape clause of GATT, which permits the withdrawal or modification of trade agreement concessions under conditions specified in Section 7 of the Trade Agreement Extension Act of 1951 (Public Law 50, 82nd Congress). Section 7 established procedures for invoking the escape clause in trade agreements whenever a product upon which a trade concession has been granted is, as a result in whole or in part, of the duty or

other customs treatment reflected such concession, being imported into the United States in such increased quantities, either actual or relative, as to cause or threaten serious injury to the domestic industry producing like or directly competitive products.

The maximum rates of duty which could be imposed resulting from escape clause action with respect to zinc articles in comparison with the original rates provided under the Tariff Act of 1930 and with the current rates are shown in the table on the following page.

The highest possible rates of duty on zinc articles are represented by the rates "existing on January 1, 1945" plus 50 per cent of those rates. For articles under paragraph 77, the rates "existing on January 1, 1945" were the actual effective rates on that date, but zinc articles under paragraphs 393 and 394 the "existing" rates and the "actual" rates were not the same. The actual rates assessed on January 1, 1945 on articles under these latter paragraphs were reduced emergency rates made effective pursuant to concessions granted in the trade agreement with Mexico. This agreement, howeve, provided higher post-emergency rates, and it is under these higher rates, which, under provisions of section 350 of the Tariff Act of 1930, as amended, determine the rates "existing on January 1, 1945" for the purpose of computing the maximum rates possible under escape clause action.(4)

As mentioned previously in connection with lead, the duties presently applicable to lead and zinc articles are

TABLE 19.--Zinc Articles: Rates of Duty in the United States Under the Tariff Act of 1930 and Under Grade Agreements, and the Maximum Rates Possible as a Result of the Escape Clause Action

| Zinc article | Average imports, 1946-52 | Rate of duty under Tariff Act of 1930 | Rate of duty under trade agreements | | | Maximum rate possible as result of escape-clause action | |
|---|---|---|---|---|---|---|---|
| | | | Rate in effect on Jan. 1, 1954 | | | | |
| | | | Rate | Reduction from 1930 rate | Rate of duty "existing on Jan. 1, 1945" [1] | Rate [2] | Increase over rate in effect on Jan. 1, 1954 |
| Par. 77: | | | | | | | |
| Zinc oxide and leaded zinc oxides containing not more than 25 percent of lead: | *Short tons* | | | *Percent* | | | *Percent* |
| In any form of dry powder | 1,066 | 1¾ cents per pound | 9/10 cent per pound | 66 | 1 5/16 cents per pound | 1 13/16 cents per pound | 175 |
| Ground in or mixed with oil or water | 2 | 2¼ cents per pound | 1 cent per pound | 56 | 1½ cents per pound | 2¼ cents per pound | 125 |
| Lithopone, and other combinations or mixtures of zinc sulfide and barium sulfate: | | | | | | | |
| Containing by weight less than 30 percent of zinc sulfide | 213 | 1¾ cents per pound | 3/4 cent per pound | 50 | 1½ cents per pound | 2¼ cents per pound | 157 |
| Containing by weight 30 percent or more of zinc sulfide | 75 | 1¾ cents per pound plus 15 percent | 3/4 cent per pound plus 7½ percent | [3] 50 | 1¾ cents per pound plus 15 percent | 2⅜ cents per pound plus 22½ percent | [3] 200 |
| Par. 393: Zinc-bearing ores of all kinds, except pyrites containing not more than 3 percent zinc (zinc content) [4] | 278,517 | 1½ cents per pound | 9/10 cent per pound | 60 | 1 9/16 cents per pound | 1 9/16 cents per pound | 200 |
| Par. 394: | | | | | | | |
| Zinc blocks, pigs, or slabs | 107,231 | 1¾ cents per pound | 7/10 cent per pound | 60 | 1 5/16 cents per pound | 2 5/16 cents per pound | 200 |
| Old and worn-out zinc, fit only to be remanufactured, zinc dross, and zinc skimmings | 5,164 | 1½ cents per pound | 3/4 cent per pound | 50 | 1½ cents per pound | 2¼ cents per pound | 200 |
| Zinc dust | 128 | 1¾ cents per pound | 7/10 cent per pound | 60 | 1 5/16 cents per pound | 2 5/16 cents per pound | 200 |
| Zinc sheets | 90 | 2 cents per pound | 1 cent per pound | 50 | 2 cents per pound | 3 cents per pound | 200 |
| Zinc sheets coated or plated with nickel or other metal (except gold, silver, or platinum), or solutions | (5) | 2¾ cents per pound | 1 1/8 cents per pound | 50 | 2¾ cents per pound | 3⅜ cents per pound | 200 |

[1] The rate "existing on Jan. 1, 1945" for the purpose of sec. 350 (a), Tariff Act of 1930, as amended (for determining the maximum rate possible as a result of escape-clause action), is not necessarily the actual rate assessed on that date. For rates actually in effect at that time see table Z-5.

[2] Rate "existing on Jan. 1, 1945" plus 50 percent of that rate. For zinc oxide in any form of dry powder, the maximum rate possible as a result of escape-clause action would be the rate resulting from withdrawal of the concession; this would make applicable the rate of 1¾ cents per pound provided in the Tariff Act of 1930.

[3] Represents percentage change in both the specific rate and the ad valorem rate.

[4] Import duty is applied on the zinc content.

[5] Less than ½ ton.

Source: Printed as Table Z-4 in U. S. Tariff Commission, Lead and Zinc Industries, Report on Investigation conducted Under Section 332 of the Tariff Act of 1930 Pursuant to a Resolution by the Committee on Finance of the U. S. Senate, dated July 27, 1953, and a Resolution by the Committee on Ways and Means of the U. S. House of Representatives, dated July 29, 1953, Report No. 192, Second Series, Washington, 1953.

subject to tariff commitments under the General Agreement on Tariffs and Trade (see the discussion of this subject under lead).

## Summary

The tariff treatment of the different lead and zinc articles varies from article to article, thus does not consistently apply. An important distinction is the difference between "manufactured" and "unmanufactured" articles. These general categories are treated differently for purposes of the tariff (and come in for different treatment under the policies, such as the quota). The major focus of governmental policy has been on "unmanufactured" articles for the simple reason that these constitute the bulk of the imports of lead and zinc articles.

In general, rates of duty are applicable to the lead content of articles imported (except lead sheets and pigments which are dutiable in cents per pound of gross weight). The ad valorem equivalents of the duties on lead articles were much lower in 1961 than in 1930 for two reasons: (1) reduction in rates of duty following from trade concession, and (2) increase in the general price level.

There is a differential burden in the rates of duty on lead bearing ores and on lead pigs and bars which is protective of the domestic lead smelting and refining operations. In the immediate postwar years substantial quantities of lead

were entered duty-free, although the proposition of duty-free imports was greatly reduced in the years following 1952. Duty-free imports fall into three main categories: (1) those for smelting, refining, and export; (2) those for government use, for stockpiling and distribution to consumers; and (3) those entered during periods when the duties were suspended.

The trade agreements concessions with respect to lead granted by the United States are subject to the escape clause provisions of the General Agreement on Tariffs and Trade. This gives substantial latitutde to government in withdrawing concessions granted to foreign exporters. Procedures under domestic statutes established limits as to the level to which tariffs could have been raised without Congressional action, i.e., under an escape clause action. (Conditions have changed subsequent to the passage of the Trade Agreements Extension Act of 1962.)

Zinc articles are also classified into categories of "manufactured" and "unmanufactured." As in the case of lead, the main preoccupation of government has been with the "unmanufactured" articles. Refined zinc is divided into a number of different grades--depending upon the degree of purity. A large part of the imports consist of Special High Grade Zinc, the most nearly pure form.

Zinc fume is an item of special interest as it was not specifically provided for under the Tariff Act of 1930 and had not even been included in the statistics of the

Tariff Commission prior to 1960. It is not subject to the quota restrictions imposed on October 1, 1958.

The greatest bulk of imports of zinc articles have been "unmanufactured" articles, just as in the case of lead. Tariffs on zinc articles have been expressed in cents per pound of gross weight, except in the case of zinc-bearing ores which are dutiable in cents per pound of zinc content (with the exception of lithopone containing more than 30 per cent zinc sulfide).

Trade agreement concessions have reduced the specific rates of duty on zinc articles (making these articles subject to escape clause action). The burden of the duty as measured as a per cent of market price has been further reduced by a rise in the general price level. The structure of the tariff schedule discriminates against domestic refining and smelting processes (just the opposite from the case of lead). Trade concessions have reduced duties on zinc-bearing ores, zinc blocks, pigs and slabs by a greater amount than on zinc scrap, dross, and skimmings introducing an element of discrimination against the latter items. No specific rate of duty per pound of gross weight of zinc scrap, dross, and skimmings could be applied equitably due to the widely varying zinc content of these articles.

Duty-free imports of zinc articles became large during World War II, and although greatly declining subsequently, still constituted 22 per cent of the imports during the

years 1946-51. Large quantities of zinc articles entered during periods when duties were suspended.

Duties on zinc articles can be increased by the "rates existing of January 1, 1945" plus 50 per cent of those rates through escape clause action (or could have been before the Trade Agreements Extension Act of 1962 was enacted).

## CHAPTER VI: FOOTNOTES

1. Public Law 257, 82nd Congress suspended duties until March 31, 1953, but included a proviso for an earlier termination of the suspension when the average market price of lead fell below 18 cents a pound for a calendar month. The average price for May 1952 was below this average and thus the suspension was terminated as of June 25, 1952.

2. U. S. Tariff Commission, Lead and Zinc Industries, Report on Investigation Conducted under Sec. 332 of the Tariff Act of 1930 Pursuant to a Resolution by the Committee on Finance, United States Senate, dated July 27, 1953 and a Resolution by the Committee on Ways and Means of the United States dated July 29, 1953, Report No. 192, Second Series, Washington, 1954. For a more recent interpretation see U. S. Tariff Commission, Rules and Procedures, Part 206, Section C, par. 206.12, p. 13.

3. Public Law 258 (82nd Congress), which provided for the termination of the suspension with the close of March 31, 1953, or the termination of the national emergency proclaimed by the President on December 16, 1950, whichever was earlier, included a proviso for an earlier termination of the suspension when the average market price of Prime Western Zinc, East Saint Louis, fell below 18 cents a pound for any calendar month. The average market price for the calendar month of June 1952 dropped below 18 cents and the suspension was terminated July 23, 1952.

4. The possibility of increasing duties on lead and zinc articles through escape clause action has all but been precluded with the passage of the Trade Agreements Extension Act of 1962.

# CHAPTER VII

# ACTIONS OF THE TARIFF COMMISSION AND CONSEQUENCES

## Introduction

This chapter is essentially descriptive and is designed to acquaint the reader with the actions of the Tariff Commission. The escape clause investigations provide one of the main battlegrounds for the various economic interests and it is from these that many of the government programs, directly or indirectly, originate. A brief history of Congressional action on lead and zinc legislation is also included as the Congress is an alternate policy making body. It certainly can be said that the various programs that have been undertaken, have been initiated as a result of political pressures, and it is probable that if certain programs had not been adopted pursuant to the deliberations of the Tariff Commission, legislation would have been enacted by Congress to meet the demands of the various economic interests. Thus it is convenient to describe the actions of the two policy making agencies simultaneously.

Included is a discussion of the reasons given by the Tariff Commission for arriving at their recommendations, which helps one to understand the various policy recommendations of the Tariff Commission.

The import quotas imposed on October 1, 1958 on "unmanufactured" lead and zinc articles follow directly from an escape clause investigation and closely the recommendations of three members of the Tariff Commission. A detailed discussion of this program is thusly included in this chapter.

An abbreviated historical description is included so as not to burden the reader unduely. For the interested reader, extensive explanatory footnotes elaborate on many of the points made.

## History of Petitions of the Lead and Zinc to the Tariff Commission and Related Government Programs

The first of a series of escape clause petitions on behalf of the lead and zinc mining industries was filed on May 10, 1950. The Tariff Commission refused to act on the grounds that the then current trade agreement with Mexico expired at the end of that year and thus, in effect, lead and zinc would not be subject to any tariff concession.(1) A new trade agreement was concluded with Mexico and on June 6, 1951, duties were restored to the levels under the previous trade agreement. A second application was filed on February 14, 1951, but was subsequently dismissed.(2)

A third petition was filed on September 14, 1953 and after holding hearings the Tariff Commission unanimously found that imports were causing serious injury, and recommended the maximum possible increase in duties. Concurrently,

with the escape clause investigation the Commission conducted a fact finding investigation at the request of Congress.(3)

The President set aside the recommendations of the Tariff Commission on the grounds that the proposed remedy was inadequate and would be contrary to U. S. foreign policy objectives. He proposed an expanded stockpile purchase program as an alternative. Subsequently an expanded barter program was also undertaken.(4)

In the summer of 1957 it was announced that the stockpile purchase program was almost completed. In addition the barter program in lead and zinc was sharply cut back. This has significance with reference to the escape clause investigations in that the Commission has, in other cases, ruled that as long as a remedial program resulting from a previous escape clause investigation is effective, the industry is precluded from filing again under the escape clause. The industry was held to be ineligible under the national security amendment escape clause.(5)

In that same summer an import excise bill was introduced into Congress. This proposal would have suspended the trade agreements duties and substituted a series of import excise taxes, which would have been effective only when the price of lead was below 17 cents and the price of zinc below 14-1/2 cents, a pound. This constituted the Administration's program of relief for the industries. It failed to pass Congress.(6)

The fourth escape clause petition was filed with the Tariff Commission by the Emergency Lead and Zinc Committee on September 27, 1957. The Commission for a second time found that the domestic lead and zinc industries were being seriously damaged by imports. The Commission, however, split on the proposed remedy. Three Commissioners recommended the maximum possible increase in duty (which was 50 per cent above the rate "existing in 1945") and the imposition of absolute quotas, based on 50 per cent of imports during 1953-57. The other three recommended reimposition of the 1930 rates of duty.

The President delayed in implementing any program pending the outcome of the "Minerals Stabilization Plan" submitted by Secretary of Interior, Fred M. Seaton, and then pending in Congress.(7) After this plan was defeated, the President imposed quotas, effective October 1, 1958, on unmanufactured lead and zinc articles. The quota amounts were established at 80 per cent of the annual commercial imports for the base period 1953-57. These restrictions were more liberal than had been recommended by the Tariff Commission.(8)

The United Nation's Interim Coordinating Committee for International Commodity arrangements held a conference in London in September, 1958 and a second conference in Geneva in November of that year. It was at these meetings that plans were formulated for the establishment of a long-term lead and zinc study group. This marked the beginnings of the present International Lead and Zinc Study Group.

In Congress, Western Senators introduced S.1566 in the continuing attempt to implement a program of assistance to the domestic lead and zinc industries.

In May 1959, the third session of the U. N. lead and zinc committee was held in New York. It was concluded that there was a world excess of production over consumption of both metals and as a result voluntary production controls were announced by the larger exporting nations. Foundations were laid for the establishment of a more permanent agency, the International Lead and Zinc Study Group.

There were several bills pertaining to lead and zinc introduced into Congress during 1959 but none were passed.(9)

In July, the U. S. producers of coated and uncoated zinc sheets filed an escape clause petition, but it was dismissed by the Commission.(10) The lead and zinc mining industries planned to file another escape clause petition but were prevented by a ruling of the Tariff Commission Counsel.(11) However, Senate Resolution 162 was passed in August, again directing the Tariff Commission to review conditions in the lead and zinc industry. Consequently two of the six Commissioners recommended increases in duties, while the other four took no position. At the same time a request for an investigation of the necessity of maintaining the import quotas was dismissed.(12)

The International Lead and Zinc Study Group was created and held its first meeting in Geneva in January,

1960. The voluntary production controls agreed to the previous May were abrogated with respect to zinc. Australia, Canada, Mexico, and Peru agreed to limit offerings of lead in hopes of improving market conditions. At the same time the British government announced that it was making available 54,000 tons of slab zinc for orderly disposal.

Several bills were introduced into Congress during 1960, and one, the Small Mines Subsidy bill passed but was vetoed by the President.(13) Most of the remaining measures were designed to increase duties on lead and zinc articles.

The bicycle case was pending in 1960 and its resolution provided an important legal precedent which had direct application to lead and zinc. In the bicycle case import duties had been increased as a result of an escape clause action under Section 7 of the Trade Agreements Extension Act of 1951. The relief had been instituted prior to 1958. The President had, however, imposed only part of the recommended increases in duty. The courts held that the President did not have this perogative; that he could either accept or reject the recommendations ~~of the recommendations~~ of the Tariff Commission, but could not modify them. This brought the legality of the lead and zinc quotas into question. The President's legal advisors, however, held that the 1958 Trade Agreements Extension Act enabled the President to accept, reject, or modify the recommendations of the Tariff Commission. The lead and zinc quotas were held to be legal

since they were imposed subsequent to the passage of the 1958 Trade Agreements Extension Act.

The International Lead and Zinc Study Group held its second session in Geneva in September 1960. No action was taken to restrict offerings of zinc, but the voluntary restrictions on lead as formulated in the previous meeting of the Group were continued.

The Tariff Commission reviewed conditions in the lead and zinc industries and concluded that serious injury continued in the domestic industry due to imports and the President accepted this recommendation.(14)

The year 1961 saw the introduction of several bills into Congress, one of which became law. It provided subsidy payments for small mines, hence is referred to as the Small Mines Stabilization Bill.(15) The third Session of the International Lead and Zinc Study Group convened at Mexico City. No action was taken regarding the surplus zinc stocks as this was considered to be a domestic problem of the United States. Lead stocks, however, were considered to be a world problem. The solution to this problem that was finally accepted was an offer of the United States to barter for surplus world stocks in return for reduced mine and metal output.

## The 1954 Decision of the Tariff Commission

### The Findings of the Tariff Commission

Following the 1953-54 investigation, it was concluded that trade concessions pursuant to G.A.T.T. were causing injury to U. S. producers of unmanufactured lead and zinc. The remedy that was recommended was the maximum possible increase in the tariff under an escape clause action. The recommended increase in duties applied only to unmanufactured lead and zinc articles and was to be applied because of the reduction of the burden of the tariff, depressed conditions in mining and milling, the relatively severe effect of depressed conditions on U. S. relative to foreign producers and lower costs of production abroad. The Commission did not impose quotas though a request for them was included in the original petition.(16)

### Subsequent Presidential Action

The recommendations of the Tariff Commission were rejected by the President on the grounds that the imposition of increased rates of tariff would be inconsistant to the general economic and foreign policy objectives of the United States, and would have only minor effects on the reopening of closed mines. However, since lead and zinc were strategically critical materials, the President took steps "to protect our domestic mobilization base" by instituting a stepped up stockpile purchase program, and later, a stepped up barter program.(17)

## The 1958 Decision of the Tariff Commission (18)

### The Findings of the Commission

The Commission unanimously found that increased imports of unmanufactured lead and zinc arising from trade concessions granted under the General Agreement on Tariffs and Trade were doing serious damage to domestic procedures. (19)

The Commission, however, split evenly on the proposed remedy, three members recommending the maximum increase in tariff plus quota restrictions the other three recommending reimposition of the duties originally provided in the Tariff Act of 1930.(20)

### Considerations Supporting the Findings and Recommendations of Commissioners Brossard, Talbot, and Schreiber

Factors influencing the decision of these Commissioners were: reduced effectiveness of import duties, lower costs abroad, and generally poor economic conditions.(21)

The proposed remedy is justified on the following grounds: (1) a serious problem existed in the domestic industry, and (2) the problem stemmed from increased imports, caused by a growing imbalance between world production and consumption, in turn, partially caused by the actions of the United States itself. Quotas were recommended because the maximum increase in tariff was felt to be inadequate.(22)

The Quota System Recommended by Commissioners Brossard, Talbot and Schreiber (23)

The quota proposal was based on 50 per cent of competitive imports during the five year period 1953-57.(24) The quota system was broken down into four categories (lead ores, zinc ores, lead metal, and zinc metal) and allocations were set up in the same proportions as in the base period. The same procedure was used to allocate total dutiable imports among the principle supplying countries.(25) The quota restrictions were designed to be temporary in order to meet an emergency situation.(26)

Considerations Supporting the Findings and Recommendations of Commissioners Sutton, Jones, and Dowling

These three Commissioners disagreed with the other Commissioners for the following reasons: (1)large increases in duty and imposition of a strict import quota would have been redundant, (2) the recommended remedy of Commissioners Brossard, Talbot, and Schreiber was too strong, and (3) the imposition of quotas were to administratively complex to be useful as a remedy.(27)

Subsequent Presidential Action

On September 22, 1958, the President issued a proclamation imposing a system of import quotas on imports of unmanufactured lead and zinc to be effective on October 1 of that year (Proclamation 3257,23 F.R. 7475). This was done after

Congress had failed to act on the Minerals Stabilization Plan as put forth by the Secretary of the Interior Seaton. The President limited imports of unmanufactured lead and zinc to 80 per cent of the average annual commercial imports during the five year period 1953-57. The quota (still in effect) is subdivided by calendar quarters and by tariff schedule classification.

## Imports of Unmanufactured Lead and Zinc As Modified by Import Quotas

### Basis of Import Quotas Established

Presidential Proclamation No. 3257 on September 22, 1958 established absolute import quotas limiting the quarterly rate of commercial imports of unmanufactured lead and zinc (not including zinc fume) to 80 per cent of the average rate of such imports during the five year period 1953-57. The recommended quotas of three of the members of the Tariff Commission imposed a limit of 50 per cent of the average rate of imports during the five year period 1953-57. The term "commercial imports" denotes dutiable imports for consumption, i.e., entries for immediate consumption plus withdrawals from bonded warehouses. Imports for U. S. Government account and imports under bond for smelting, refining, and export are not classified as commercial imports. The quarterly quota for commercial imports for consumption of unmanufactured lead is 88,680 tons (80 per cent of the quarterly commercial imports for consumption of unmanufactured

TABLE 20.--Lead and Zinc: U. S. Import Quotas Established Beginning October 1, 1958, by Countries[1]
(in short tons)

| Item and country | Lead | | Zinc | |
|---|---|---|---|---|
| | Quarterly quota | Annual equivalent | Quarterly quota | Annual equivalent |
| Ores (lead or zinc content): [2] | | | | |
| Peru | 8,080 | 32,320 | 17,560 | 70,240 |
| Union of South Africa | 7,440 | 29,760 | [3] | [3] |
| Canada | 6,720 | 26,880 | 33,240 | 132,960 |
| Australia | 5,040 | 20,160 | [3] | [3] |
| Bolivia | 2,520 | 10,080 | [3] | [3] |
| Mexico | [3] | [3] | 35,240 | 140,960 |
| All other | 3,280 | 13,120 | 8,920 | 35,680 |
| Total | 33,080 | 132,320 | 94,960 | 379,840 |
| Metal: [4] | | | | |
| Mexico | 18,440 | 73,760 | 3,160 | 12,640 |
| Australia | 11,840 | 47,360 | [3] | [3] |
| Canada | 7,960 | 31,840 | 18,920 | 75,680 |
| Yugoslavia | 7,880 | 31,520 | [3] | [3] |
| Peru | 6,440 | 25,760 | 1,880 | 7,520 |
| Belgium and Luxembourg | [3] | [3] | 3,760 | 15,040 |
| Belgian Congo | [3] | [3] | 2,720 | 10,880 |
| Italy | [3] | [3] | 1,800 | 7,200 |
| All other | 3,040 | 12,160 | 3,040 | 12,160 |
| Total | 55,600 | 222,400 | 35,280 | 141,120 |
| Total ores and metal | 88,680 | 354,720 | 130,240 | 520,960 |

[1] The import quotas apply to dutiable imports for immediate consumption and to withdrawals from bonded warehouses (not to entries into bonded warehouses). Articles produced in any country not named in the list of countries shown in the above table, for each of the 4 categories shown, are subject to the quota for "All other" foreign countries. The proclamation specifically exempts the following from the quota restrictions imposed therein:

(a) Any article imported by or for the account of the U.S. Government; or any imported article which is under contract for delivery in the United States for the account of a corporation wholly owned by the U.S. Government.

(b) Any lead or zinc metal article described in footnote 4 below exported to the United States before Sept. 22, 1958.

(c) Lead-bearing ores, flue dust, and mattes of all kinds, and zinc-bearing ores of all kinds (except pyrites containing not over 3 percent of zinc) exported to the United States before Sept. 22, 1958. This exemption does not apply to withdrawals for consumption of "metal producible" from bonded smelters under sec. 312, Tariff Act of 1930.

(d) Any lead-bearing ore, flue dust, or matte (dutiable under par. 391) which contains less than 2 percent of lead.

(e) Any zinc-bearing ore (dutiable under par. 393) which contains less than 1 percent of zinc.

[2] Lead-bearing ores, flue dust, and mattes entered under par. 391, and zinc-bearing ores entered under par. 393 of the Tariff Act of 1930. The latter excludes zinc fume.

[3] Included in "All other."

[4] For lead, the lead content of lead or base bullion, lead pigs and bars, lead scrap and dross, antimonial lead, type metal, and all alloys or combinations of lead, not specially provided for, entered under par. 392 of the Tariff Act of 1930. For zinc, the gross weight of zinc blocks, pigs, or slabs and zinc scrap, dross, and skimmings entered under par. 394 of the Tariff Act of 1930.

Source: Presidential Proclamation No. 3257, dated Sept. 22, 1958.

lead in all forms of 110,846 pounds during the base period). The quarterly import quota for commercial imports for consumption of unmanufactured zinc was fixed at 130,240 tons (80 per cent of the quarterly commercial imports for consumption of unmanufactured zinc in all forms in the base period).

The total quotas for unmanufactured lead and zinc were subdivided to establish separate sub-quotas for imports in the form of ores and for imports in unmanufactured metallic forms. The subquota for lead metal includes the lead content of lead bullion, lead dross, type metal, antimonial lead, and miscellaneous lead alloys (not including babbitt metal and solder) in addition to refined lead pigs and bars of all grades (which are by far the largest item in the group). The quota established for zinc metal includes zinc scrap, dross, and skimmings in addition to the most important item--zinc blocks, pigs and slabs of all grades. The dutiable imports were categorized in the same proportions as they had been classified in the base period 1953-57. As a consequence, 37 per cent of the total lead quota was allocated to lead in ores, about 63 per cent to lead in metallic forms, about 73 per cent to zinc in ores, and 27 per cent to zinc in metallic forms.

The import quota for lead ores and that for lead in metallic form was allocated among supplying countries in proportion to the quantities of dutiable imports of unmanufactured lead in these forms imported from the principal

supplying countries in the base period. The country quotas for zinc were determined in the same manner. Specific quotas were established for individual countries that in the aggregate accounted for at least 90 per cent of the total dutiable imports in each of the categories in the base period. The countries of origin for the remaining imports in the base period were classified under "all other countries."

A number of exemptions from the quota restrictions were provided. One of the more important exemptions was one applying to lead and zinc exported to the United States before September 22, 1958; this exemption was applicable to all imports for consumption except withdrawals from bonded smelters, for consumption of "metal producible" from imported ores and concentrates (under Sec. 312 of the Tariff Act of 1930).

Imports of Lead Under the Quotas

The following table shows the lead import quotas of individual countries, on an annual basis, and the actual entries under the quotas in each of the years 1959-61 as tabulated by the U. S. Department of the Treasury (in short tons of lead content).

Under the category of ores, the country allotments have been filled with the exception of "all other countries." This allotment went unfilled in 1959 and to lesser extent in 1960 because of the shut down of a Guatamalan mine, a supplier during the base period and no alternative source

TABLE 21.--Lead Imports Under the Quota

| Item and Country | Annual Equivalent of Goals | Actual Imports Under the Import Quota in | | |
|---|---|---|---|---|
| | | 1959 | 1960 | 1961 |
| Ores (lead content) | | | | |
| Peru | 32,320 | 32,320 | 32,320 | 32,320 |
| Union of South Africa | 29,760 | 29,760 | 29.760 | 29,760 |
| Canada | 26,880 | 26,880 | 26,880 | 26,880 |
| Australia | 20,160 | 20,160 | 20,160 | 20,160 |
| Bolivia | 10,080 | 10,080 | 10,080 | 10,080 |
| All Other | 13,120 | 5,522 | 12,624 | 13,120 |
| TOTAL | 132,320 | 124,722 | 131,824 | 132,320 |
| Metal (lead content) | | | | |
| Mexico | 73,760 | 73,760 | 73,754 | 73,760 |
| Australia | 47,360 | 47,360 | 47,360 | 47,360 |
| Canada | 31,840 | 31,840 | 31,840 | 31,840 |
| Yugoslavia | 31,520 | 31,520 | 31,520 | 31,487 |
| Peru | 25,760 | 25,756 | 25,758 | 25,755 |
| All Other | 12,160 | 12,160 | 12,160 | 12,160 |
| TOTAL | 222,400 | 222,360 | 222,392 | 222,362 |

Source: U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation 332-261 (Supplement 2) TC, Washington Publication 58, May, 1962.

of lead ores was available for shipment to the United States. Due to the fact that Guatamalan shipments were resumed, the allotment for "all other countries" was nearly filled in 1960 and completely filled in 1961.

Imports of Zinc Under the Quotas

The following table compares the zinc import quotas, on an annual basis, with actual entries under the quotas in each of the years 1959-61 (in short tons, zinc content of ores, gross weight of metals).

Substantial parts of the zinc quotas have gone unfilled. In the years 1959 and 1960, zinc ore quotas were filled, but in 1961 ore imports were 25,586 tons less than the quota limit. This decrease in imports was primarily due to the decrease in Canadian imports which were 22,787 tons under the quota limit in that year. The allotment for "all other countries" was filled in each of the three years, and that deficits from Peru and Mexico account for the balance of the 1961 difference between actual imports and quota restrictions.

It is evident that imports of zinc metal have been less than the quota limits in each of the three years. Entries were 6,846 tons under the quota limits. The corresponding figures for 1960 and 1961 were 19,358 tons and 15,564 tons. The major part of the under quota imports in 1959 was a result of imports from Belgium and Luxembourg being 3,615 tons and imports from Mexico being 3,228 tons below the quota limits. In 1960, the following countries were short by the indicated

TABLE 22.--Zinc Imports Under the Quota

| Item and Country | Annual Equivalent of Goals | Actual Imports Under the Import Quota in | | |
|---|---|---|---|---|
| | | 1959 | 1960 | 1961 |
| Ores (zinc content) | | | | |
| Mexico | 140,960 | 140,960 | 140,960 | 140,866 |
| Canada | 132,960 | 132,960 | 132,960 | 110,173 |
| Peru | 70,240 | 70,240 | 70,240 | 67,535 |
| All Other | 35,680 | 35,680 | 35,680 | 35,680 |
| TOTAL | 379,840 | 379,840 | 379,840 | 354,254 |
| Metal (gross weight) | | | | |
| Canada | 75,680 | 75,680 | 75,680 | 73,157 |
| Belgium & Luxembourg | 15,040 | 11,425 | 5,696 | 12,465 |
| Mexico | 12,640 | 9,412 | 8,601 | 8,498 |
| Belgian Congo | 10,880 | 10,880 | 9,618 | 10,876 |
| Peru | 7,520 | 7,517 | 7,518 | 7,517 |
| Italy | 7,200 | 7,200 | 3,614 | 883 |
| All Other | 12,160 | 12,160 | 11,035 | 12,160 |
| TOTAL | 141,120 | 134,274 | 121,762 | 125,556 |

Source: U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation 332-26 (Supplemental 2) TC Publication 58, Washington, May, 1962.

amounts: Belgium and Luxembourg, 9,344 tons and "all other" countries, 1,125 tons. In 1961, it is evident from the table that only Peru, the Belgian Congo, and "all other countries" approximately filled their allotted quotas.

The construction of new lead and zinc smelters throughout the world, may reduce the availability of foreign ores and concentrates to the United States. Consequently, U. S. import quotas for ores from some countries may not be filled as it is likely that the new smelters will utilize ores from existing mines to a substantial degree. It is clear that, if the ore quotas remain unfilled, the only way by which the United States could obtain the same amount of lead and zinc as now permitted under the quotas would be by adjusting the quotas to permit larger imports in the form of metals rather than ores.

## Imports of Manufactured Lead and Zinc Articles

The quota restrictions on lead and zinc that were put into effect on October 1, 1958 were limited to imports of unmanufactured lead and zinc. Additional (compensatory) import restrictions were not applied to manufactured lead and zinc articles. Some of these (such as lead and zinc compounds, mill products, or alloys) are composed entirely of lead and zinc, or their content of either of these metals is very high. Furthermore, the value per pound of some of these articles is only moderately higher than the value of their content of

lead or zinc. To the extent that the import quotas on unmanufactured lead and zinc result in increased imports of lead and zinc in manufactured articles not similarly restricted, the quotas nullify the results they were intended to achieve, for they reduce domestic production of these articles and the consumption of domestic lead and zinc in their manufacture. The quota restriction introduces a price spread between domestic and foreign prices of unmanufactured lead and zinc. Because foreign producers of manufactured articles are able to purchase raw materials at relatively low prices, they enjoy a competitive advantage.

Margin Between U. S. and London Prices

During the years 1959 through 1961, the monthly average spread between the New York and London prices has exceeded, on occasion, by a substantial amount, the U. S. import duty plus the cost of insuring and transporting lead from London to New York City. In recent months such costs have been equal to about 2.1 cents a pound for lead. Figure 4 shows the relationship between the New York and London prices.

Although the spread between the London Metal Exchange price and the New York common lead price varies in cyclical fashion, there are substantial periods of time when the price differential is significantly greater than the transfer costs. The New York price is much more stable over long periods of time than the London price, which experiences wide fluctuations.

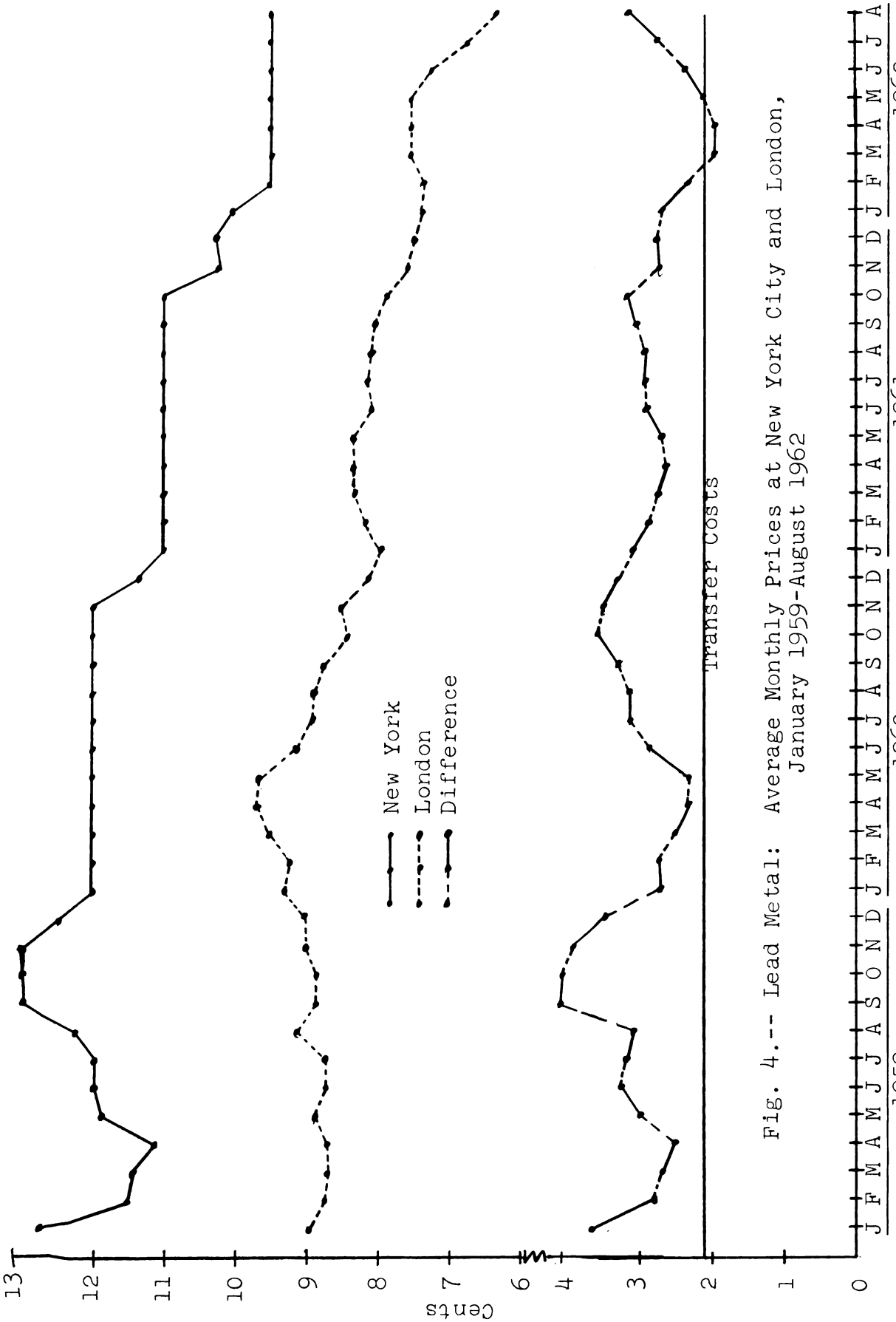



Fig. 4.-- Lead Metal: Average Monthly Prices at New York City and London, January 1959-August 1962

During the greater part of the period 1959-61 the average monthly price differential for zinc was greater than the U. S. import duty plus transportation costs and insurance. The differential was smaller only during the last half of 1959, January 1960, and February-May 1961. On the other hand, in August 1962, the differential was more than double transportation costs. In recent years, the U. S. import duty plus the shipping costs have been 1.8 cents per pound of zinc (see Figure 5).

## Summary

A continual clamor had been maintained before the Tariff Commission and Congress ~~by~~ responded to the lead and zinc industries for assistance programs and import restrictions. In the years 1950 to 1958, no less than four petitions for relief were filed with the Tariff Commission. In addition there have been numerous bills introduced into Congress to provide relief. The greatest majority of these programs were specifically designed to assist the mining segment of these industries. The escape clause investigations provide a partial origin for the development of other programs beside those concerning tariff and quota restrictions.

For instance the expanded stockpile purchase and barter programs, in part, at least, were initiated as an alternative to increased tariff protection for the lead and zinc industries. The origins of these programs thusly stem in part from the escape clause investigations and were undertaken

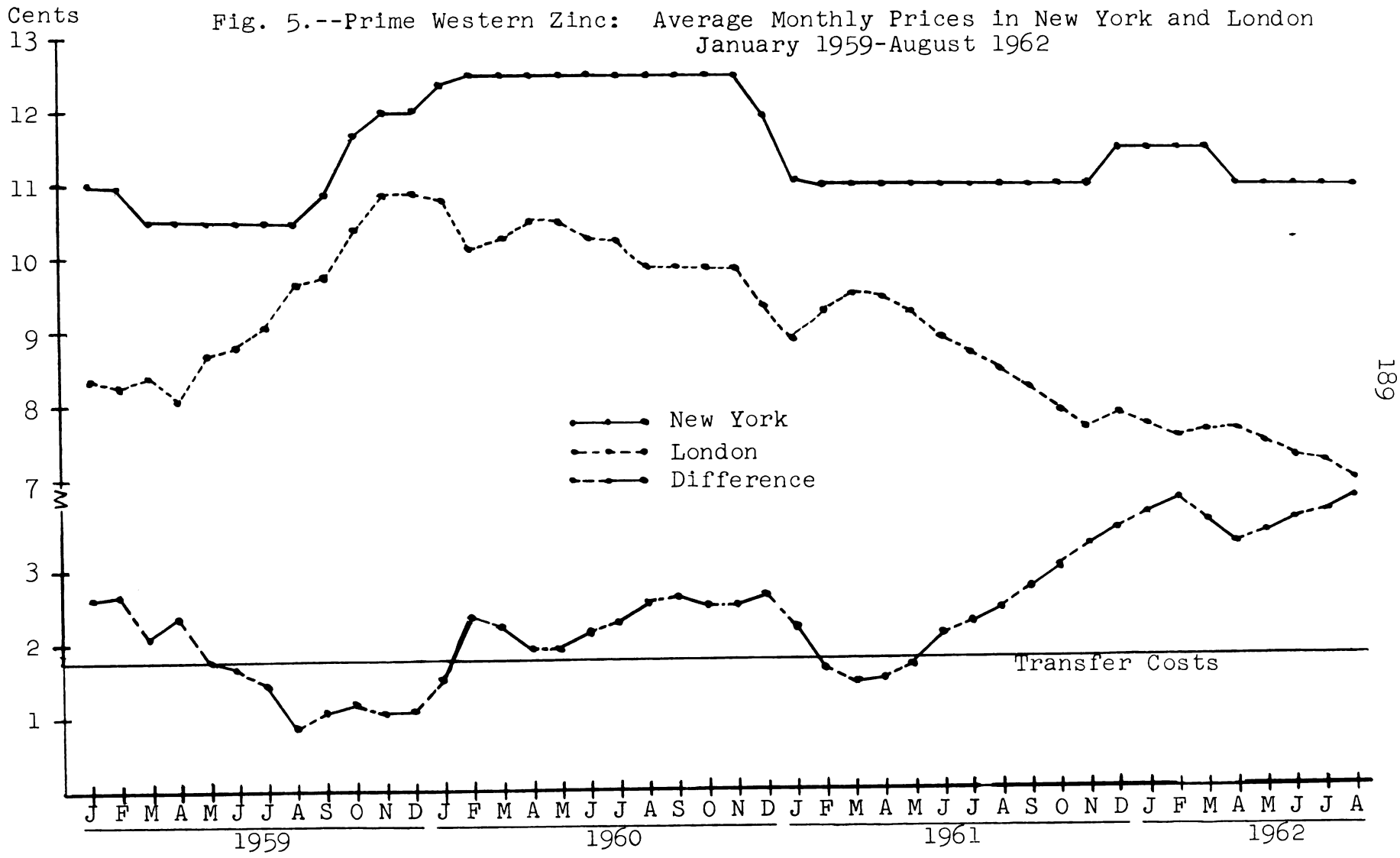



Fig. 5.--Prime Western Zinc: Average Monthly Prices in New York and London January 1959-August 1962

so as to avoid complications in U. S. foreign trade policy, and yet provide some measure of relief to domestic mine producers.

The executive branch of government was active on other fronts as well, participating in the International Lead and Zinc Study Group in an attempt to limit production and raise prices on a world wide basis.

When Congress failed to enact the "Minerals Stabilization Plan" proposed by Secretary of Interior Seaton, import quotas pursuant to a decision of the Tariff Commission were imposed on October 1, 1958. Quotas were established on the basis of 80 per cent of imports during the base period 1953-1957.

## CHAPTER VII: FOOTNOTES

1. The petition was filed in accordance with Article XI of the 1943 Trade Agreement with Mexico and with the 1947 Executive Order 9832 which first established the escape clause procedures before the Tariff Commission. The Commission announced on July 18, 1950 that the petition would not be acted upon because the expiration of the 1943 Trade Agreement would cause the tariffs on lead and zinc to revert back to their original levels under the Tariff Act of 1930. On July 25, 1951, the petition was formally dismissed by the Commission (after the duties had been restored).

2. This petition was filed under provisions of Section 336 of the Tariff Act of 1930 and asked for an investigation of the differences in the cost of production of lead in the United States and abroad. The petition was dismissed by the Tariff Commission on May 29, 1951 on the grounds that duties established pursuant to trade agreements could not be modified by action under the provisions of Section 336.

3. This petition was filed under the escape clause, Section 7, of the Trade Agreements Extension Act of 1951, and the decision was announced on May 21, 1954. Simultaneously the Commission conducted an investigation under Section 332 of the Tariff Act of 1930, pursuant to a joint resolution of the House Ways and Means Committee (July 29, 1953) and the Senate Finance Committee (July 27, 1953). The resulting report was released on October 19, 1954.

4. The President's position was stated in a letter to the Chairman of the House Ways and Means Committee and the Senate Committee on Finance. One of the reasons given by the President was that the maximum possible increase in duty would be insufficient to reopen closed mines and would have only a minor effect on U. S. prices. The President also stated that he was asking the Secretary of State to seek recognition by the foreign countries, who were the principal exporters to the United States, that they would not seek to take unfair advantage of these programs.

5. The Department of Agriculture on May 27, 1957, issued a series of regulations which had the effect of stopping all barter in lead and zinc. On August 1, 1957, Mr. Gordon Gray, Director of the Office of Defense Mobilization, announced that the lead and zinc stockpile objectives had been fulfilled and that purchases would soon end. He repeated this statement in February, 1958 in testimony before the House Appropriations Sub Committee. The Office of the Commissioner of Defense Moblization announced that April 1958 was the last month it would purchase zinc, and June 1958 would end lead purchases.

   Mr. Gordon Gray stated on August 1, 1957 in testimony before the House Committee on Ways and Means that the lead and zinc industries were not eligible to seek relief under the national security amendment escape clause, Section 7(b) of the Trade Agreements Extension Act of 1955, on the grounds that the government had acquired very large stocks of both metals in the two alternative programs instituted by the President when he declined to follow the Tariff Commission recommendations.

6. This bill was proposed by Secretary of the Interior Seaton on June 19, 1957, and was designed to provide relief for the lead and zinc industries after purchases from the stockpile were terminated and procurement under the barter program was greatly reduced. In this regard, the House Ways and Means Committee held hearings on August 1 and 2, 1957 on H.R. 8257 (and similar bills). The Senate Committee on Finance held hearings on a companion bill, S. 2376 on July 22-24, 1957.

7. This plan proposed stabilization payments on domestic production up to 350,000 tons of lead and 550,000 tons of zinc when the market price was below 15-1/2 cents per pound for lead and 13-1/2 cents a pound for zinc. An additional limited tonnage payment was to be made when the market prices of lead and zinc were below 17 cents and 14-1/2 cents a pound respectively. The plan passed the Senate but was defeated in the House in August 1958.

8. Presidential Proclamation No. 3257, issued September 22, 1958, established absolute quota restrictions on imports for consumption of unmanufactured lead and zinc.

9. Senator Murray, Montana, introduced S.2169 which called for a 4 cent import tax with peril points of 15-1/2 cents for lead and 13-1/2 cents for zinc. Representative Aspinall, Colorado, introduced H.R. 7721, a flexible quota bill. In addition, Representative Aspinall introduced House Resolution 177 in May. This resolution in

effect, stated that the national interest required the maintenance and development of, the orderly discovery of, and research to promote the wise and efficient use of domestic metal and mineral reserves.

10. The petition was filed under Section 7 of the Trade Agreements Extension Act of 1951. On January 14, 1960, the Tariff Commission issued a statement which held that injury from imports did not exist, and, therefore, no recommendation for an increase in duties could be made.

11. The industries planned to file their petition after one year under the quota program but were prevented from doing so because the Tariff Commission counsel ruled that an industry operating under a Section 7 escape clause proclamation was precluded from again filing for relief under this section.

12. Hearings on Senate Resolution 162 were held on January 12, 1960. Simultaneously fluorspar hearings were being held under Senate Resolution 163 with the reports being issued on February 29, 1960. Three of the four Commissioners involved in the fluorspar investigation refused to make any specific findings on the grounds that the Commission lacked authority to submit recommendations or findings. In the lead and zinc report, Commissioners Talbot, Overton, Jones and Dowling maintained this position. Commissioners Schreiber and Sutton recommended increases in tariffs to 3 cents on lead and 2.5 cents on zinc metal and 7/10 of these rates on ores and concentrates. In addition, compensatory duties were recommended for manufactured items.

    On August 28, 1959, six importing smelters filed a representation with the Department of Commerce, and on November 24, 1959, they filed with the Tariff Commission. The smelters requested a formal investigation under Executive Order 10401 to determine the extent to which the quotas effective October 1, 1958 remained necessary. This petition was dismissed by the Tariff Commission as untimely because of their current investigation being conducted under Senate Resolution 162.

13. Hearings were held on the Small Mines Subsidy bill in March 1960. This bill was subsequently passed by both houses of Congress but was subjected to Presidential pocket veto on the grounds that it was difficult to administer, would establish an uneconomic precedent, increased production would adversely affect the market, and that relief under the quota was still effective.

Congressman Baker, Tennessee, introduced H.R. 11584 proposing that tariffs be increased in accordance with the recommendations of the minority in the Tariff Commission Report. S. 3968 was introduced by Senator Kerr, Oklahoma. This was essentially the same as the Baker bill except that it included a one cent removable tax in the 3 cent and 2.5 cent tariffs on lead and zinc. Senator Bennett, Idaho, introduced S. 3696, which provided a 4 cent removable tax. None of these bills, however, were passed.

14. United States Tariff Commission, Lead and Zinc, Report to the President (1960), Under Executive Order 10401, Washington, October, 1960.

15. Congressman Edmonson, Oklahoma, reintroduced the Small Mines Subsidy bill, H.R. 84 in the 1961 session of Congress. The bill became law in October 1961. Congressman Baker reintroduced his bill as H.R. 5193 and the same bill was introduced by Senator Kerr as S. 1361. These bills provided for a permanent tariff on lead metal of 2 cents, 1.8 cents on zinc metal, 20 per cent of these rates on concentrates, and, in addition, a one cent removable tax on each metal controlled by peril points of 13-1/2 cents and 14-1/2 cents on lead and 12-1/2 cents and 13-1/2 cents on zinc. This bill provided compensatory rates on manufactured goods of one cent base tariff on lead products, 0.8 cent base tariff on zinc products, and a one cent removable tariff on each controlled by the above peril points.

16. For a more complete discussion of this subject see United States Tariff Commission, Lead and Zinc, Report to the President on Escape-Clause Investigation No. 27 Under the Provisions of Section 7 of the Trade Agreements Extension Act of 1951, Washington, May 1954, p. 8 et seq.

17. The President provided an explanation for his decision in duplicate letters to the chairmen of the Senate Finance Committee and the House Ways and Means Committee, dated August 20, 1954. This subjected will be discussed further in the chapter on stockpiling.

18. The 1958 action of the Tariff Commission was initiated by an application of the Emergency Lead-Zinc Committee made on September 27, 1957. The Commission instituted investigation No. 65 on October 4, 1957 on imports of unmanufactured lead and zinc.

19. See U. S. Tariff Commission, Lead and Zinc, Report to the President on Escape Clause Investigation No. 65, Washington, April, 1958.

20. Ibid.

21. Ibid.

22. Ibid.

23. Three main problems had to be met in determining the quota system: (1) the selection of representative base period, (2) the determination of how restrictive the quotas would be, and (3) the equitable allocation of the quotas among the various supplying countries.

24. The five year period 1953-57 was chosen as the base because it was felt to be more representative of a recent normal period than any longer or shorter period of time would have been. A longer period would have included 1952, during part of which duties were suspended. In the years from 1953 to 1955, the dutiable imports can be regarded as competitive and the duty-free imports as non-competitive. The same interpretation is valid for 1956 and 1957, after due allowance is made for the dutiable imports acquired under the barter program. No quotas were recommended for non-competitive imports.

25. Specific quotas were recommended for individual countries that in aggregate accounted for at least 90 per cent of the total dutiable imports in each of the four categories of the base period. Quotas were not separately assigned to the many countries that supplied the small balances in the various import categories.

    Limits on the quantity of imports to be entered into the country in any calendar quarter were fixed at one-fourth of the annual quota in order to prevent disproportionately large shares of the various lead and zinc articles from being imported in any part of the year.

26. It was the intention of the Commissioners that the quota restrictions were to be removed when the commercial demands for lead and zinc (1) brought about substantial reduction of the excessive inventories of refined lead and zinc at smelters and refineries, and (2) made up for the announced cessation of the then prospective purchases of lead and zinc (from newly mined domestic ores) for the national stockpile.

27. See footnote 19 above.

# CHAPTER VIII

# DISPOSAL OF LEAD AND ZINC FROM STOCKPILE

## Introduction

The purpose of discussing the procedures of disposing of lead and zinc before discussing the stockpile purchase and the barter programs is to provide a general insight into the nature and impact of the latter programs. This is to say that the possibility (or impossibility) of disposal from stockpile and the procedures involved provide a necessary general background for the understanding of the lead and zinc stockpile purchase program.

Unfortunately disposal and disposal procedure is not a simple subject. The complexity begins to show itself when it is realized that there are (for our purposes) three different stockpile programs: (1) the National Stockpile, (2) the Supplemental Stockpile, and (3) the Defense Production Act Inventory. Disposal procedures are different under each of the stockpile programs.(1) Another complexity is introduced by changes that have been made in the procedures over time.(2)

From the point of view of policy, the question of disposal from stockpile does not arise prior to June 30, 1958, for the simple reason that government policy was oriented towards purchase prior to that date.(3) Since that time,

however, disposal of stockpile materials has become a problem of concern to policymakers and the desirability of and the procedures relating to the disposal of stockpile materials has become a matter of some controversy.(4)

## Disposal Procedures

### General Considerations

Disposal procedures are set out under the provisions of the Defense Production Act and the National Stockpile Act. These procedures and the acceptable reasons for disposal under them are so closely drawn and interpreted as to be very restrictive. Generally speaking, acceptable conditions for disposal of stockpile materials are (1) under conditions of national emergency as proclaimed by the President, (2) through Congressional enactment, and (3) under conditions of obsolescence.

Some materials were disposed of under Presidential Proclamation during the Korean crisis. The amounts of lead and zinc disposed of in this way were limited. (See the discussion in Chapters III and IV under "Supply and Demand Before 1951.")

It can generally be said that the only way that stockpile materials can be sold is by Congressional enactment (due to the reluctance of the President to use his emergency powers in normal circumstances).

There is one further procedure than can be employed. This entails that a commodity be determined obsolete by the

Office of Emergency Planning (under Section 2(a) of the National Stockpile Act). Once this has been done, the passage of a joint resolution of the Senate and the House of Representatives is required for disposal. The term obsolete includes deteriorated items, items which have been superceded by substitutes which are superior in quality, or if the item has "no further usefulness in time of war." The Office of Emergency Planning has taken the position that no material can be disposed of under the latter on the grounds that everything in the stockpile could be used in some way in time of war.

In the past these conditions have been so interpreted that together with the concomitant procedural difficulties, disposal of materials has effectively been prevented. The procedures are different with respect to different stockpiles with which we shall be concerned, i.e., the National Stockpile, the Supplemental Stockpile, and the Defense Production Act Inventory. Formal procedures for disposal from each of the stockpiles will be discussed below.

National Stockpile

Under the National Stockpile Act disposal of materials and the quantities thereof are determined by the Office of Emergency Planning. Since the April 1962 revision of Defense Materials Order V-7, the Defense Materials Service of the General Services Administration can also originate disposal plans.

After the disposal has been authorized by the Office of Emergency Planning, the Administrator of the General Services Administration is requested to draw up a disposal plan for the specific material. Once this plan has been drawn up, G.S.A. is required to consult with the Departments of State, Commerce, Interior, Defense, and Agriculture, the latter in cases involving agricultural commodities. The consultation feature of disposal procedure has had a rather involved history, which, perhaps ought to be briefly recounted here.

On December 10, 1959, Defense Mobilization Order V-7 was modified so that any disposal from the National Stockpile required the approval of the Departments of Interior, Commerce, State, Agriculture, and Defense. In effect a veto was given to each of these Departments on any proposed disposal plan. On April 25, 1962, Defense Mobilization Order V-7 was again modified. The effect of this latter change was to remove the veto power from the Departments. The amended section now provides that the Director of the Office of Emergency Planning shall give notice to the appropriate departments and agencies of any proposed disposal plan and invite their views. If within 30 days a department or agency interposes an objection to the proposed disposal plan, and agreement can not be reached between the Office of Emergency Planning and the agency in question, the Director shall present the issue to the President for decision.

After getting the approval of the Departments (or the President), notice is published in the Federal Registar of the proposed sale. This notice must be published at least six months prior to the final disposition of the material. After the notice has been published, the disposal proposal is forwarded to Congress for final approval. Passage of a joint resolution of the Senate and House of Representatives is required for final approval of the disposal plan.

In addition to the obstacles to disposal of stockpile materials already mentioned, there was established, at Meeting No. 130 of the Defense Mobilization Board, on January 17, 1957, a policy to the effect that no material on the strategic and critical list could be sold from the Stockpile even though there might be a substantial surplus of the material over and above stockpile requirements. Disposals of castor oil, coconut oil, and other items were prevented by this policy. The import of the policy was to make more difficult the sale of surplus stockpile materials, which, in effect, had to be reclassified as non-strategic and non-critical before disposal procedures could be instituted. This policy was effective until ended by the revision of Defense Mobilization Order V-7, effective June 30, 1958.

Supplemental Stockpile

As of June 18, 1962, there had been no authorizations by the Office of Emergency Planning or its predecessor agencies to dispose of excess materials from the Supplemental

Stockpile. Consequently, no disposals whatever have been made. The reason for this is that the Agricultural Trade Development Assistance Act (more popularly known as P. L. 480) provides that materials in the Supplemental Stockpile can be released only under conditions specified in Section 3 of the Stockpile Act (which means that only non-strategic and non-critical materials can be released from the stockpile except by Congressional authorization, or by the President in times of emergency, etc.). The counsel for the Office of Emergency Planning has taken the position that no disposals can be made from the Supplemental Stockpile because Section 3 of the Stockpile Act provides that dispositions can only be made where there has been a revised determination as to the necessity of keeping the material. Since the Office of Emergency Planning had nothing to do with the acquisition of materials in the Supplemental Stockpile, they did not make the original determination, and therefore cannot make a redetermination. It should be noted in passing that the Agricultural Trade Development Assistance Act is the statute under which the greatest share of barter transactions have been undertaken. Materials received in barter transactions are added to the Supplemental Stockpile.

The Supplemental Stockpile is, in effect, "buttoned down," i.e., no materials can be released from it even if needed by industry to stimulate the economy, or, for that matter in a wartime emergency. Even if the materials are

sub-specification, i. e., of lower quality than that required by the stockpile, or are deteriorating, under present conditions and interpretations, no disposal is possible.

Defense Production Act Inventory

Disposal procedures from the Defense Production Act Inventory do not require Congressional approval for disposal. Initially the same procedures are followed as in the case of the National Stockpile. The authorized amounts of the material to be disposed of are communicated to the General Services Administration, which prepares a final disposal plan. The Office of Emergency Planning, under the provisions of Defense Mobilization Order V-7, is required to consult with the various departments just as in the case of the National Stockpile (see pages 199 and 200). Subsequent to this, however, no further action is necessary except the issuance of public notice of the impending disposal (which may be done by the issuance of a press release, instead of a published notice in the Federal Register).

Section 303(a) of the Defense Production Act of 1950, as amended, provided that metals and minerals may not be sold at less than the "current domestic market price." In the case of many commodities, lead and zinc among them, producers offer materials for delivery in foreign markets at prices lower than they offer the same materials for delivery in this country. Because of the limitation on the price at which sales can be made, the government is precluded from making

sales of surplus materials (i.e. lead and zinc) for delivery in foreign markets because they cannot meet the prevailing prices for delivery in such markets. Another problem that is involved here is the problem of determining what constitutes market price. If the General Services Administration decides to sell a material, but between the time the decision is made and the commodity is ready for sale, prices change, there is a question of what constitutes market price. If it is determined that the original price is the "market price," in cases where prices fall it would be impossible to sell the materials.

Section 303(b) of the Defense Production Act limits the sale of materials in the Inventory to the period ending June 30, 1965, thus necessitating the disposal of a large amount of materials in a very short time (if disposal is to be effected at all).

There is at present adequate authority under the Defense Production Act to use surpluses to pay the cost of upgrading quantities of materials held under that Act or under the National Stockpile Act. In this very limited sense some disposal may be effected.

## Disposal Policy

Despite different regulations, it is evident that disposal of materials from any of the stockpiles is rendered virtually impossible from a purely procedural standpoint. As if this were not enough, past attempts to dispose of

materials have been further hampered by the policies of the various departments and agencies involved.

Perhaps two examples could be cited to illustrate this point. First, we shall discuss a case involving a small lot of substandard aluminum. At the time of the disposal sale there was a total of 1,929,000 tons of aluminum in the Stockpile. The maximum objective was 1,200,000 tons, which meant a surplus of 729,000 tons. The Defense Materials Service of the General Services Administration requested permission to dispose of two small lots of non-specification aluminum on February 27, 1958. One lot was 4,938 short tons to be sold from the Defense Production Act Inventory, and the other, 1,644 short tons from the National Stockpile. On March 27, 1958, the Office of Defense Mobilization refused to agree to disposal on the grounds that "disposal was not urgent in view of the current unfavorable market and possible adverse effects of the proposed disposal." This position was taken in spite of the fact that the total amounts under consideration totaled only 6,082 short tons (in contrast with the total annual production of aluminum of approximately 2 million tons).

Following this episode, on September 2, 1960, a second request was made to dispose of surplus aluminum, this time in the amount of 5,380.85 short tons of secondary aluminum remelt scrap and 2,171.58 short tons of aluminum alloys from the National Stockpile (all subspecification). On

October 13, 1960, the Office of Defense Mobilization (predecessor agency to the Office of Emergency Planning) replied that they would study the matter further and would notify the Defense Materials Service when they would reach a decision. On April 16, 1961, the Office of Emergency Planning was again asked about the proposed disposal. As of the day of the Hearings before the National Stockpile and Petroleum Resources Subcommittee (June 18, 1962), no reply was forthcoming. Consequently these two lots of aluminum were not disposed of at all, even though they were subspecification and consisted of two very small lots.

Tungsten disposal provides another example. On March 16, 1962, the Defense Materials Service of the General Services Administration proposed to dispose of 5 million pounds of surplus tungsten from the Defense Production Act Inventory by selling it to General Electric, Westinghouse, and Sylvania in conjunction with lamp contracts that these companies had with the National Buying Division of the General Services Administration. On March 21, 1962, it was learned that Sylvania was at that moment willing to purchase 5,000 tons of tungsten provided that they could obtain the metal immediately.

On March 22, 1962, the Director of the Office of Minerals Mobilization, Department of Interior, in a letter to the Defense Materials Service of the General Services Administration, in effect, vetoed the disposal plan. Mr.

William E. S. Flory, the Director, wrote: "After review of the tungsten market and the possible effects of curtailment of demand by the substitution of government material for current producer output, this Department concludes that it can not approve the proposed disposal."(5)

As a result Sylvania went abroad to purchase the necessary tungsten, in spite of the fact that the government already owned enough tungsten to fulfill their own contract.

At this point, the Defense Materials Service made further inquiry into why the proposed tungsten disposal was disapproved and were told that no world shortage of tungsten existed at the time of the proposed disposal. It is evident from this case that no reason need be given for the disapproval of a disposal plan by one of the departments or agencies.

In this instance, the amount of surplus seemed to make no difference. At the time of the proposed tungsten disposal, there was 161,464,000 pounds of tungsten in the stockpile. The maximum objective was 50,000,000 pounds, so that there was an excess of 111,464,000 tons.

## Conclusion

Once materials have been put into the stockpile, they stay there permanently. This conclusion should be kept in mind as one reads the following chapters on the lead and zinc stockpile purchase and barter programs. It is claimed

in those discussions that these programs were instituted as price support programs for the lead and zinc industry. If it can be established that these programs were based on this motivation, then clearly a greater transfer of income results when the government impounds the purchased quantities. This is to say that prevention of the disposal of purchased lead and zinc gives this type of program a greater impact than otherwise.

## CHAPTER VIII: FOOTNOTES

1. In the case of the Supplemental Stockpile and the National Stockpile, disposal procedures were first set forth in Defense Mobilization Orcer V-7 which became effective on June 30, 1958. In the case of the Defense Production Act Inventory disposal procedures were initially established in Defense Mobilization Order V-3 effective March 18, 1954. The Defense Mobilization Orders were administrative Orders issued by the Office of Emergency Planning (or predecessor agencies, i.e. the Office of Defense Mobilization, etc.).

2. The Defense Mobilization Orders V-3 and V-7 were consolidated into Defense Mobilization Order V-7 on December 10, 1959. It was at this time that the Departmental veto (discussed later in this chapter) was introduced. On April 25, 1962, Defense Mobilization Orcer V-7 was again revised; the Departmental veto being somewhat modified.

3. This change in orientation from purchase to sale will be developed further in the discussion of stockpile objectives in Chapter VIII. See changes in the objectives of June 30, 1958.

4. The Defense Materials Service of the General Services Administration was assigned to draw up the actual disposal plans on materials having the disposal authorization of the Office of Emergency Planning. Under the present circumstances the disposal plan can originate either with the Office of Emergency Planning or with the Defense Materials Service. Prior to the establishment of the Defense Materials Service (in 1958), the idea of disposing of a material could originate only in the Office of Emergency Planning (or its predecessor or agencies).

5. See the letter to Mr. John Croston reproduced on page 1039 of Inquiry into the Strategic and Critical Materials Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Sub-Committee of the Committee on Armed Services, United States Senate, 87th Congress, 2nd Session, Part 4, June 18, 1962.

# CHAPTER IX

# THE LEAD AND ZINC STOCKPILE PURCHASE PROGRAM

## Introduction

After the end of the Korean War, lead and zinc market conditions sharply deteriorated from a producer point of view. General cutbacks in production, sharply lower prices and numerous mine closures characterized the markets. Despite depressed conditions in U. S. markets, conditions in foreign countries were even more depressed so that U. S. imports continued at a high level.

In seeking relief, the lead and zinc industries had several alternatives open in seeking governmental assistance. One alternative was to petition the U. S. Tariff Commission for relief under the escape clause provision of the Trade Agreements Extension Act of 1951. Or they could have sought increased government stockpile purchases (under Public Law 520). A third alternative was to seek expanded acquisition of lead and zinc under the barter program.

At the time the relief program for lead and zinc was under consideration, there was strong opposition to expanded barter transactions of surplus agricultural commodities for strategic and critical materials (including lead and zinc) from procedures and government departments, such as the

Department of Interior. The reason lay in the provisions of the law. The Agricultural Trade Development Assistance Act (P.L. 480) provided that metals and minerals obtained in barter transactions were to be added to the Supplemental Stockpile. At this time the Department of Agriculture had the right to buy and dispose of anything that it acquired in the way of metal products on its own initiative. It was felt that the implementation of the barter program in relief of the lead and zinc industries would give the Department of Agriculture powers of life and death over these industries. This was felt to be undesirable.(1)

Of the remaining alternatives, the industry chose to file an escape clause petition with the Tariff Commission. Instead of implementing the subsequent decision, the President instituted an expanded stockpile purchase program.

The following sections attempt to explain the nature of this program. With reference to the alleged use of stockpile purchases as a technique for assisting the lead and zinc industries, one factor of crucial importance is the determination of the stockpile objectives, what they were, how they were set and why. This aspect will occupy a central place in the attempt that will be made to trace the history of the stockpile program as it applies to lead and zinc. Determination of stockpile objectives will be briefly discussed in the text of this chapter so as to reduce the length and complexity of the discussion. Detailed

explanatory footnotes have been included, however, to provide the interested reader with a more complete historical description.

## General Policy Guidelines Followed by the Administration I

The Administration established the expanded stockpile purchase program under the following general guidelines: (1) to reduce or eliminate the dependency of the United States on foreign nations for supplies of strategic and critical materials in times of national emergency; (2) to expand productive capacity so as to shorten the time required for mobilization in the advent of an emergency (i.e., to maintain an adequate mobilization base); (3) to purchase from supplies of materials in excess of current industrial demand (i.e. from market surpluses); (4) to allow no disposition of stockpile materials except for war purposes, to prevent deterioration, or for reasons of obsolescence except by expressed consent of Congress; and (5) to make and keep America strong.(2)

The reader will not that there is a distinct difference in philosophy between guidelines one and two as listed above. The first denotes the policy of stockpiling, i.e., the accumulation of stocks of materials for possible future use in times when these materials might otherwise be in short supply. The authorization for this program comes under the Strategic and Critical Materials Stock Piling Act.

The second guideline provides for the expansion of productive capacity beyond normal civilian needs in the interest of national defense. The authorization for this type of program comes under the Defense Production Act of 1950. This difference in orientation is fundamental and is necessary for the understanding of the underlying reasons behind the stockpile purchase program with reference to lead and zinc. One would expect under the circumstances that purchases made under the first guideline would be added to the National Stockpile, while those made under the second would be added to the Defense Production Act Inventory.

Guideline three also has interesting implications in that it says that purchases insofar as it is possible should be made in times of excess supply. But it is only possible to talk of excess supply when one specifies a particular market price. Under normal circumstances any excess supply can be eliminated by lowering price. It is clear, then that purchases under this policy are intended to maintain price at a higher than market equilibrium level, e.g., this is a price support program.

## General Policy Guidelines Followed by the Administration II

The following chronological description of events will serve to point up the principal developments and issues in the stockpile program concerning lead and zinc in the first two years of the expanded program.

On April 14, 1954, President Eisenhower ordered the immediate determination of long-term stockpile objectives for minerals and materials and the rapid implementation of the program in order to fulfill these objectives. The President included the following list of instructions in his directive: (1) no wartime reliance on sources of materials located outside of the United States, Canada, Mexico, and comparably accessible nearby areas as defined by the National Security Council; (2) programs designed to acquire materials under the long-term stockpile objectives should provide for "purchases at advantageous prices (normally lower than the individual price trends, with due regard for changes in the value of the dollar) when such purchases will also serve to maintain essential elements of the mobilization base"; (3) whenever possible these purchases were to be spread out over a considerable period of time so that operations of domestic producers that were essential elements of the mobilization base could be appropriately maintained or reactivated; and (4) the acquisition plans were to provide that in making purchases preference was to be given to newly mined materials and minerals of domestic origin.

If one compares instruction (1) in the above list with general guideline one in the above (i.e. in Section II, this chapter) he finds that there is a difference in what was actually done and the instructions of the President. The

actual policy guideline followed placed no reliance on any foreign nation for strategic and critical materials, while instructions were that no reliance was to be placed on sources of materials located outside the United States, Canada, and Mexico, and comparibly accessible areas as defined by the National Security Council. This becomes a very important difference when one realizes that the bulk of U. S. imports of lead and zinc come from Canada and Mexico.

In considering instruction (2) the phrase "purchases at advantageous prices (normally lower than the individual price trends, with due regard for changes in the value of the dollar) when such purchases will also serve to maintain the essential elements of the mobilization base" seems to be a fancy bit of broken field running. In fact it is difficult to determine what it actually means from a practical sense. In any case, it can be interpreted in such a way as to justify purchases at higher than market prices.

Instruction (4) institutes a policy of buying from domestic producers. To the extent that domestic firms are high cost producers this establishes a policy of not buying at the cheapest source.

The most significant point about this set of instructions is the emphasis on the maintainance of the mobilization base as opposed to the accumulation of materials to be used in times of shortage. This is important because it

involves a more or less open-ended policy as opposed to a definite amount which would be necessary to mitigate a possible future shortage. One of the consequences of attempting to maintain a given level of industrial production in this way is that it is possible (or necessary) to purchase a great deal more material than would otherwise be the case (assuming that the program is maintained over a long period of time).

The concept of one year's normal United States use of a material was first suggested on June 24, recommended to the President on July 6, and put into effect as a stockpile purchase policy on July 15, 1954.(3) This concept was first suggested on the grounds such a quality should be sufficient to provide for any unforeseen contingencies such as destruction of ports or internal transportation facilities, strikes, loss of labor through atomic attack or completely new requirements.

Two important aspects of the one year rule are: (1) the objective is set on a basis which has no relationship to projected need; and (2) the rule applied only to lead, zinc, and antimony. Thus the application of the one year rule is consistant with the position that the stockpile purchase program was being used as a purchase support program.

A new long term stockpile objective for lead was established on August 3, 1954 based on the 1953 consumption

of zinc. By way of contrast, the new long-term objective for lead was established on September 8, 1954 treating as a normal year's use of the material the annual average consumption for the years 1950, 1951, 1952, and 1953. To have been consistent on the method of determining the objective in both cases would have required the purchase of less metal in one or the other of the cases. The policy was revised on October 8, 1956, at which time it was decided that the consumption of the last previous calendar year was to be used in determining "one year's normal consumption." On November 8, 1956, this concept was embodied in the objectives of both lead and zinc. This modification acted to raise the objectives and thus is consistent with a purchase support program in that it allowed more purchases of lead and zinc to be made.

The Administration claimed that this sequence of events was a logical outcome of the pursuit of the main stockpile guidelines discussed in the previous section above and completely in line with the needs of national security.(4)

## Origins of the Stockpile Purchase Policy

The first written evidence of the impending new stockpile purchase program appeared on November 12, 1953.(5) The avowed purpose of the new program was to purchase more lead and zinc in order to relieve the distressed conditions in the lead and zinc industry. The degree of military

preparedness was not a significant consideration at that time.

At about the same time, the Administration took under consideration the formulation of a national policy with respect to minerals and metals. The President appointed a Committee of the Cabinet for the purpose of studying and making recommendations for a "sound" mineral policy.(6)

The "Interim Report" of this Committee, dated March 31, 1954, recommended that the old objectives that were being used for stockpiling be continued as "minimum objectives." These minimum objectives were established by adding up all the requirements of the country during a projected five year period of war and balancing the result against supplied from domestic or dependable areas outside of the United States. The resulting balance, if a deficit, would establish the stockpile objective. In addition, the Interim Report recommended a new long-term objective based on the assumption that the United States could not depend upon oversea supplies and that lead and zinc would be going and efficient industries at the moment war broke out. An additional factor that was included was the rehabitation of the country in the event of war. In practice, however, the long-term objective was computed by applying a more stringent system to oversea supplies in wartime.

An important aspect of the purchase program is the introduction of "duality" into the determination of stockpile

objectives. In determining the amounts of materials to be held in stockpile, there are two alternatives, one substantially greater than the other. In the determination of how much material was to be purchased, the objective which allowed the greatest amount to be acquired was invariably chosen. This is consistent with a program of purchases for stockpile as a support program for the lead and zinc industries.

On March 26, 1954 (which antedates the release of the "Interim Report"), the White House authorized the Office of Defense Mobilization to establish the new long-term stockpile objectives.(7) Under this new minerals policy, purchases began on June 7, 1954. Lead and zinc purchases began before the Cabinet Committee filed its final report and before the new objectives were set by the Office of Defense Mobilization. In examining the underlying principles behind the new purchase policy, there is very little difference to be discovered in a formal sense between the new policy and the old.

It is unfortunate from our point of view that the setting of the specific objectives and the reasons for the decisions that were made are nowhere discussed in detail. This is a feature of the classified nature of the stockpile purchase program. This new policy, however, was used as a justification for increased purchases of lead and zinc.

Another feature of some interest was the speed with which the recommendations of the Cabinet Committee were

adopted (even before the "Interim Report" was filed) and before the final report was finished.

Reasons Behind the Stockpile Purchase Program

The reason behind the new policy was that the Presidentdent had decided not to accept the recommendations of the Tariff Commission to increase the tariff on lead and zinc, but he, nevertheless, was anxious to implement an assistance program for the mining segment of the lead and zinc industries. Consequently, he ordered the immediate procurement of lead and zinc under the new long-range stockpiling purchase program.

The advantages of this program were listed as follows: (1) the government would acquire metals and minerals for the stockpile over and above its minimum needs at times when it would be advantageous to do so rather than waiting until emergency conditions force it to pay premium prices; (2) the tariff increase would have serious effects on the foreign policy objectives of the United States; and (3) the proposed increase in tariffs would be of uncertain benefit to lead and zinc mining.(8)

The purpose of the government policy was to reduce the inventories of private companies by impounding them in government inventories. Officially the purpose was "to increase production because the production of the lead and zinc mines in the United States was below the mobilization base."(9) More specifically stated, the ultimate goal was

to keep the lead and zinc mines in condition to produce; the transfer of "surplus" lead and zinc to the government was the method by which this was to be accomplished. The agrument that was made in favor of this position states, in effect, that lead and zinc mines need to be continously worked in order to stay in operable condition. If left standing idle they fill up with water and otherwise deteriorate. Government purchases were designed to keep the mines in operable condition in the event of a sudden emergency.

While the stockpile purchase program was designed to be of assistance to the lead and zinc producers in its original inception it was intended to be a temporary stopgap program. It was instituted because the lead and zinc industries were in a depressed condition (hence the recommendations of the Tariff Commission). The Administration felt that something had to be done, and the stockpiling alternative was chosen. This temporary solution as to be utilized until a long-term solution could be drawn up and implemented. The Administration's long-term plan (the "Minerals Stablization" or "Seaton Plan") involving an import tax which would apply when the market prices of these metals fell below a certain level was, however, defeated in Congress.

## Stockpile Purchase Objectives I: Introduction

We shall find it necessary, at the risk of repeating some of the things that we have already said in other connections, to discuss the various considerations involved in determining the actual purchase objectives for lead and zinc.

Determination of stockpile objectives constituted a very important aspect of the program of assistance to the lead and zinc industries. The program was one which was not authorized by Congress; in fact, it proceeded without Congressional knowledge. Therefore, legal justification had to be found under existing statutes. In other words, existing statutes had to be interpreted in such a way as to allow the purchase program to progress. The desired end was accomplished through the continual reinterpretation of stockpile objectives. Consequently the determination of stockpile objectives constitutes a complex and not altogether clear subject.

There are four distinct concepts that can be distinguished (in theory, though not always in practice). These are: (1) the long-term objective; (2) the maximum objective (or one year's normal use); (3) the mobilization base; and (4) the minimum objective. This multiplicity of objectives is an important aspect of the program.

One of the important concepts in setting stockpile objectives is that of the mobilization base. This concept

is a difficult one to pin down as to origin and exact meaning. The origin of the concept is rather obscure. Apparently this is a concept that was in the minds of the Office of Defense Mobilization since the beginning of the stockpile program. But prior to the Cabinet Committee's "Report on Mineral Policy" (the "Interim Report") which was filed on March 31, 1954, the objectives that governed the purchases for the stockpile were determined on the basis of balancing requirements against supply during a five year war. This supposedly was the only criterion for setting objectives for stockpiling prior to March 1954 and is termed the "minimum objective."

To degress for a moment, it can be said that the "minimum objective" was set by determining the supplies that would be available in a five year war, and comparing these with the requirements for a five year war, the deficit becoming the objective. The amount available was determined by calculating the supply of the given material that was available, subject to discount from certain countries (on the advice of the Joint Chiefs of Staff), where, for special reasons, it was felt that the supply was not actually accessible. Included in the supply figure was U. S. production, plus the supply that could be expected in wartime from the usual sources in peacetime. The figure for requirements took into consideration the military requirements, defense requirements (which included those for the

Atomic Energy Commission), the war supporting or industrial requirements, the essential civilian requirements, and the wartime export requirements.

To return to the mobilization base idea, one might suppose that the Cabinet Committee's "Mineral Report to the President" ("Interim Report") originates this concept as technique of determining stockpile objectives. For our purposes, this interpretation will be used as an operating hypothesis, though subject to qualification.

The next problem that arises is the definition of the concept "mobilization base." There is some difficulty here. A general statement of the concept behind the mobilization base would be: "The amount of lead (and zinc) which could be reasonably expected to be mined from year to year and which would serve as a sort of guarantee that the Government could count on this basic supply in connection with its defense policies."(10) Going further, the mobilization base "consists of the level at which we would have efficient, healthy, and going lead and zinc industries in the United States, and anything below that level would be below the mobilization base."(11) Thus, the concept of the mobilization base was that there was a certain level at which the lead and zinc industries are producing enough metal to provide the United States with a strong and healthy industry. And it was under this concept of the Cabinet Committee, that, if the lead and zinc industries were

producing at a level below the mobilization base, then the government would buy lead for the stockpile in such amounts as would bring lead and zinc production up to the prescribed "mobilization base." This seems to be saying that the government would stand ready to purchase lead and zinc at any time the level of production falls below a certain arbitrary minimum level, irrespective of how large a stockpile of lead and zinc had previously been accumulated by the government. In other words the government committed itself to a policy of maintaining a minimum level of domestic production regardless of the consequences of such a policy.

The publication of the announcement of the "Interim Report" of March 31, 1954, was immediately followed by a rise in lead and zinc prices. This was, perhaps, anticipated in a memorandum to the Secretary of the Interior from the Assistant Secretary for Mineral Resources, Felix E. Wormser, dated March 11, 1954. A portion of this letter can be quoted as follows: "The new stockpile policy if endorsed by the Cabinet and the President, can be used to give speedy, but temporary relief to our hard pressed lead and zinc mining industries." Mr. Wormser in his testimony stated that what he meant by "temporary relief" was that the stockpile program would give relief to the lead and zinc industries only so long as the stockpile purchases could be continued at a high level.(12)

At the time the Cabinet Committee report was filed, the lead and zinc industries were held to be operating at a level below the mobilization base. It was hoped, that by purchases of lead and zinc under this new program the lead and zinc industries would increase their production because prices would be increased, stimulating "mobilization base" production. This is, in fact, what happened, and, of course, when stockpile purchases ceased, the industry again found itself in a depressed condition.

In addition to the mobilization base concept the Cabinet Committee report introduced a second entirely new concept, the "long-term objective."(13) The long-term objectives were set up so that no wartime reliance would be placed on minerals located outside of the United States, Canada, Mexico, and "comparably accessible nearby areas as defined by the National Security Council. (In any normal situation, the bulk of U. S. imports of lead and zinc come from Canada and Mexico.) The technique of determining the minimum objective and the long-term objective are essentially the same except that a much more stringent discounting procedure is used in determining the long-term objective. Under the latter, any lead or zinc that has to be transported by sea is not counted as part of the domestic supply.

There was one note of criticism from the Director of the Budget, Joseph M. Dodge. He showed concern about several features of the stockpile purchase program in his letter of

April 14, 1954.(14) He complained about the attitude of the industry in that the latter looked upon increased stockpile purchases of lead and zinc as a subsidy to the industry rather than as a defense requirement. He wondered if the program was more a price support program than one to meet defense requirements.

Another problem according to Budget Director Dodge was that increased purchases for stockpile might not increase production at all, but would, instead, result in liquidation of inventories and increase imports rather than reopening domestic mines. On this problem it should be realized that if raising of price and stimulation of production were to be effectively accomplished under this program, it would be necessary to prevent additional imports, i.e., to establish a tariff or quota to keep additional imports out. This, of course, is a problem common to all price support programs.

## Stockpile Purchase Objectives II: The "One Year" Rule

At about this time, an alternative method of determining the long-term objective was introduced. This was what we shall call the maximum objective or the so-called "one year rule." This rule was first suggested on July 6, 1954.(15) It provided that "one year's normal consumption" be used as an alternate basis to the supply and requirement studies as a means of establishing the long-term objective. For all intents and purposes, the objective was figured

using both methods and whichever one established the greater objective was used. (We shall use the term maximum objective to refer to the one year rule because in the present instance it provides the greater objective.)

Of all the metals and minerals being stockpiled, the adoption of the one year rule caused the objectives to be revised upward in only the three following instances:

TABLE 23.--Effect of One Year Rule on Objectives(tons)

| Material | Minimum Objective | One Year's Normal Use |
|---|---|---|
| Antimony | 21,000 | 38,000 |
| Lead | 700,000 | 1,200,000 |
| Zinc | 740,000 | 1,100,000 |

Adoption of the maximum rule (one year's normal use) provided room for the purchase of the following quantities: Antimony, 19,000 tons; Lead, 450,000 tons; and Zinc 310,000 tons.(16)

Determination of stockpile objectives (previous to the use of the one year rule) was influenced by the production of Mexico and Canada which is available by rail. This is to say that under the long-term objective as determined by a supply and requirements study was based on reliance only on materials that were produced in the United States, Mexico, and Canada. But since the bulk of U. S. lead and zinc imports come from Mexico and Canada, the long-term objective

would be little different from the minimum objectives. The introduction of the one year rule made the maximum objective substantially greater than the minimum objective.

One of the proponents of stockpiling, Mr. Wormser, testified that initially he had not been in favor of stockpiling because of the proximity of foreign sources of lead and zinc. But after it had become obvious that the atomic bomb had been developed abroad, his view was changed.(17) According to this view, this new condition outmoded the use of the old supply versus requirements studies as a method of determining long-term stockpile objectives as objectives set according to this technique seriously underestimated actual needs.

The utilization of "one year's normal use" of either lead or zinc as a stockpile objective involved the introduction of an entirely new concept into the determination process in the sense that the objectives were no longer directly on the basis of projected need. This is significant because "one year's normal use" of either lead or zinc is a quantity substantially greater than previously determined stockpile objectives.

One can not infer from this anything but a general statement of policy which apparently could have been applied to all 75 metals and minerals being stockpiled. If this had been adopted as a general policy for all stockpile materials it is evident that the program would have been many billions of dollars greater than it actually was.

## Stockpile Purchase Objectives III: Underlying Purposes

The President issued a press release on August 20, 1945 in which he outlined his projected policy with reference to the lead and zinc industries. In lieu of accepting the recommendations of the U. S. Tariff Commission the President announced that the following steps were being taken: (1) to increase purchases at market prices of newly mined domestic lead and zinc under the long-term stockpile program; (2) to acquire lead and zinc under the barter program which had been set up under the Agricultural Trade Development Assistance Act; and (3) to seek voluntary restrictions on exports by the major U. S. suppliers of lead and zinc.

As might be expected the purchase program succeeded in raising domestic metal prices, and as a consequence U.S. imports of lead and zinc increased during the period. This is illustrated by Table 24.

One might reasonably conclude from these figures that during the expanded stockpile purchase program, the imports of lead and zinc did increase, and when the buying program was terminated imports fell off. One has to be careful in drawing any cause and effect relationships here because the fluctuations in the import figures also conform to fluctuations in the general level of U. S. business activity.

Once the expanded stockpile purchase program had been decided upon it was necessary to determine the amounts of

TABLE 24.--U.S. Imports 1954-1960(18)

| Year | Total Imports of Zinc (tons) | Total Imports of Lead (tons) | Zinc Price | Lead Price |
|---|---|---|---|---|
| 1954 | 621,000 | 443,000 | 10.681 | 14.054 |
| 1955 | 674,000 | 462,000 | 12.299 | 15.138 |
| 1956 | 770,000 | 477,000 | 13.494 | 16.013 |
| 1957 | 794,000 | 531,000 | 11.399 | 14.658 |
| 1958 | 657,000 | 577,000 | 10.309 | 12.109 |
| 1959 | 656,000 | 411,000 | 11.448 | 12.211 |
| 1960 | 577,000 | 358,000 | 12.946 | 11.948 |

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, United States Senate, 87th Congress, 2nd Session, July 19, 1962, p. 1068 and 1072. Price data from Chapter III, Table 3-2 and Chapter IV, Table 4-3.

lead and zinc to be purchased. It was suggested that lead purchases be 30,000 to 35,000 tons per month (lead content) and zinc purchases be 40,000 to 45,000 tons per month (zinc content).(19)

The main purpose of this recommended purchase program was to lift production of the depressed lead and zinc mining industry. Since it was impossible to tell without testing the market to see how much lead and zinc would have to be taken off the market by impounding it in the government stockpile, it was suggested that a combined maximum price of lead and zinc be established at 28 cents because much

lead and zinc is mined out of the same ore deposit and the establishment of a combined maximum price would have given some latitude as to what price would have been fair to the government and at the same time be of assistance to the lead and zinc industry. (The prices then currently in effect were 14 cents, New York, for lead and 10-1/4 cents, East St. Louis, for zinc.)

Subsequently these recommendations were revised. Pursuant to the revision, the new recommendations were: (1) the domestic mine production of lead be maintained at a minimum annual rate of 350,000 tons; (2) the domestic mine production of zinc be maintained at a minimum annual rate of 500,000 tons. The estimated prices necessary to assure the annual production of these quantities were 13 cents a pound, East St. Louis, for zinc and 14 cents a pound, New York, for lead; (3) a stockpile purchase program of an average of 5,000 tons of zinc a month for one year; (4) a similar program of 3,500 tons of lead a month; and (5) a program to restrict the flow of imports.(20)

The above recommendations were designed to be a fraction of the total purchases estimated to be necessary to fill the long-term stockpile objectives.

With reference to recommendations (1) and (2) it was proposed that the government purchase a sufficient quantity of lead to raise domestic production from the then current level of 300,000 tons (1954) to 350,000 tons annually. The

same program was applicable to zinc, the production of which, was to be raised to an annual rate of 500,000 tons from the then current level of 450,000 tons.

The last recommendation was to restrict the flow of imports. Three alternative methods were suggested: (1) tariffs, (2) import quotas, or (3) both. These recommendations were made on May 17, 1954; the recommendations of the Tariff Commission to raise tariffs by the maximum amount allowable under the law, were issued on May 21, 1954. Subsequently the President set asside all recommendations for import restrictions.

## Stockpile Purchase Objectives IV: Pro and Con

On June 24, 1954, Mr. E. H. Weaver, Assistant Director for Materials, Office of Defense Mobilization, made the point that the minimum stockpile objectives for lead (700,000 tons) and zinc (740,000 tons) had been achieved and that slight over runs of about 50,000 tons of each metal were in prospect. Further, the development of expanded long-term objectives on the basis of supply and requirement studies would be impossible. He then made these criticisms of the proposed stockpile purchase program with reference to lead and zinc: (1) information on stocks of ores at mines or smelters or in the hands of speculators, brokers, consumers, or foreign concerns was lacking; (2) the purchase program would not provide any permanent solution to the problem of foreign

metal competing with domestic; (3) program provides no remedy for most of the shut-down small mines; (4) there is no way to distinguish between domestic and foreign ores; (5) most of the benefits would go to the larger firms which do not need assistance; (6) consumers would oppose price increases resulting from government purchases; (7) the program requires the use of stockpile cash or borrowing authority to acquire low instead of high priority items; and (8) the program would tend to reverse the generally expressed intent of the Administration to refrain from direct interference in commodity markets.

Under item (1) it was pointed out that a government purchase program of the type recommended would have uncertain consequences and might even make conditions worse instead of better depending on producer reactions to the stimulus of increased government purchases. This would be especially true under conditions where producers had no idea of the projected extent of the government purchase program; particularly in circumstances where the government is purchasing at higher than market prices.

Under item (2) it is undoubtedly true that government purchases of domestic metal would provide no permanent solution to the problem of foreign markets competing with domestic production. Increased purchases by government would tend to raise prices which would in turn tend to cause increased imports. In the absence of import restrictions

the situation could not be improved, except perhaps, the absolute amount of U. S. production might be increased, at the cost of large idle stocks of lead and zinc in government inventories, if it were specified that increased purchases come exclusively from domestic mines. This program would have to be set up on a long-term contractual basis with a separate contract for a specified amount of ore and concentrate production for each of the participating domestic mines. In this type of program, it would undoubtedly be the case that premium prices would have to be paid, therefore, the program would be more expensive than if the government were to purchase at the cheapest source.

The objection under item (3) follows along in this line, in that short-term purchases of lead and zinc for stockpile are not likely to affect long-run decision-making of mines that have shut done, i.e., a projected short run program will not bring shut-down mines back into operation.

Under item (4) the difficulty is in distinguishing which part of the producers' stocks consist of domestic metal and which foreign, so that any purchase program would have difficulty enforcing a "buy America" policy. In any case, it is likely to make little difference because, even if such a policy were successful, it would likely be the case that foreign metal would replace domestic metal in productive processes.

Under item (5) it might be said that the large producers would get the greatest benefit out of the program if

for no other reason than the four largest producers do about 90 per cent of the lead and zinc business. They would benefit despite the fact that they were operating at a profit. In this sense the assistance program would have been highly inefficient in that a large amount of wasteful expenditures have to be made in order to aid a few small producers.

Under item (6) price increases would work to the disadvantage of consumers; this is, of course, true of any price increase. Consumers, however, can in the long run retaliate to some extent in that they can substitute other materials for lead and zinc. This is a serious problem in the lead and zinc industries.

Item (7) contains an important criticism in that even the government has a limited budget and purchases of lead and zinc preclude purchase of other stockpile items (or even essential non-stockpile items). This is especially serious for stockpile purposes if high priority items must be sacrificed. Lead and zinc did not have a high priority from a strategic needs standpoint among the materials that were being purchased for the stockpile.

These were two favorable aspects of the program enumerated by Mr. Weaver: (1) stockpile purchases would remove the large inventories from the market which prevent prices from rising to those levels at which an adequate mobilization base might be maintained, and (2) the country would be safer with more metal actually on hand.

## Stockpile Purchase Objectives V: The Objectives for Zinc

The purchase program for zinc is reflected in the determination of the zinc purchase objectives. Prior to 1954, the purchase objectives were established on the basis of supply and requirements studies. Included in the first objective was a large discount for estimated depletion of reserves but this was subsequently eliminated. The first two objectives were set at 1-1/2 million tons. The priority of the program of zinc purchases is perhaps reflected in the fact that, the purchase objectives were only half full at the time.

Changing conditions and improved estimating procedures were also reflected in the pre-purchase program objectives in that these were continually being revised downward in spite of the Korean War emergency.

However, when the purchase program was instituted, the supply requirements studies were still being made, but a new concept had been introduced, that of the long-term objective was the maximum objective or "one year's normal consumption" of zinc. This allowed the purchase objectives to be divorced from any estimated need, hence these were arbitrary in nature. Thus it was possible to greatly increase the objectives.

At first, the objectives were based on U. S. consumption for 1953. Consumption in this year was the highest of any year pervious to the selling of the objectives and thus

the maximum possible objective using this basis was set. When it was found that consumption in 1955 exceeded that of 1953, the basis for setting the objective was changed from "one year's normal consumption" to the "last calendar year's consumption." When 1956 consumption was found to be smaller than that of 1955 it was changed back again so that the 1955 figures could be used on a continuing basis. When the Department of Interior revised its 1955 consumption figures, the purchase objective (and purchases) were immediately increased by 6,000 tons. The possibility of acquiring more zinc was further enhanced by the policy of not counting materials in the Supplemental Stockpile as part of the purchase objective. In this way the purchase objective could be circumvented and substantially greater amounts of zinc could be acquired.

Finally on June 30, 1958, the whole stockpile policy came under administrative review. At this time the policy reverted to setting the objectives by supply-requirements studies and as a result, purchase objectives were very substantially reduced, so that at the present time the zinc actually in stockpile is 888 per cent of the purchase objective.

## Stockpile Purchase Objectives VI: The Objectives for Lead

The purchase program for lead is reflected in the determination of the lead purchase objectives. Prior to 1954, the

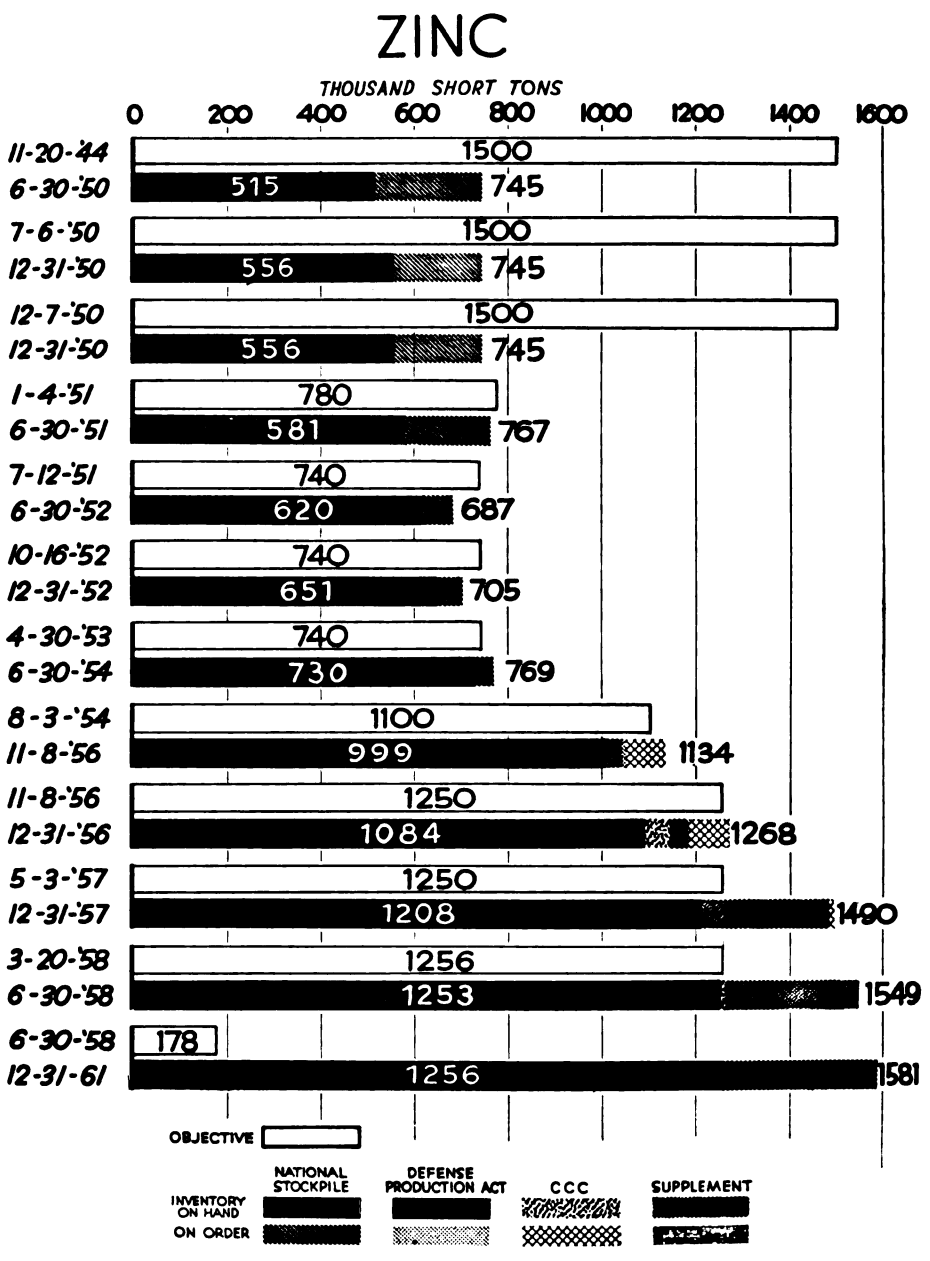



Fig. 6.--Zinc Stockpile Objectives and Quantities Purchased

Source: Inquiry into the Strategic and Critical Materials Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, United States Senate, 88th Congress, 2nd Session, June 19, 1962, p. 1062.

purchase objectives were primarily established on the basis of supply and requirements studies, although this fact can not be stated in as unqualified a manner as it can in zinc.

The 1944 lead objective was set by the same method that was used to set the zinc objective, except that the allowance for depletion was one-half of the depletion discount for zinc.

Subsequent objectives, however, are somewhat more complicated than in zinc in that other considerations beside the supply-requirements studies were used. On June 1, 1950 for instance, the stockpile objective was increased in order to cover deliveries due under stockpile contracts. Subsequently, it was recommended that the objective be increased still further in order to provide a "tapering of lead production." This recommendation was subsequently withdrawn. The objective was increased again in November, 1950 because of increased military requirements arising from the Korean War.

The next objective, set in 1953, included a large discount factor for expected reduction in production which had been artifically stimulated during the Korean emergency.

The lead objective was set by the Office of Defense Mobilization on September 28, 1954, at which time the long-term (maximum) and minimum objectives were used for the first time with respect to lead. This objective was set after the stockpile purchase program was instituted. The maximum

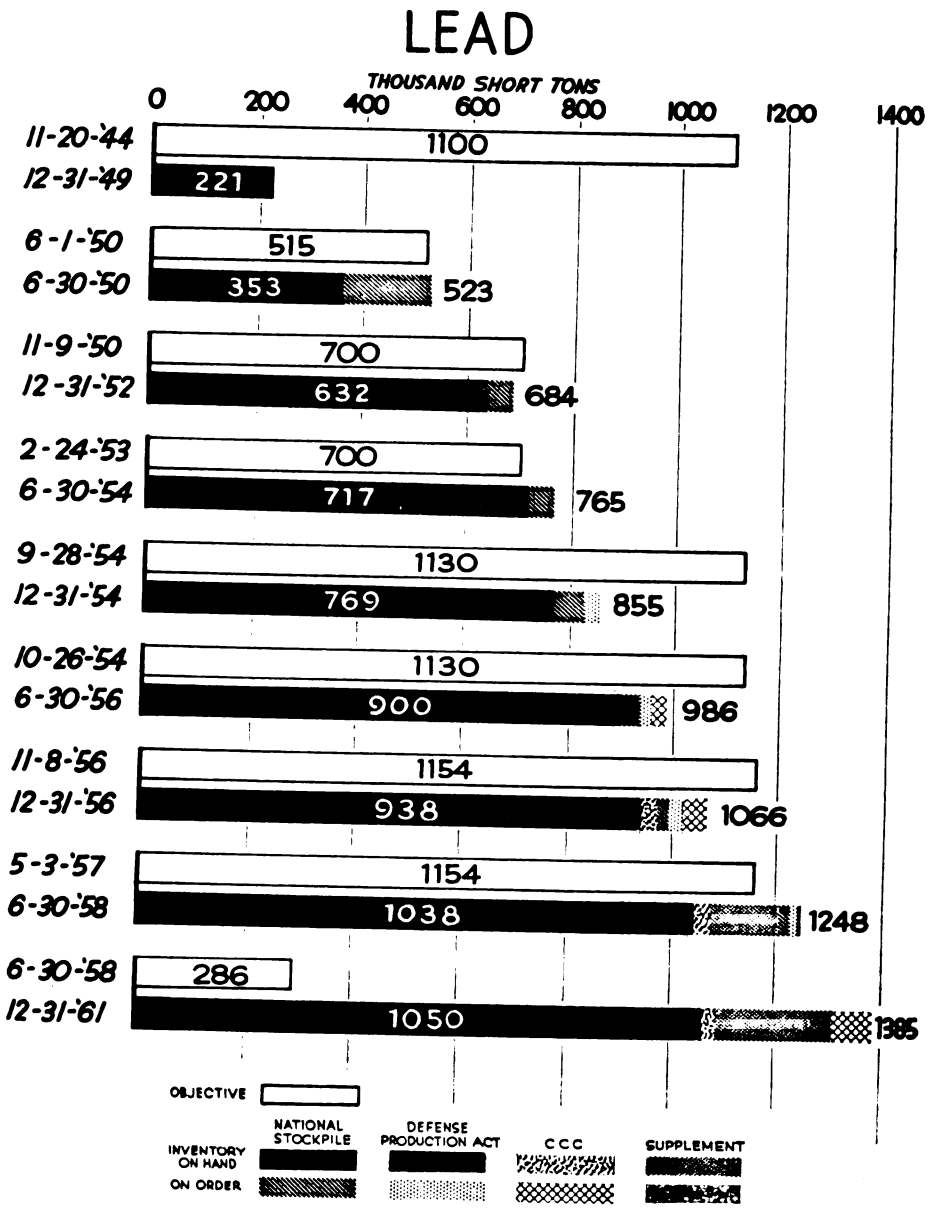



Fig. 7.--Lead Stockpile Objectives and Quantities Purchased

Source: Inquiry into the Strategic and Critical Materials Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 88th Congress, 2nd Session, June 19, 1962, p. 1061.

objective was determined by using the average of the consumption of the years 1950-53, which allowed a greater objective to be set than if 1953 consumption has been used.

The 1956 objective was determined by using the consumption of the last calendar year, 1955 (the same procedure as was used in determining the zinc objective) because this allowed greater lead purchases. The objective set on May 3, 1957 was also set using the 1955 consumption in order that the objective would not have to be cut.

The final objective was established on June 30, 1958, at which time the purchase objective was set at 286,000 tons on the basis of a supply-requirements study. As in the case of zinc, the planning period was reduced from five years to three and the one year rule eliminated. Cash purchases of lead had been eliminated in 1958, but lead continued to be acquired under the barter program subsequent to that date.

Clearly the lesson that was taught in zinc was repeated in lead.

## Summary and Conclusion

A very important aspect of the policy of government with reference to the lead and zinc industries involves the stockpile purchase program. The administrators responsible for the implementation of the program claimed that it was essential for national security. The history of the program including the determination of the objectives and

even the public statements of the President clearly show that the program was designed to assist the lead and zinc industries in a program similar to the price support program in agriculture. The ultimate purchase beyond all defense requirements lends strong support to that position and constitutes a strong rebuttal to the "defense essentiality" argument.

## CHAPTER IX: FOOTNOTES

1. Congress, later in an amendment to the Agricultural Trade Development Assistance Act made provisions which tied up the acquisitions of the Department of Agriculture under the barter program just as tightly as under the National Stockpile Act. (Actually more tightly, under a ruling of the Counsel of the Office of Emergency Planning to the effect that no materials may be sold from the Supplemental Stockpile under any circumstances.) Subsequent to the passage of the amendment, it is possible to view the barter program as another instrumentality which could be used as a program of assistance to the lead and zinc industries (or alternatively, as a facet of the stockpile purchase program). One has good reasons for believing that the barter program has actually been used as a support program, since it was only after the amendment to the Agricultural Trade Development Assistance Act was passed by Congress that substantial barter transactions in lead and zinc began. The barter program will be more completely discussed in a subsequent chapter on the subject.

2. See the testimony of Arthur S. Flemming, Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings Before the National Stockpile and Naval Petroleum Reserves Sub-Committee of the Committee on Armed Services, United States Senate, Part 9, January 28, 1963, p. 3627. For simplicity, henceforth, this source will be referred to as Hearings.

3. The expanded purchase program was begun on June 7, 1954, prior to the setting of the objectives. Such purchases were in excess of the objectives in force at the time. This subject will be discussed in greater detail in subsequent sections.

4. See the testimony of Arthur S. Flemming, Hearings, Part 9, p. 3627.

5. See the letter from Felix E. Wormser, Assistant Secretary for Mineral Resources to John W. Love, Business Editor of the Cleveland Press, reproduced in Hearings, Part 4, p. 1077.

6. See the letter from President Eisenhower to Secretary of the Interior, Douglas McKay, dated October 26, 1953, reproduced in Hearings, Part 4, p. 1079. The "Interim Report" is reproduced in Hearings, Part 4,pp. 1080-1085.

7. See the White House Press Release of March 26, 1954, reproduced in Hearings, Part 4, pp. 1087-1088.

8. See the White House Press Release of March 26, 1954, reproduced in Hearings, Part 4, pp. 1087-1088; the State Department Memorandum to the President dated August 17, 1954, reproduced in Hearings, Part 4, pp. 1092-1093; and "The Text of the President's Letters to Chairman Miliken of the Senate Finance Committee and Chairman Reed of the House Ways and Means Committee, August 20, 1954, reproduced in Hearings, Part 4, pp. 1087-1098.

9. See the testimony of Felix E. Wormser in Hearings, Part 4, p. 1098 et seq. In his testimony Mr. Wounser contrasted the objectives of the lead and zinc purchases and purchases of agricultural commodities under a similar type program. He stated that purchases of agricultural surpluses were designed to cut production while purchases of lead and zinc were designed to stimulate production.

10. Hearings, Part 4, p. 1112.

11. Hearings, Part 4, p. 1112.

12. Hearings, Part 4, p. 1114.

13. See the memorandum of April 14, 1954 from President Eisenhower to Arthur S. Flemming reproduced in Hearings, Part 4, p. 1114.

14. Hearings, Part 4, pp. 1118-1119.

15. In a memorandum from Arthur S. Flemming to President Eisenhower, reproduced in Hearings, Part 4, pp. 1121-1122.

16. Figures can be derived from the table because the quantity of materials actually in the stockpile on the day of the revision of objectives may have been somewhat more or less than the objective.

17. Hearings, Part 4, p. 1122.

18. Department of Mines figures, see Hearings, Part 4, pp. 1068 and 1072.

19. See the memorandum from Felix C. Wormser to Arthur S. Flemming dated April 27, 1954, reproduced in Hearings, Part 4, p. 1135.

20. See the letter from Felix E. Wormser to Arthur S. Flemming dated May 17, 1954, reproduced in Hearings, Part 4, pp. 1135-1136.

# CHAPTER X

# THE PURCHASE PROGRAM ITSELF

## The Allocation System

During the duration of the minerals purchase policy, i.e., from 1954 to 1958, lead and zinc were purchases on a monthly basis. A schedule of purchases was drawn up by the Emergency Procurement Service (predecessor agency of the Defense Materials Service) of the General Services Administration as to how much lead was to be purchased from all domestic producers.

Based on information obtained from the Bureau of Mines, the amount of domestic smelter production coming from domestically produced lead and zinc ores was determined for the year 1952. The percentage of the total that each company produced during that year was attributed against a monthly total of 3,000 tons for lead and 5,000 tons for zinc.(1) Monthly directives were then issued by the Office of Defense Mobilization determining the quantities to be purchased.

The origins of the allocation system are somewhat obscure. The idea was thought to have come up in the discussions between the Defense Materials Service, the Office of Defense Mobilization, and other government agencies. The rationale behind the system is also obscure. It was the

opinion of the Defense Materials Service that the quota system would not make any difference in the objective of supporting the price of lead and zinc compared to a bid and offer system.

The system that was actually used operated in the following manner. The companies, unaware of what the objectives were would be asked to make offers of lead and zinc. The actual purchases were apportioned among the companies that made the offers on the basis of the schedule. But there were many months that some of the companies did not make any offers, so that their allotment which was left over, was redistributed among the companies that had made offers in excess of their quota.

This first purchase directive that was issued by the Office of Defense Mobilization specified that lead should be purchased at a price below 14 cents a pound and zinc at a price below 13 cents a pound. Subsequently, all directives specified that purchases should be made at market price. The market price was determined by the General Services Administration based on quotations published in the Engineering and Mining Journal and other trade papers.

At this time the first directive was issued, the market price for lead was 14-1/4 cents a pound, somewhat higher than the maximum price of lead set under the directive. The market price of zinc was 11 cents, or 2 cents below the maximum price. After the initial announcement of stockpile purchases, lead

and zinc prices increased, and after the actual purchases began, prices gradually increased over the four year period, 1954 to 1958 (discussed further below). During this period, the General Services Administration continued to purchase at market price under the direction of the Office of Defense Mobilization.

Under the purchasing arrangement, there was no competitive bidding. The companies, themselves, did not know until after they had made an offer, how much tonnage they were going to get. How much they would get would depend on what they and the other companies offered.

Table A-10 shows the quota system as it was set up, including an indication of the capacity of each of the companies up to that time.

Following is a table showing the total amounts of lead and zinc purchased during the four period, 1954 to 1958, and the dollar value relative to U. S. mine production.

## Authorizations and Purchases

Appendix Tables 17 and 18 show the dates of receipt by the General Services Administration of various directives from the Office of Defense Mobilization with reference to the purchase of lead and zinc.

The GSA received purchase directives from the Office of Defense Mobilization on a monthly basis. These directives stipulated the amount of metal to be purchased. Historically, the quantities authorized for purchase were higher in the

TABLE 25.--Authorizations, Offerings, Purchases, and Cost of Domestic Lead Purchases for National Stockpile for Period June 1954 through June 1958

| Lead | 1 | 2 | 3 | 4 | 5 | 6 | |
|---|---|---|---|---|---|---|---|
| | Quantity Authorized for Purchase by ODM* (000) | Quantity Offered by Lead Industry (000) | Quantities Actually Purchased (000) | Dollar Values of Purchases (000) | U. S. Mine Production (000) | Per Cent of Columns | |
| | | | | | | 1 to 5 | 3 to 5 |
| 1954 (last 7 mos.) | 77 | 107 | 77 | $22,502 | 185 | 42 | 42 |
| 1955 | 130 | 72 | 64 | 14,429 | 333 | 40 | 19 |
| 1956 | 111 | 89 | 70 | 22,630 | 353 | 32 | 20 |
| 1957 | 52 | 131 | 52 | 14,847 | 338 | 15 | 15 |
| 1958 (first 6 mos.) | 30 | 69 | 30 | 7,390 | 139 | 22 | 22 |

*Purchase directives authorized purchases of lead from newly mined ores.
Sources: GSA Authorizations, offerings, purchase, and cost of lead for national stockpile; Bureau of Mines, "U. S. Mine Production of Lead."

TABLE 26.--Authorizations, Offerings, Purchases, and Cost of Domestic Zinc Purchased for National Stockpile for Period June 1954 through March 1958

| Zinc | 1 | 2 | 3 | 4 | 5 | 6 | |
|---|---|---|---|---|---|---|---|
| | Quantity Authorized for Purchase by ODM* (000) | Quantity Offered by Zinc Industry (000) | Quantities Actually Purchased (000) | Dollar Values of Purchases (000) | U. S. Mine Production** (000) | Per Cent of Columns | |
| | | | | | | 1 to 5 | 3 to 5 |
| 1954 (last 7 mos.) | 145 | 154 | 122 | $29,805 | 270 | 54 | 45 |
| 1955 | 200 | 71 | 71 | 17,937 | 514 | 39 | 14 |
| 1956 | 173 | 158 | 128 | 36,888 | 542 | 32 | 24 |
| 1957 | 112 | 289 | 112 | 27,293 | 532 | 21 | 21 |
| 1958 (first 3 mos.) | 24 | 80 | 24 | 5,317 | 110 | 22 | 22 |

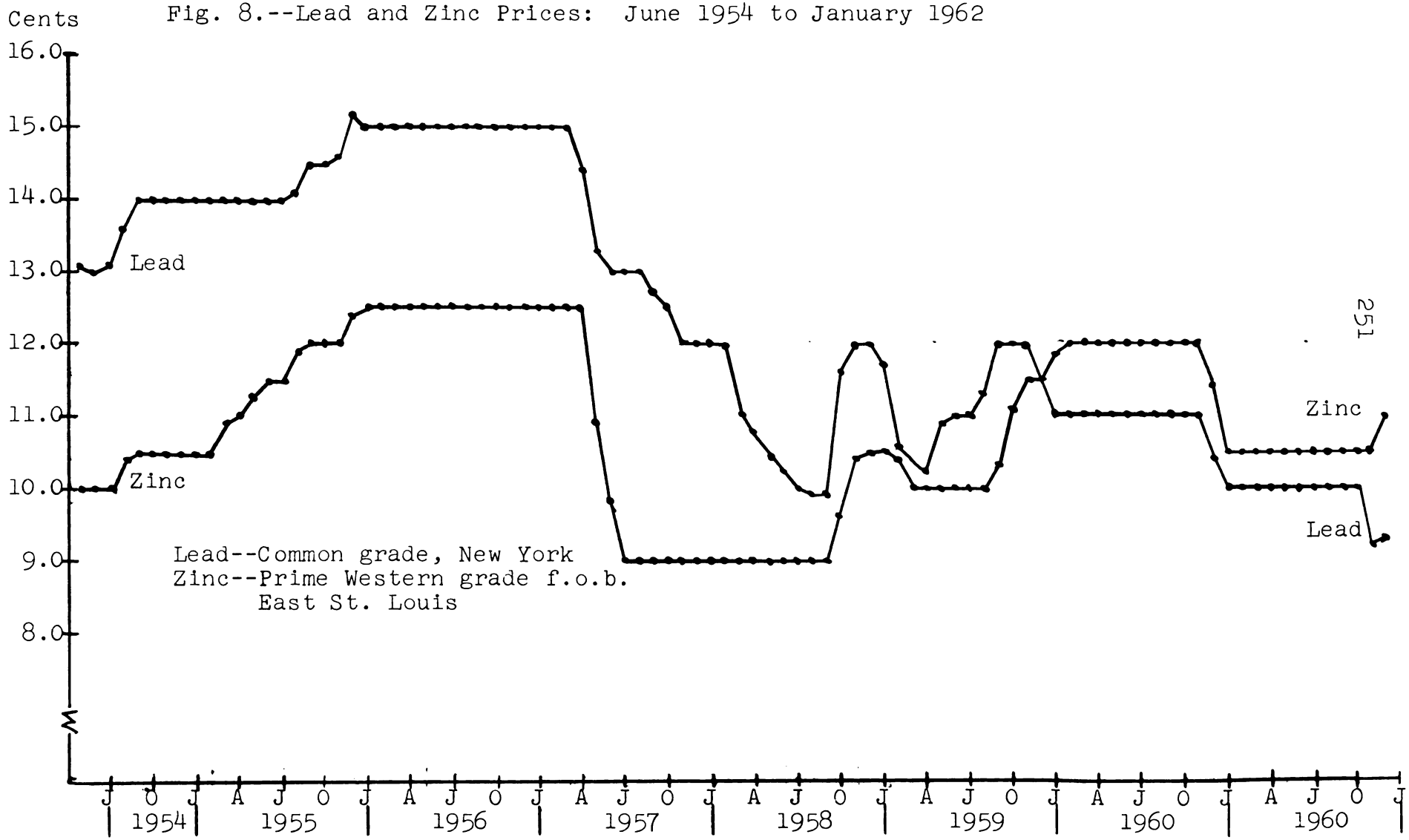
*Purchase directives authorized by ODM were for purchases of newly mined ores.
**U.S. mine production of zinc includes recoverable content of ores and reclaimed concentrates produced and of old tailings, mine dumps and smelter slag dumps.
Source: Same as Table 25.

latter part of 1954 and early 1955 than they were in 1956 and 1957. The greatest lead purchase was 12,500 tons and the largest zinc purchase was 20,000 tons. In four months no lead at all was purchased and 350 tons represented the smallest zinc purchase.

Lead prices were going down from the first week in January to the second week in March, 1954 (not shown on graph). In the second week in March, the price began an increase that was to continue on a steady basis for the balance of 1954 and through 1955 until at the end of that year, it was approximately 16.0 cents a pound throughout 1956 until May, 1957. The price began a sharp decline at that time and at the end of 1957, the price had dropped to 13 cents a pound. The sharp decline in prices continued in the first half of 1958 until by June of that year it had fallen to 11.2 cents a pound.

Zinc prices declined slightly during January 1954. They remained fairly constant during February and March, declining slightly during the last two weeks of February. The price began to increase during the last two weeks of March, remained steady during April and May of 1954. (Not shown on graph.) During the rest of 1954 the price continued steadily upward. This rise continued until February of 1956 when price leveled off. It remained steady until April, 1957. Then the price dropped off sharply and leveled off in July, 1957 at a price which continued until the end of the purchase program.

Fig. 8.--Lead and Zinc Prices: June 1954 to January 1962



The Office of Defense Mobilization used a monthly purchase program only with reference to lead and zinc. The customary practice as between the General Services Administration and the Office of Defense Mobilization was for ODM to send GSA an annual directive with reference to the purchase of materials. Normal purchase directives might have several amendments during the year, but never were purchases made on a month-to-month basis. Even in the case of lead and zinc prior to 1954, the Office of Defense Mobilization issued annual purchase directives, the same as it did for other minerals.

## Purchases by Source

Appendix Tables A-21 and A-22 show the total lead and zinc purchases from the American companies that were participating in the program. Lead purchases were made pursuant to the allocation system as described above. Accordingly, sales were made by only four refiners. Actually there are only five lead smelting firms in the United States, and one of these, the Bunker Hill and Sullivan Co., marketed its lead through the St. Joseph Lead Co.

Zinc purchases were also made according to the heretofore described allocation system. Purchases of zinc were made from 12 companies. Three of these merit special attention (leaving only 9 as actually having smelting capacity) in respect to their role in selling finished metal to the stockpile. The Combined Metals Reduction Co., Inc., and

the U. S. Smelting, Refining, and Mining Co. (at the time of sale to the stockpile) did not own smelting capacity, hence had their zinc ore smelted by the Anaconda Copper Co. on a toll basis. The former companies then sold the finished metal to the stockpile. Philipp Bros. is not normally in the zinc business at all, but rather is a commodity firm, which apparently had certain quantities of domestic ore on hand, that they apparently had a refiner smelt, and which was then sold to the stockpile. The remaining nine constitute the total U. S. smelting capacity. The St. Joseph Lead Co. also sold the zinc of the Bunker Hill and Sullivan Co.

If all the lead and zinc in the stockpile were sold at market prices which prevailed in July of 1962 (supposing that it all could be sold with no decline in price) a loss of $201,022,100 relative to acquisition cost would occur, not including storage charges on the lead and zinc over the time which it has been held. The loss would probably be even greater because disposal of lead and zinc in any large quantities would certainly cause a drastic decline in market price.

The allocation system was established prior to the beginning and was maintained more or less throughout the duration of the purchase program. It was intended that the contracting parties should not be advised as to how much lead was being purchased each month for the stockpile. However, if one looks closely at the monthly data, some correlation

can be found between the quantity that the General Services Administration was authorized to purchase and the quantity offered by the industry. For example, in the case of lead, the authorization of July 8, 1954 specifies the purchase of 10,000 tons and the amount offered by the industry was 10,000 tons. Identical authorizations offers and authorizations also occur on August 27, 1954, June 9, 1955, and April 18, 1956. Whether this is coincidental can not be determined.

The authorizations and company offers in zinc were identical on July 8, 1954 and December 9, 1954.

One further aspect of the program should be mentioned. Purchases of lead and zinc were the greatest during the early years of the purchase program, when industrial consumption was also high. (The year 1955 had a record high consumption of both metals.) In the later years of program, consumption declined sharply, and so did purchases. When consumption had reached a relatively low level purchases were terminated. Thus the stockpile purchase program tended to be procyclical in its impact.

## Summary

Purchases of lead and zinc were made at market price (for the most part) according to an allocation system of uncertain origin. The system did not include competitive bidding, nor did the individual companies know how great a quantity they could sell. The purchase quotas were

established on the basis of the capacity of the various companies. Purchases were made on a monthly basis, a program applying only to lead and zinc (and to no other stockpile material).

The purchase program was accompanied by higher prices than were effective both before and after the duration of the program. Prices declined so that in July 1962, a capital loss of $201,022,100 would have occurred if the stockpiled metal had been sold at the then current price.

The purchase program was undertaken during a period of high industrial consumption of lead and zinc and was terminated during a period of relatively low consumption, so that the timing of the program was faulty.

## CHAPTER X: FOOTNOTES

1. 3,000 tons of lead and 5,000 tons of zinc were the quantities to be purchased on a monthly basis under the original purchase plan.

# CHAPTER XI

# THE BARTER PROGRAM

## Introduction

Barter is perhaps the most complex of the government programs with respect to lead and zinc in that its history is varied due to changes in its basis and administration. This chapter will attempt to describe barter from its inception as it applies to lead and zinc. In later sections, the International Lead and Zinc Study Group will be discussed. Finally, to give the reader some insight into the complexities of barter transactions, two transactions involving the barter of surplus agricultural commodities for lead will be discussed.

The history of the barter program ties in closely with the expanded stockpile purchase program in the years 1954-57, so some of the things that were discussed in the previous two chapters also apply here. However, since 1957, acquisition of lead and zinc under the barter program has proceeded on a basis independent of the stockpile purchase program and hence independent of national security. The realization of the varied nature of the program over time is essential to its understanding.

The name barter is somewhat of a misnomer in that it implies a simple commodity exchange with no cash involved. As we shall see, cash transactions play an important part in the barter program, both in the acquisition of lead and zinc and in the disposal of agricultural commodities.

Most of the lead and zinc acquired under the barter program has been added to the Supplemental Stockpile. We have seen in Chapter VIII that disposal procedures are such that once the material is placed in the stockpile, disposal is impossible. This fact has important implications in assessing the impact of the barter program.

There is considerable latitude for administrative policy-making within the framework of the barter program as constituted. Large supplies of surplus agricultural commodities in the Commodity Credit Corporation Inventory gives the Administration an independent source of financing. Thus the barter program provides administrative agencies with some freedom of action (and tends to weaken the traditional check and balance features of government).

An expanded barter program was established simultaneously with the expanded stockpile purchase program and the strategic and critical materials acquired were added to the Supplemental Stockpile. These acquisitions were not counted against the stockpile objectives, thus, a fundamental distinction must be drawn between the two programs.

With these considerations in mind we shall proceed to examine the barter program in some detail. Tables 27 and 28 show all the lead and zinc acquisitions by barter through 1961. This provides some measure of the extent of the program.

## The Barter List

The actual procedure of making up the list of materials to be acquired by barter has had a varied history reflecting the changes in the program over time. In the years 1950 to 1954 the Office of Barter and Stockpiling of the Foreign Agricultural Service of the Department of Agriculture, on the advice, or with the permission of the General Services Administration, would acquire metals and minerals for transfer to the National Stockpile. The General Services Administration would then reimburse the Office of Barter and Stockpiling at a fair market price. During the years 1949 to 1954, barter was a relatively minor program (barter of all commodities amounted to approximately $108 million).

In 1954 a fundamental change in policy occurred when the President announced that new long-term objectives were to be established for the National Stockpile. This marked the beginning of an expanded stockpile purchase program. On July 10, 1954, the Agricultural Trade Development Assistance Act (P. L. 480) became law, and the Supplemental Stockpile was established under one of its provisions. This provided a depository for "strategic and critical" materials purchased

TABLE 27.--Lead Acquired by Barter During Calendar Years 1956 through 1961

| Calendar Year | Number of Contracts or Commit-ments | Quantity Deliverable in Short Tons | Value | Source Countries |
|---|---|---|---|---|
| 1956 | 14 | 76,325 | $23,768,457 | Australia, Canada, Mexico, Peru, and Spain. Also ores from Australia, Bolivia, Peru, South Africa and Tasmania were processed in the United States. |
| 1957 | 15 | 55,438 | $16,938,372 | Australia, Belgium, West Germany, Mexico, Peru, and Yugoslavia. Also ores from Australia, Bolivia, Canada, Chile, Mexico, Peru, and Southwest Africa were processed in the United States. |
| 1958 | 18 | 45,788 | $10,753,395 | |
| 1959 | 15 | 43,694 | $ 8,278,570 | Canada, West Germany, Mexico, Peru, Spain, and Yugoslavia. Also Peruvian ores were processed in the United States. |
| 1960 | None | None | None | None |
| 1961 | 3 | 105,000 | $19,067,000 | Australia and Canada |
| Total | 65 | 326,245 | $79,255,794 | |

Source: Inquiry into the Strategic and Critical Materials Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee on Armed Services, U. S. Senate, 87th Congress, 2nd Session, June 21, 1962, pp. 1264-1265.

TABLE 28.--Zinc Acquired by Barter During Calendar Years 1956 through 1961

| Calendar Year | Number of Contracts or Commit ments | Quantity Deliverable in Short Tons | Value | Source Countries |
|---|---|---|---|---|
| 1956 | 30 | 147,183 | $41,912,177 | Australia, Belgium, Bolivia, Canada, Belgian Congo, West Germany, Italy, Japan, Mexico, Mozambique, Netherlands, Northern Rhodasia, Peru, and Yugoslavia. Also ores from Mexico and Canada were processed in the United States. |
| 1957 | 26 | 109,584 | $30,950,488 | Australia, Belgium, Canada, Belgian Congo, West Germany, Italy, Japan, Mexico, Netherlands, Northern Rhodesia, Norway, Peru, and Yugoslavia. Also ores from Canada, Mexico, and Peru were processed in the United States. |
| 1958 | 7 | 36,860 | $ 7,674,680 | Canada, Italy, Japan, Mexico, Peru, and Yugoslavia. |
| 1959 | 12 | 29,541 | $ 6,386,310 | Australia, Canada, Belgian Congo, Peru, and Yugoslavia. Also ores from Peru were processed in the United States. |
| 1960 | None | None | None | None |
| 1961 | None | None | None | None |
| Total | 75 | 323,168 | $86,933,655 | |

Source: Inquiry into the Strategic and Critical Materials Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee on Armed Services, U. S. Senate, 87th Congress, 2nd Session, June 21, 1962, pp. 1264-1265.

with foreign currencies obtained from sales of surplus agricultural commodities. On September 21, 1954, the Office of Defense Mobilization issued a press release listing those materials needed to meet minimum and long-term National Stockpile objectives. This announcement, in a second list, also enumerated those materials which the Office of the Commissioner, Defense Materials Service suggested for procurement for the Supplemental Stockpile. This second list was designed to be a guide for barter procurement of metals and minerals and it established acquisition of lead and zinc for their own sake as an active part of barter policy. Despite this fact the acquisition of these metals did not actually begin until June 7, 1956.

## Operating Rules of the Barter Program

### Rules Prior to 1954

Before the passage of the Agricultural Trade Development Act of 1954, the Foreign Agricultural Service obtained metals and minerals under Section 4-h of the Commodity Credit Corporation Charter Act. Of the $108 million of acquisitions, $71,800,000 represented strategic and critical materials.

The acquisitions proceeded as follows: the Department of Agriculture would receive an offer of a material, the dollar value of which would be determined, and an equivalent dollar quantity of surplus agricultural commodities would be presented in payment. The price offered to the Department

by a potential vendor of materials was referred to the General Services Administration for evaluation.

Rules 1954 to 1958

The Agricultural Trade Development Assistance Act of 1954 spelled out more specifically the authority already existent under the Commodity Credit Corporation Act. The former, however, did create the Supplemental Stockpile as a repository for the materials that might be acquired. Nevertheless, prior to 1956, barter transactions were taken for the account of Commodity Credit Corporation (except for small amounts which went into the National Stockpile).

The Agricultural Act of 1956 greatly tightened the disposal procedures connected with the Supplemental Stockpile and subsequently the materials in the Commodity Credit Corporation Inventory were transferred to the Supplemental Stockpile. This is the first instance of barter materials being so treated. Barter acquisitions of lead and zinc began in large amounts because the change in rules meant that acquisitions could not be sold at some future time and thus "disrupt " the market.(1)

On May 25, 1957, some fundamental changes were made which brought the program to a halt. Prior to that time surplus agricultural commodities moved into friently countries without restriction. At this time, the Department of Agriculture began to require assurances that the commodities exported under the barter program would be over and above the

commodities exported for cash in order that U. S. cash sales would not be displaced. A certificate to this effect was required from the country into which the agricultural commodities were moving.

The difficulty with this aspect of the program was that many governments did not control their individual import firms, thus could not give the required certificate making barter transactions impossible.

Rules Subsequent to 1958

On November 14, 1958, the Department of Agriculture decided to revise their policy on certification, and in doing so made a study of the financial standing or stability of all the friendly countries and graded them as excellent, good, fair, or poor according to their financial position.

The import history of U. S. agricultural commodities for each country was matched against their financial stability. In cases where a country had a high import history and a good dollar position, the Department placed restrictions on the agricultural commodities permitted to go into that country on the supposition that they would have displaced U. S. cash sales. This change greatly facilitated shipments of grain into low income countries.

Barter Procurement Directives

Table 29 contains the barter procurement directives (for lead and zinc) for the years 1954-61. In the years

TABLE 29.--Barter Procurement Directives

| Date of Directive | Fiscal Year | Amount (tons) | |
|---|---|---|---|
| | | Lead | Zinc |
| August 27, 1954 | 1955 | 500,000 | 1,250,000 |
| September 16, 1954 | 1955 | 500,000 | 1,250,000 |
| November 11, 1955 | 1956 | 100,000 | 100,000 |
| May 11, 1956(a) | 1956 | 100,000 | 100,000 |
| June 6, 1956 | 1957 | 185,000 | 150,000 |
| April 10, 1957(b) | 1957 | 185,000 | 250,000 |
| May 14, 1957 | 1957 | 265,000 | 175,000 |
| July 24, 1957 | 1958 | 150,000 | 175,000 |
| July 1, 1958(c) | 1959 | 108,526 | 136,820 |
| November 11, 1958(d) | 1959 | 50,000 | 75,000 |
| July 1, 1959(e) | 1960 | 0 | 52,459 |
| January 6, 1960 | 1960 | 75,000 | 50,000 |
| May 2, 1961(f) | 1961 | 125,000 | 50,000 |
| July 1, 1961(g) | 1962 | 125,000 | 50,000 |

(a) Office of Defense Mobilization recommends maximum delivery time as a part of barter terms.
(b) Maximum delivery time set at 2.5 months.
(c) Extended carryover from what was left of the objective for fiscal 1958.
(d) President determines the objective for the first time; 2.5 month delivery stipulation continued.
(e) Extended carryover from what was left of the objective of fiscal 1959.
(f) Lead objective set specifically to allow barter transactions to be concluded with Canadian and Australian producers for 105,000 tons of lead.
(g) Carryover from fiscal 1961.

Source: Inquiry into the Strategic and Critical Materials Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 87th Congress, 2nd Session, July 2, 1962, pp. 1336-1337.

before fiscal 1959, the objectives were determined by the Office of Defense Mobilization who sent barter directives to the Department of Agriculture, who assumed the final responsibility for implementing the barter transaction. On November 11, 1958 the President assumed the responsibility for establishing the barter objectives. As a practical matter this change had the effect of allowing the Department of Agriculture to set the objectives on the advice of an interdepartmental committee. This has had the effect of institutionalizing the divorce between barter policy and national security considerations.

## Mechanics

### The Interdepartmental Materials Advisory Committee

The Interdepartmental Materials Advisory Committee was set up to advise the Office of Defense Mobilization on matters of materials policy. In the years 1954-58, procurement directives were channeled through this committee, who recommended the kinds and quantities of materials to be acquired.

This committee appointed an ad hoc committee to go more deeply into the details of the problems connected with the acquisition of lead and zinc with an eye for coordinating these activities and to find ways to stimulate domestic production.

On July 22, 1956, the ad hoc committee recommended limitation of the flow of lead and zinc into the United States by voluntary agreements with foreign producers. The aim was to limit imports to approximately the monthly rate of the first quarter of 1956. Specifically they recommended that barter agreements be concluded whenever signs of "market softness" appear. Barter contracts were to be designed to remove surplus supplies from the market without encouraging an increase in foreign production. A six months maximum delivery time was included in an attempt to achieve this end.(2) These recommendations are indicative of the overall nature of the acquisition program.

The "Additionality" Committee

It is the policy of the Department of Agriculture, fixed by statute, that the barter of agricultural commodities shall not interfere with the United States cash sales of agricultural products. Consequently presentation of the ocean bill of lading is required to determine where the shipment actually goes. When an offer is first made the offeror is required to specify the destination of agricultural commodities. Simultaneously, a determination is made as to whether the commodities so delivered will be in addition to those to be sold for cash. There is a small list of undeveloped countries which have virtually no history of commodity imports from the United States. It is assumed that barter commodities going into their countries will not displace cash sales.

Barter agreements are not included with the hardest currency countries such as the United Kingdom, West Germany, Belgium, Netherlands, Luxembourg, Switzerland, Japan, Italy, etc. because these countries have histories of very sizeable imports of U. S. agricultural commodities. It is assumed that barter transactions with these countries would displace cash sales.

There is an intermediate category which includes countries whose history of imports of U. S. agricultural commodities is not so great in extent or of such long standing. Barter arrangements are sometimes made with countries in this category. In such cases, the department secures statements from importers of the quantities they are going to buy for cash. Studies of the import histories of these firms are then made, and if importers intend to buy for cash quantities close to what they have been buying and the importers give assurances that the bartered commodities will be over and above cash transactions, it is assumed that the barter transaction will be in addition to cash purchases. Finally, a study is made to determine whether importers actually do what they say they will do.

A committee dubbed the "Additionality Committee" attempts to police the barter program to prevent displacement of cash sales. This committee is composed of representatives of the Administrator of the Agricultural Stabilization and Conservation Service, a member from the Office of Barter and

Stockpiling, and members from the various commodity divisions of the Foreign Agricultural Service.

The Barter Classification System

The Department of State can object to any bilateral or multilateral transaction involving the export of agricultural commodities to harder currency countries if it is felt that these transactions pose a threat to U. S. foreign policy.

A bilateral transaction is one in which the agricultural commodities go directly into that country from which the materials obtained by the United States originate. A multilateral transaction involves shipping agricultural commodities into one country, taking a strategic material from a second country, and then making an equivalent dollar transfer of some commodity from the first country to the second.

The barter program is a restricted one. The Department of Agriculture publishes lists from time to time under which country in the world is classified according to a certain letter--A, B, C, D, or X--and depending on the classification, special requirements are attached to the particular country.

In "A" classification countries the importers of agricultural commodities are required to certify that the barter shipment is in addition to their normal requirements.

A certificate is not required of the importer in "B" classification countries. However, an export of an equivalent dollar amount of the commodities imported is required. This export must ultimately go to the country that supplies the

United States with strategic and critical materials, though this may be accomplished indirectly through a complicated series of intermediate transactions.

The "C" classification or "open-end" transactions are with countries that do not normally purchase agricultural commodities from the United States. Movements of barter commodities into these countries is unrestricted.

The hard currency countries into which barter commodities can not move are classified "X". It is felt that barter commodities moving into these countries would displace sales for cash.

In policing barter agreements the Department of Agriculture does not go beyond requiring the ocean bill of lading to be furnished unless there is a report of transhipment The Department's staff is inadequate to keep a regular check on each contract. Experience has shown that if brokers attempt to transship commodities in violation of their barter contracts, competitors tend to find out about it and complain. Transportation costs tend to discourage trans-shipment of commodities once they have reached their original destination.

## Views of the Department of Agriculture

### Saving of Storage Costs

The Department has taken the position that barter has exchanged surplus agricultural commodities which are costly to store and subject to deterioration for materials and

minerals which are relatively cheap to store and deteriorate less rapidly. The annual cost of storage of agricultural commodities bartered is about $93 million, while that of materials acquired is approximately $1 million.

Barter can be used to aid underdeveloped countries, when the alternative might be to sell agricultural commodities for local currencies, which, being soft, would be of little value to the United States. This affords an opportunity for these countries to maintain a high level of employment and makes direct donations unnecessary. Processing of raw materials thusly acquired in the United States tends to stimulate employment in the domestic industries.

Barter does not stimulate domestic agricultural production since only $160 million out of the $5.1 billion of agricultural exports (in 1961) were barter commodities. Since the United States is the world's largest importer of metals and minerals, and consumption is expected to increase in future generations, it would seem prudent to accumulate inventories of essential metals and minerals for use of future generations.

Although barter is merely a supporting program, it is useful as a collateral device to assist in achieving a number of different desirable objectives as well as the basic one of agricultural commodity disposal.

### Displacement of Cash Sales

There never has been conclusive proof that barter commodity exports displace cash sales. Nevertheless, there may have been some displacement. In spite of this disadvantage, it is true that the barter program helps to make the movement of agricultural commodities abroad greater than it otherwise would have been, thus the advantages outweigh the disadvantages.

One argument against barter is that the metals and minerals acquired are put into stockpile and tend to depress prices by "overhanging" the market. The Department counters this view by pointing out that these materials go into the Supplemental Stockpile, the disposal procedures from which are sufficiently restrictive as to prellude this possibility (the Counsel for the Office of Emergency Planning is of the opinion that disposal from the Supplemental Stockpile is impossible under present statutes).

## The International Lead and Zinc Study Group and Barter: The Role of the Department of Interior

### Origins of the International Lead and Zinc Study Group

The International Lead and Zinc Study Group originated in late 1957 when representatives of several nations requested the United Nations to call a meeting of governments to consider the problems of copper, lead, and zinc though it was not formally organized until May 1959. Among the objectives

of the Group wa to seek ways to correct depressed market conditions by planned reductions in output and sales.

In 1960, the United States suggested that if it were possible for world producers to devise some means of limiting surplus production, the United States would explore the possibility of using the barter program to remove some of the surplus stocks. The Department of Interior stipulated that a ten per cent reduction in output was a necessary prerequisite to any barter agreement. The objective of the Department was to get a sufficiently large reduction in output to provide a measure of solution to the lead problem. This had to be accomplished by a reduction in foreign output as the Department could not propose reductions in United States output without contravening the anti-trust laws.

## The Mexico City Meeting of the Study Group

The Study Group held a session in Mexico City in March, 1961, at which the United States representatives made a specific offer to barter agricultural surpluses for lead, providing each company seeking a contract would restrict output in a satisfactory manner. The following conditions were specified: (a) the company would not rebuilt its surplus stocks, (2) stocks accumulated subsequent to January 1, 1961 would be liquidated, and (c) total commercial offerings in 1961 be less than those of 1960. No limit was set as to how much lead output to be obtained. The purpose of the

arrangement was to accelerate the tedious process of removing surplus lead from the world market and to restore a balance between world supply and demand. More specifically, the objective was to raise the world lead price and to divert lead shipments from the United States. It was hoped that the U. S. price could be raised to 12-12.5 cents a pound.

Barter Arrangements with Canada and Austrialia

Following the Mexico City conference, the Departments of State, Interior, and Commerce recommended that the Department of Agriculture enter into barter contracts with Canadian and Australian producers. The Canadian producers found themselves in a peculiar position in that they could not make direct contact with the United States Government in which they could offer to cut their production in exchange for barter without contravening their anti-trust laws. Thus, prior to the Mexico City meeting they announced that they were unilaterally cutting back production. Then, at the meeting, they requested to be considered in the barter program. Because of this and similar indications of planned output reductions from some of the other delegations, the United States delegation felt justified in making a barter proposal. Consequently in April 1961, contracts for 50,000 tons of lead from Australia and 55,000 tons from Canada were concluded.

The Results

These barter agreements were designed to remove the surplus lead from the world market. They did succeed in reducing somewhat the surpluses from markets outside of the United States. The program, however, had no effect on domestic market conditions which worsened during 1961.

The estimated surplus outside of the United States was 135,000 tons. The barter program was designed to absorb all but 20,000 tons of this surplus. But the United States produced more lead than had been estimated and the Soviet Union exported considerably more lead than had been anticipated (neither being committed to any reduction in output). Consequently the 105,000 tons taken off the market was replaced by an equally large increase in supply so that market conditions were approximately the same after the barter transaction as before.

## The International Lead and Zinc Study Group: The Role of the Department of State

The Department of State gave its approval to this particular barter program provided a satisfactory reduction in output could be made. Normally the Department is opposed to barter. This has been a long standing policy for as number of years prior to these transactions because, except for bilateral transactions which exchange a surplus for a surplus there is no way to avoid infringement upon commercial sales. This infringement causes complications in international

relations. More than this, barter does not actually effect disposal of agricultural commodities.

Most of the commodities bartered are surplus because they are under a domestic price support program. The most prominent example is that of wheat. United States participation in the World Wheat Agreement precludes sales at prices other than those between the limits set by the floor and ceiling of the wheat agreement. The market price is usually somewhere in the middle of that range. Barter exports either displace a United States cash sale or a sale of Canada or Argentina. In the former case, surplus agricultural stocks are unchanged by the transaction. In the latter case, Canadian and Argentine exporters find a method of displacing United States cash sales in another part of the world by cutting price by just enough to sell the wheat. Perhaps the best evidence of this is that since 1954 the United States is the only country to have persistent surpluses despite all disposal efforts. Thus barter has the effect of putting downward pressure on market prices, because other sellers have to undercut some United States commercial sales in order to sell their own products.

Despite this general outlook, the Department of State took a lead in the barter acquisition of lead because it was felt that a certain amount of bartering was intended by Congress. Therefore the policy is to allow a substantial amount of barter under the somewhat restricted rules that had been established.

## The 1961 Barter of Surplus Agricultural Commodities for Load (Australia)

### Role of the Metal Dealers

C. Tennant and Sons Co., the metal dealers executed a contract with the Commodity Credit Corporation to deliver the 50,000 tons of lead acquired from Australia. The dealers sold the lead to the General Services Administration at three different prices depending upon the delivery point to which the lead was to be shipped. Delivered to the New Jersey depot the price was 9.27 cents, to the Louisiana depot, 9.11 cents, and to the Mississippi depot, 9.04 cents a pound.

The total value of the contract was approximately $9 million, which was discounted by 6-1/2 per cent (about $600,000) in "agricultural discounts." These compensate the agricultural commodity dealers for underwriting the responsibility of the disposal of the agricultural commodities acquired by the metal dealers in the course of the transaction. Out of the total proceeds the metal dealers had to pay transportation charges, financing and interest charges, insurance, etc. in addition to the grain discount.

The metal dealers paid the Australians a net price (free alongside shop or free on board) taking title at the port of shipment. They then delivered the lead to the Commodity Credit Corporation at the specified depot. The transaction did not involve a direct exchange of grain for lead.

The grain was sold on the various world markets and the dollar receipts generated were used to purchase the lead.

### Role of the Grain Dealers

The Continental Grain Co., the grain dealers took responsibility for the disposal of the agricultural commodities obtained by the metal dealers. The grain dealers paid cash to the Commodity Credit Corporation for the agricultural commodities involved and the latter reimbursed the metal dealers as the lead was delivered. There was no connection between the buyer of the agricultural commodities and the origin of the lead (normally the case in barter transactions).

## The 1961 Barter of Surplus Commodities for Lead (Canada)

### The Participants

Philipp Bros. and the American Metal Climax Co. participated in the barter of surplus agricultural products of 55,000 tons of Canadian lead valued at approximately $10 million. In circumstances similar to those described above, Philipp Bros. assumed the risk of disposing of the agricultural commodities involved.

### Disposal Procedures and Problems

Even though the Department of Agriculture publishes its program, the dealers still face difficulties in disposing of the agricultural commodities because the Department

of State has the right to veto any proposed disposal.

A veto not only applies to the original disposal of agricultural commodities, but to any of the individual transactions that might be involved in a complex multilateral transaction. For instance, if the commodity dealers proposed to sell tobacco in Portugal and ship olives from Portugal to Canada, the Department of Commerce could object if the olives were thought to be in competition with United States exports.

This disposal plan was very complicated involving approximately 125 different disposals of which 35 can be considered as being major. A typical one involved the disposal of $100,000 worth of tobacco to Portugal. As a third leg, Portugese iron and manganese ores moved either directly to Canada, or to West Germany. The West Germans then exported glass to Canada to offset the imports from Portugal. The commodity dealers kept a check on the various markets to ensure that exports arising from barter are in addition to normal exports. The commodity dealers may make payments to the exporters to insure the movement of exports. Suppose on inquiry, it is discovered that West German glass is no longer being sent to Canada because French producers are selling at one to two cents below the German price. The commodity dealers might then make an offer to pay the West German glass exporter one to two per cent in order to move West German glass into Canada. Substitution makes the

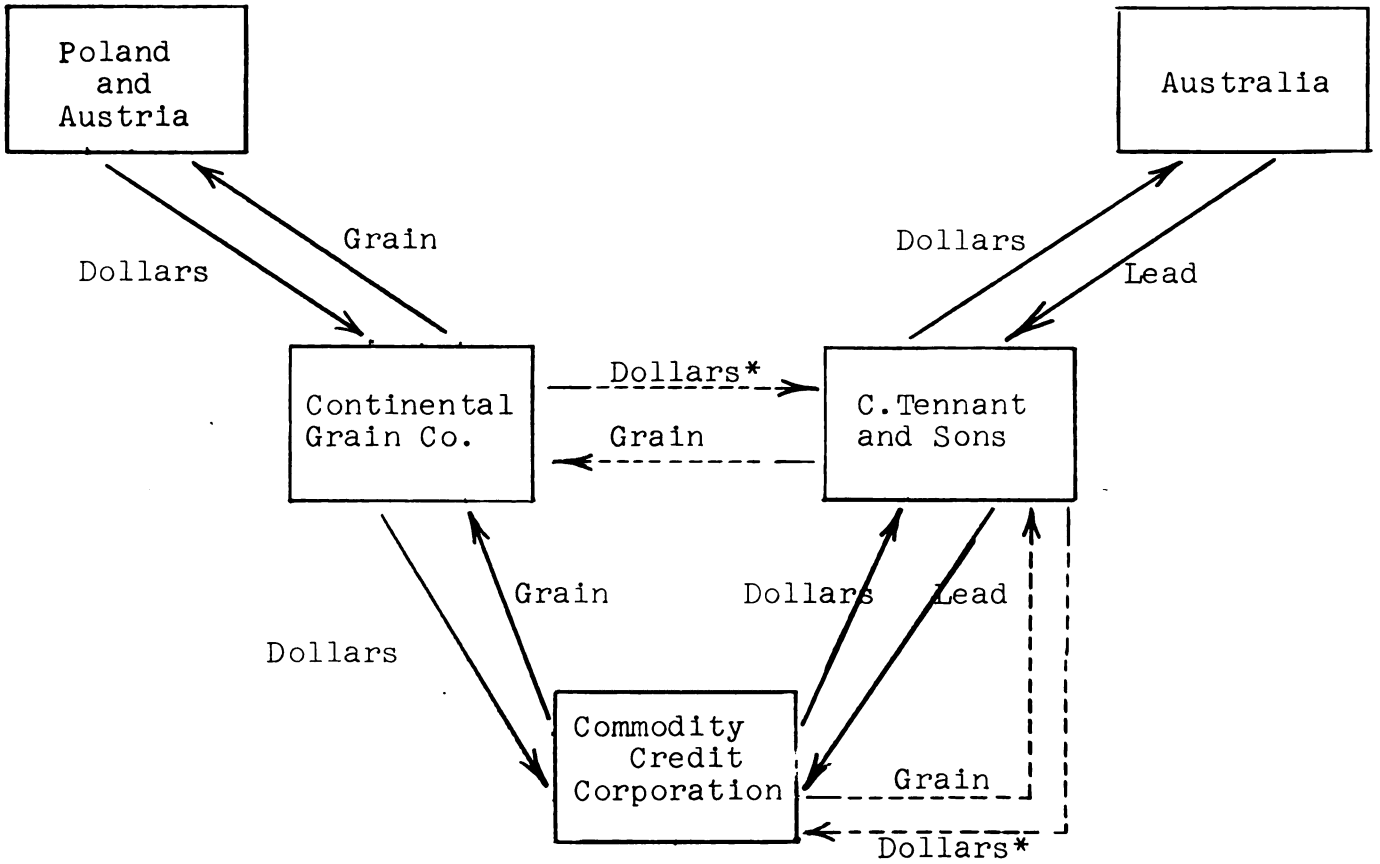



Fig. 9.--Organization of a Barter Transaction (Lead from Australia)

*Formally, but not in actual practice, C. Tennant and Son would trade lead for grain and then sell the grain at a discount to the Continental Grain Co. This is shown by the dotted lines.

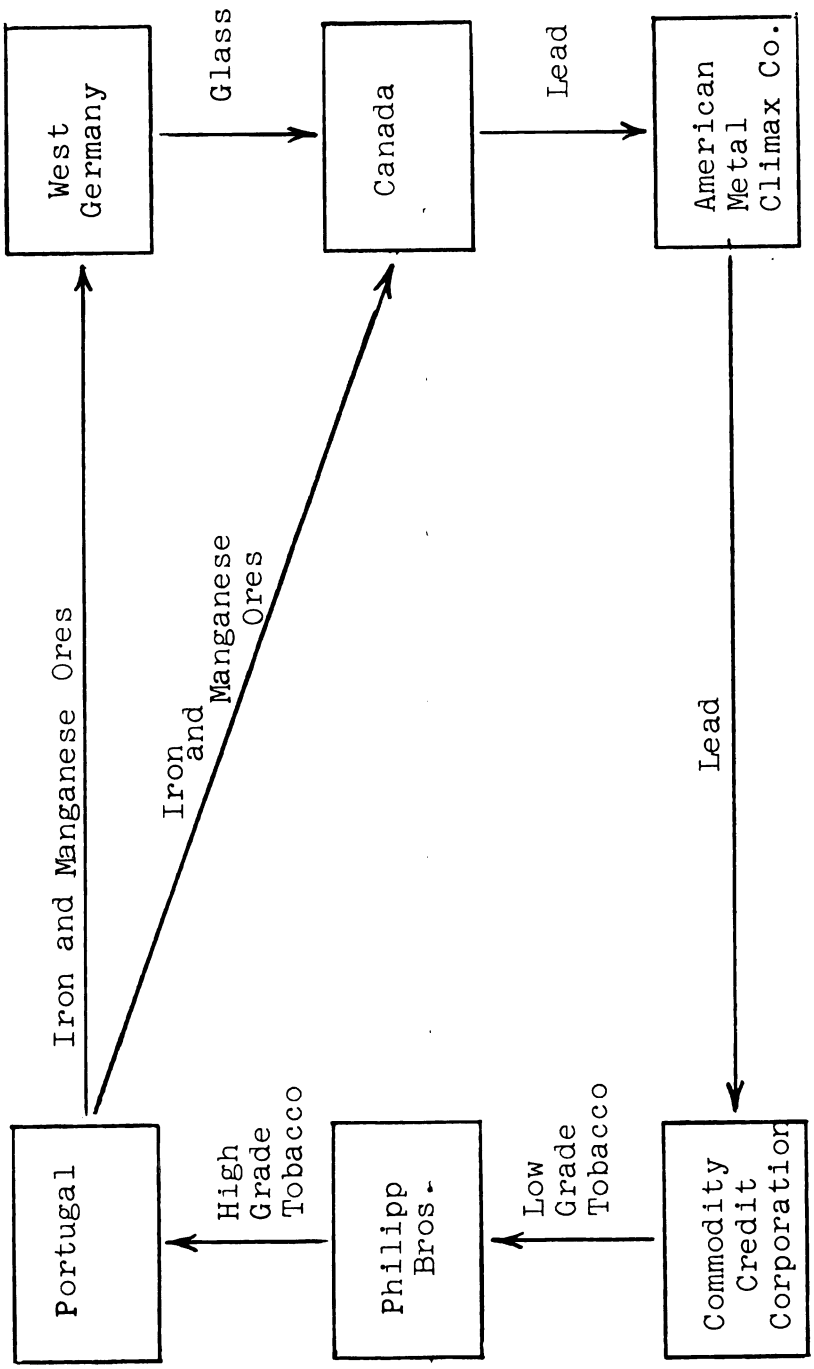



Fig. 10.--Organization of a Barter Transaction (Lead from Canada)

process still more complicated. The Commodity Credit Corporation tobacco being of low grade was not acceptable to the Portugese. Consequently the tobacco was sold at a loss in the United States and better Virginia tobacco went to Portugal.

## Summary

The barter program exchanged surplus agricultural commodities for $79 million worth of lead and $87 million worth of zinc in the years 1956-62.

The list of materials eligible for barter has had a varied history. Before 1954, acquisitions were made with the cooperation of the General Services Administration for addition to the National Stockpile. Since the Agricultural Trade Development Assistance Act was passed, materials were acquired with the proceeds of the sales of surplus commodities (after 1956) and were added to the Supplemental Stockpile.

Prior to the passage of the Agricultural Trade Development Assistance Act, the acquisition of strategic and critical materials was on a very small scale. The total acquisitions before 1954 of all commodities was $107 million, of which $71.8 million represented strategic and critical materials.

Barter materials were placed in the Supplemental Stockpile for the first time after the passage of the Agricultural

Act of 1956, which gave that authorization. Since the passage of that act lead and zinc acquisitons greatly increased.

On May 28, 1957, the barter program was revised in such a way as to bring the program virtually to a halt. On November 14, 1958 the program was again revised. The effect was to liberalize the restrictive provisions which had been included in the revision of the previous year. Thus, the barter program was re-instituted though on a smaller scale than in the 1954-57 period.

The barter program was set up as a technique to support the market by removing "surplus foreign ores, concentrates and metal from the market without encouraging an increase in foreign production." In order to insure that this would be the case, a specified time limit was placed on deliveries (originally six months).

The Department of Agriculture is under obligation to prevent disposals for surplus agricultural commodities from interfering with cash sales. Consequently elaborate procedures have been set up to minimize the interference. Therefore, barter transactions can be very complicated multilateral or relatively simple bilateral transactions.

The International Lead and Zinc Study Group had its origins in the depressed conditions in worl markets during the latter part of 1957. It originated when, under United States auspices a meeting of a number of countries was

convened to consider the problems of copper, lead, and zinc. At the Geneva meeting in 1960, the United States indicated a willingness to barter in an attempt to remove surplus inventories from the world market.

Following the Mexico City meeting in March 1961, the United States concluded barter arrangements, involving the exchange of surplus agricultural commodities for lead, with Australian and Canadian producers. A total of 105,000 tons of lead was added to the Supplemental Stockpile as a result of these transactions.

## CHAPTER XI: FOOTNOTES

1. See the testimony of Felix E. Wornser, Hearings, Part 4, p. 1158.

2. Hearings, Part 4, p. 1341.

# CHAPTER XII

# ANALYSIS OF GOVERNMENT POLICIES I

## Introduction

In this and succeeding chapters we shall attempt to analyze the effects of various government programs in terms of their effect on resource allocation. For purposes of simplicity we shall consider each policy in isolation and we shall make the assumption of perfect competition throughout the whole of the economy. We shall take the allocation of resources under conditions of perfect competition as the optimum allocation of resources to be used as a criterion of performance. We shall view the impact of various government programs on: (1) output, (2) prices, (3) consumption, (4) government reviews or expenditures, (5) the impact on the foreign producer, (6) effect on market structure, (7) influence on cyclical fluctuations, and (8) effect on the distribution of income. No effort will be made to give quantitative significance to any of these factors due to the complexities involved. Thus our conclusions will be drawn on the basis of tendency only.

Included in the analysis will be some discussion relating to the general and historical charter of the various government programs in order to provide the reader with an

overall frame of reference within which the policies of government with respect to the lead and zinc industries might be viewed.

This chapter will specifically relate itself to a discussion of the various tax concessions as they relate to lead and zinc. Frequently, the discussion we shall undertake will have general application to tax policy. We will find it convenient, at times, to conduct our discussion in general terms remembering that the conclusions we shall draw apply specially to the lead and zinc industries.

## Tax Concessions

### General Statement

One of the generally accepted concepts behind the financing of the Federal Government is that federal tax policy should encourage the balanced growth of the economy and the most efficient use of economic resources. These twin objectives require that the burden of taxes fall as naturally as possible among all the various taxpayers. Economists have repeatedly observed that the federal revenue system contains a myriad of special provisions, some with very restricted applicability, which provide preferential treatment with respect to various types of activity. Some of these special provisions apply to lead and zinc production and hence will be discussed in detail below. A

distinction, however, must be made between "differential" and "preferential" tax treatment. Differences in actual economic circumstances may require differential tax treatment if the tax base in each set of circumstances is to be acurately and equitably measured so that the correct tax rate is to be applied. A preferential tax burden, for its part, refers to treatment which involves a ligher burden of tax on some taxpayers relative to other than their circumstances warrant from a strictly economic point of view.

One characteristic of most of the preferential tax provisions is that they tend to induce use of resources in such a way as to produce lower returns before tax and higher returns after tax than would have resulted in the absence of preferential treatment. To be more specific, the preferential provisions tend to result in resource use different from that which would be the case if the tax system were more nearly neutral and resource allocation were determined to a greater extent by the impersonal mechanism of the price system. But since it is generally assumed that the operation of the price system in free markets will result in the best direction of our resources, tax provisions which interfere with such allocations must, of necessity, involve a cost in terms of a lower total real value for the product of the economy. This cost is reflected in the restriction of growth of productive capacity which might be attained with minimum sacrifice of current living standards.

Of major importance is the light of the objective of balanced economic growth and efficient allocation of resources are those special provisions in the tax laws which are aimed at stimulating the growth of some particular industry or industries. It should be recognized that use of the federal tax system as a means of stimulating growth of any particular industry necessarily means willingness to deter the growth of others not equally favored. The greater the preferential treatment given industry A to stimulate its growth, the less can be afforded industries B through Z. Possibly some, if not all, of the latter may even have to assume greater tax burdens than formerly and, therefore, may encounter more substantial barriers to their growth.

If preferential tax treatment is afforded any group in the economy, it necessarily implies a value judgment with respect to the type of economic activity most essential to the process of economic growth. Decision makers must be keenly aware of the weight of responsibility that they assume if such decisions, which traditionally tend to be left to the mechanism of the price system in a free market, are made. Errors in making these value judgments may prove costly in terms of the efficiency with which scarce economic resources are used and therefore in terms of the growth in living standards and productive capacity of which the economy is capable.

Moreover, experience has shown that preferential tax provisions tend to produce chain reactions, each such

provision leads to claims for similarly preferential treatment from taxpayers who do not quite qualify for the initially provided benefits. The cumulative effect of such a process is to shrink the tax base and, if total collections remain unchanged, to shift the burden of taxation on to the unfavored segment of the economy. In addition, it reduces the extent to which economic growth may be taken advantage of for purposes of reducing tax rates.

## The Depletion Allowance

As has been mentioned above, there are two techniques for computing the depletion allowance: (1) the cost method, and (2) the percentage method. Cost depreciation allows the entreprenuer to recover his costs as the minerals are being extracted from the ground. Percentage depletion, on the other hand, allows the entreprenuer to recover his costs as a percentage of gross income. The allowance is somewhat limited by the fact that the total deduction for depletion can not be in excess of 50 per cent of taxable income before deduction of the allowance.

Percentage depletion and the taxpayer.--Percentage depletion in contrast to cost depletion is not limited in total amount to any amortizable tax basis for a property. Percentage depletion may be deducted as long as a property yields net operating income, even if the operator may have already recovered tax free an amount many times his initial

investment. This arrangement is particularly beneficial to owners of properties on which the mineral resources are unexpectedly large. All other things being considered equal, this makes the mineral operation more profitable than before (on an after tax basis), consequently, tending to stimulate output and the entry of new firms.

The depeletion allowance as linked to current income puts mineral taxpayers in a comparatively favorable position with respect to changes in the price level or technological innovation. Cost depeletion, in effect, establishes a floor beneath depletion deductions, because firms have the option of the general rule for recovering capital costs. The upward limits on annual depletion deductions, however, are somewhat flexible in that the limit tends to increase as the price of the product increases. Technological innovations which make development of previously submarginal mineral deposits profitable will tend to increase gross income (and the depletion deduction). This feature of the depletion allowance, then, tends to heighten the boom periods of the business cycle by making after-tax profits larger than otherwise. The option feature would preclude any effect on profits during periods of recession.

The actual statutory provisions have also operated to widen the gap between the percentage depletion allowance and that which would recover only original costs. Usually, the actual extraction of the mineral does not produce an

immediately marketable product. Producers are frequently integrated, at least through the stages of concentrating, milling, and otherwise beneficating the raw ore. To establish a line of clear demarcation between extractive operations and refining or manufacturing is very difficult. As a result, the statutory definitions of gross income for depletion purposes now include crushing, grinding, concentrating, and numerous other processes within the meaning of "mining." In other words, the value added by all of these processes in included in the measure of the exhaustion of the mineral deposit. Under this interpretation, vertical integration of firms is promoted, as they are enabled to take advantage of a wider tax base for tax purposes.

Percentage depletion allowances computed with respect to gross operating income frequently are supplemented on a basis independent of the mineral asset itself. In theory, the gross income relevant for depletion is that income directly attributable to the mineral asset itself. However, in the actual application of tax accounting procedures, the gross income which is attributable to the mineral property usually contains numerous components more properly attributed to the economic contributions of other productive factors, superior management, monopolistic profits on pure economic profits accruing as a result of windfalls. This means a wider base to which the depletion allowance can be applied, hence a greater after tax income than otherwise.

The effects of treating capital costs as current expenses.--Frequently the percentage depletion of recovery of capital costs is further distorted by other features of the tax law with regard to tax-free recoupment. Generally speaking, under the present income tax, expenditures made during a given year for assets whose service life extends for a period substantially beyond that year must charge to a capital account. These types of expenditures, including those for depreciable mining and equipment, cannot be immediately charged to expense, but are to be recovered over the service life of the assets by amortizing deductions. However, capital investments in depletable assets have had for more than four decades the benefit of tax treatment permitting immediate expensing of large mining costs.

In seeking a practical solution to the problem of mines in the "development stage," the Bureau of Internal Revenue has ruled that only expenditures in excess of current net receipts from minerals sold shall be charged to capital account and hence be recoverable through future depletion deductions. Thus, receipts from sales of ore during the development stage are not considered to be taxable income, but rather as immediate recoupment of capital expenditures for developing the mine. If these receipts happen to be large, only a fraction of the capital costs of developing the ore body will be added to the tax base (cost) of the depletable asset.

If this procedure for recovering development costs out of current receipts was used in conjunction with the general rule for recovery of capital, the result would be merely an acceleration of recovery. To the degree that costs of development were offset by net receipts in the development period, the cost basis of the depletable asset would be reduced, and future depletion deductions would be correspondingly less. This would mean, in effect, that the taxpayer would enjoy an interest-free loan from the government; after the income would be larger in the earlier years and less in the later years. (This aspect of the tax concession has features similar to the accelerated amortization program which is discussed below. We shall, therefore, defer discussion of this subject until that time.)

By way of contrast, however, percentage depletion is not affected by the amount of development costs already recovered, since the formula for its compulation does not consider the unamortized cost as a basis for computation. Instead of merely changing the timing of the same aggregate deductions for capital recovery, the percentage depletion technique frequently permits a double deduction. The taxpayer may, to the extent that he has gross income, deduct development costs of depletable assets during the development stage and then take full percentage depletion throughout the life of the asset.

Tax policy and mineral extraction.--Tax concessions: The special provisions for determining taxable income from mineral ventures are designed, as an incentive device, to strengthen the nation's mineral industries by stimulating exploration and production. There are two ways in which the relative attractiveness of mineral ventures are promoted. In the first place, to the extent that the mineral producer has gross income against which he may charge off investment costs of development, he has an opportunity for immediate tax-free recovery of venture capital. In the second place, in comparison to alternative investment opportunities, he can expect greater net returns after taxes from a successful mineral venture because of the opportunity of deducting percentage depletion in excess of his investment costs.

The short run: The actual tax benefits accruing to investors in mineral enterprizes are dependent, of course, upon the realization of net income; and the net benefits vary with the degree of success of extractive operations. Percentage depletion is of not benefit ot prospectors who fail to make a strike, nor to mineral producers whose gross receipts are merely sufficient to cover operating and investment costs. It can be seen that the tax incentives contrast with other government programs to stimulate mineral search through payment of subsidies and premium prices which aid producers to cover their costs.

There have been instances in which it has been thought desirable to increase domestic production of lead and zinc on

a short run basis (such as during the Korean War period). While an increase in the relative prices of the metals will tend to accomplish this result, it frequently is the case that tax rates are increased during these emergency periods. This increase in tax rates tends to dampen the effect of the increase in prices, because profits after taxes are reduced making production less profitable, thusly discouraging entry of new firms or encouraging the exit of old ones. In addition the profits from current production may be compared with the present value of disposable income obtainable from deferred extraction, when presumably tax rates would be lower. Also, high rates of taxes may dampen the incentive seek a speculative gain from a new discovery because a large share of any such gain would be subject to a high rate of income taxes. In this sense, the income tax can be thought of as an excise tax on risk taking. Therefore, if increases supplies of lead and zinc are to be forthcoming, the increase in price would have to be greater than it would if taxes remained at a relatively low level. A system of progressive taxes will heighten the deterrent effect because expansion of output would be met by stages of successively increasing rates of tax. The imposition of special depletion allowances, however, will tend to reduce the effective rate of tax on net income, and thus the special depeletion allowances can be regarded as an alternative to at least a portion of the otherwise necessary increase in prices.

The tax incentive device would have a greater effect as an offset to higher statutory rates if it were understood to be only temporary in nature because the granting of depletion allowances on a permanent basis will assure similar tax treatment for deferred exploitation and offer less inducement to increase current output.

All other things remaining equal, the inclusion of a percentage depletion allowance provision in the income tax law will tend to increase the output of firms that are making a profit (and will have no effect on firms that are making losses or are just breaking even). The following example will, perhaps, suffice to illustrate. The following assumptions are made: co fixed costs, perfect competition, the depletion allowance is 30 per cent of gross income, and income taxes are 50 per cent of net income (after deduction of depletion). The price of the product is $10 per unit.

Prior to the inclusion of the depletion allowance, the output which will maximize profit will be 10 units. However, after the depletion allowance provision has been included, the most profitable output is 12 units, hence the inclusion of the depletion allowance has induced the firm to expand output by 2 units.

Long run stimulation of mineral production: In the long run, the depletion allowance in offering a special tax advantage to investors will attract a larger share of the avoidable economic resources than otherwise would be the

TABLE 30.--The Economic Consequences of the Depletion Allowance

| Quantity | Total Revenue | Marginal Cost | Total Cost | Depletion | Net Income Before Depletion Allowance | Taxable Income Minus Depletion Allowance | Taxes | Net Income After Taxes |
|---|---|---|---|---|---|---|---|---|
| 1 | $10 | $ 5 | $ 5 | $ 3 | $ 5 | $ 2 | $1.00 | $ 4.00 |
| 2 | 20 | 4 | 9 | 6 | 11 | 5 | 2.50 | 8.50 |
| 3 | 30 | 3 | 12 | 9 | 18 | 9 | 4.50 | 13.50 |
| 4 | 40 | 4 | 16 | 12 | 24 | 12 | 6.00 | 18.00 |
| 5 | 50 | 5 | 21 | 15 | 29 | 14 | 7.00 | 22.00 |
| 6 | 60 | 6 | 27 | 18 | 33 | 15 | 7.50 | 25.50 |
| 7 | 70 | 7 | 34 | 21 | 36 | 15 | 7.50 | 28.50 |
| 8 | 80 | 8 | 42 | 24 | 38 | 14 | 7.00 | 31.00 |
| 9 | 90 | 9 | 51 | 27 | 39 | 12 | 6.00 | 33.00 |
| 10 | 100 | 10 | 61 | 30 | 39 | 9 | 4.50 | 34.50 |
| 11 | 110 | 11 | 72 | 33 | 38 | 5 | 2.00 | 36.00 |
| 12 | 120 | 12 | 84 | 36 | 36 | 0 | 0 | 36.00 |
| 13 | 130 | 13 | 97 | 39 | 33 | - | - | 33.00 |
| 14 | 140 | 14 | 111 | 42 | 29 | - | - | 29.00 |
| 15 | 150 | 15 | 126 | 45 | 24 | - | - | 24.00 |

case in the search for, and development of, mineral deposits. The increase in the amount of investment for these purposes will result in increased supplies of minerals. Under competitive conditions mineral prices will decline until the price inducement plus the tax incentive for additional investment is no greater than the marginal return of investing in alternative fields of economic activity. The equilibrium position of the industry will be established at a lower price and greater output than would otherwise be the case.

In addition, the total investment in the mineral industries will be greater and the rate of exploitation higher. The marginal efficiency of capital, including the tax concession, however, will tend to equal the marginal efficiency of capital in other industries.

Conclusions: Assuming that the firm is in equilibrium under conditions of perfect competition, implying an optimum allocation of resources, the inclusion of a percentage depletion allowance provision in the income tax law will operate so as to change the optimum allocation of resources to a different and non-optimum allocation.

The percentage of gross receipts allowance provision of the depletion allowance directly relates the amount of the deduction to the total output. In other words the deduction will be greater, the larger the output. We have seen in the section above, that output will be increased. Therefore in the short run firms will produce a greater than optimum output

and in the long run plants larger than optimum size will be built. The depletion allowance, itself, by reducing the tax burden will make firms more profitable and thus stimulate entry, which will further increase the output of the industry. Thus, all other things being considered equal, the percentage depletion allowance provision will cause a greater than optimum output of lead and zinc by those firms which can take advantage of the allowance.

The fact that firms are willing to increase output at all alternative prices (i.e. the supply schedule shifts) will tend to depress market price, assuming that conditions of demand are unchanged. Since supply is assumed to be more elastic in the long run than it is in the short run, the long run price will be even lower than the short run prices in the initial periods of adjustment. Thus when compared with optimum conditions under perfect competition, the product price will be too low and output too high.

Since increased quantities will be taken off the market at lower prices, consumption will be greater than under optimum conditions. A possible exception might occur in an instance where the product were an inferior good. We can, however, safely dismiss this possibility in the present instance. Lead and zinc are for the most part raw materials used as factors of production in the production of consumer goods. It is a well known principal of price theory that the inferior good condition does not apply to factors of

production. Though this condition does not apply directly, might it not apply indirectly, through the final good? A lower metal price would reduce the costs of producing the consumer goods using the metal, thence tend to reduce the price of the final goods themselves. If the final goods were inferior goods, then it is conceivable that less metal would be consumed. However, this is unlikely to be the case, as lead and zinc are used in a large number of articles, and it is unlikely that all or even most would be inferior goods.

The granting of a percentage depletion allowance deduction will, of course, reduce the tax receipts of the government by reducing the taxable income base. It is conceivable that the government, in order to maintain tax receipts, might increase the rates of tax. This action, however, will not prevent the distortion of resource allocation, though it may reduce it somewhat by discouraging the entry of new firms.

If we assume that foreign and domestic firms are operating under similar tax laws, the depletion allowance granted only to domestic firms will give them a higher after tax rate of return, and thus a competitive advantage over foreign firms. Thus, under these conditions, domestic output will be higher and foreign output lower than would be the case under a perfectly competitive market system (and no tax concession). This means that resources would be over

committed in the domestic market and under committed in the foreign market when compared with the perfectly competitive norm. If a higher depletion allowance were given domestic firms operating at home, than was given to domestic firms operating in foreign countries, the firms operating in the domestic market would enjoy greater benefits than those operating in foreign markets and the tendency would be to cause a greater misallocation of resources in the domestic as opposed to the foreign markets.

The effect of percentage depletion allowance on the market structure tends to be mixed. A higher rate of return tends to promote entry, and so to increase the number of firms. This tends to make the industry more competitive. However, another effect is to increase the size of plant, which other things being considered equal, tends to reduce the number of firms, hence make the market less competitive. The depletion allowance, as it now stands, tends to promote vertical integration (hence to less competition in that the peculiarities of the law allow the percentage deduction to be applied to the gross receipts of facets of operations other than actual extraction of the minerals. In addition, the percentage depletion allowance concession discriminates against the marginal firm and in favor of the profitable firm in that the marginal firm is not allowed to use the percentage depletion deduction privilage (because the total deduction can not be greater than 50 per cent of net income figures before depletion deduction). Thus the marginal firm

is not only denied the use of the concession, but the increased output from the profitable firms tends to depress price, and, thusly, to put pressure on the marginal firm. In this way the depletion allowance tends to reduce competition. Thus the depletion allowance in one way tends to promote competition, and in several others tends to reduce it. The net effect would, of course, depend on which tendency were stronger.

The effect on the distribution of income presents us with some problems. The inclusion of the depletion allowance, all other things considered equal (from the viewpoint of the firm), tends to raise the after tax income of the firm. If the government content with less receipts and does not attempt to recoup lost receipts by raising tax rates, the firms claiming the depletion allowance will be better off, other firms will not be affected, and the government worse off. If on the other hand, the government attempts to maintain tax receipts by a compensatory increase in the rates of taxable income, firms claiming the depletion allowance will be made better off (but not as much better off as in the previous case), firms unable to claim the depletion allowance will be made worse off, and the government's situation will be unchanged. Under these conditions, there will be a transfer of income from firms unable to claim the depletion allowance to those able to claim it. We shall assume for the sake of analysis that the second situation will hold.

The distribution of income is also influenced by supply and demand conditions. Increased output means lower prices are necessary in order to clear the market. If the sum of the elasticities of supply and demand are greater than one income to the producing firms will be increased. However, if the sum of the elasticities is less than one, a lowering of price will reduce producer income. It can reasonably be expected that the sum of the elasticities is greater than one, so we shall take this to be the applicable case for our purposes. Thus we can conclude, that the concession of the depletion allowance causes a redistribution of income in favor of the firms who can claim the allowance and against those who can not.

Finally, we must consider the effects of percentage depletion on fluctuations in business activity. We must remember that one of the features of the law provides an option between cost depletion and percentage depletion. Since the depletion figured on a cost basis is a legitimate business expense, it is clear that the firm can not find itself worse off than if it was limited to cost depletion alone. On the other hand, it could be better off. Therefore, the application of the percentage depletion allowance has no effect in conditions of slump. However, during times of boom deductions figures under the percentage method are likely to be very much greater than those figured under the cost method. Therefore, the profits after taxes would be greater in times

of boom. Consequently the option of the percentage depletion allowance tends to prolong the upswing and increase its amplitude. Thus booms are more prolonged and severe in situations where firms have the percentage depletion allowance than in corresponding situations under conditions of perfect competition and no depletion allowance. There is no effect on the downside of the cycle except on factors in the downswing that were directly aggravated by the heightening of the boom.

In conclusion, it can be said that investment funds will enter and leave lead and zinc exploration and development projects according to price incentives, with or without special tax incentives. If the tax burden were distributed equally among the different taxpayers, economic resources would be allocated in accordance with the market mechanism. In recent decases, while tax rates have remained comparatively high, the need for additional capital and the desire to retain earnings for internal financing certainly have not been limited to the lead and zinc industries (nor to extractive industries in general). If the government were not, in effect, contributing billions of dollars a year to the mineral industries, in general, and the lead and zinc industries in particular, these industries would have experienced more difficulty in securing as large a share of the available factors of production as it has. Present mineral supplies now being marketed in all probability would be somewhat smaller than they actually are. Prices of lead and zinc and other minerals

would be somewhat higher and/or the need for import restrictions and production quotas would look to be less imperative to lobbyists for the industry. There is, however, no good reason for supposing that the domestic lead and zinc (and other mineral industries) would have faded away even in the absence of government tax incentive programs. The lure of prospective profit still attracts profit seeking investors.

On the other hand, if the present tax concessions were suddenly withdrawn it would not be likely than an immediate large reduction of supplies of lead and zinc (and other minerals) with concomitant increases in prices would be forth coming. As has been demonstrated previously, percentage depletion is available only to taxpayers whose properties yield net incomes. With or without the tax advantage, decisions to continue production will be made on the basis of whether operating properties will produce enough revenues to cover variable costs. Relative to all other classes of taxpayers, mineral producers would not be unduly prejudiced by the abolition of their special privilege. In the instance where the long-term maintainance of the depletion allowance had been expected and this had resulted in higher capitalized values for mineral properties than would otherwise be the case, then cost depletion provisions would be adequate to recoup these actual investments. However, the relative attraction for new mineral investment and reinvestment for further mineral development would tend to result in lower annual

supplies of minerals and gradually increasing prices. This adjustment would continue until the price incentive alone was sufficient to make further investment in lead and zinc as attractive as alternative lines of investment.

## Accelerated Amortization Allowances and Investment

Liberalized amortization allowances have frequently been suggested as a means of facilitating a firm's withdrawal from a particular industry; or to leas the process that a firm must undergo to discontinue a particular line of operations rendered unprofitable by increased import competition; or the firm to expand production of products other than those affected by tariff concessions. Proponents maintain that such a program would fall into two parts: One would focus on scrapping a portion of the firm's existing plant and equipment; two, on providing assistance in the acquisition of new plant and equipment to produce products relatively insensitive to import competition. For our purposes, we shall primarily be concerned with the effects of such a program on resource allocation in the lead and zinc industries, particularly in relation to other government programs which we have chosen to consider. In order to assess the advantages and/or disadvantages of such a proposal, we shall find it necessary to discuss, in some detail; the various features of the accelerated amortization program. We will find it convenient to include tax deductions for

exploration and development expenditures in this discussion, for these are nothing more than accelerated amortization programs in different guise (to the extent that they allow faster recovery of capital than would be possible if normal amortization procedures were used).

Influence on investment.--In the discussion of the consequences of an accelerated amortization program, the following simplifying assumptions will be made: (1) tax rates remain constant, (2) no cyclical fluctuations in business activity, and (3) the taxpayer's net income is sufficient to absorb the increased deductions accruing under the accelerated amortization program. These assumptions are a matter of convenience and have no direct bearing on the argument.

Amortization, sooner or later? An accelerated amortization program permits the taxpayer to amortize his capital investment sooner than otherwise, which means that he pays less taxes in the early years and higher taxes in the later years of the service life of the asset. The taxpayer thus, has, in effect, received a tax-free loan from the government to the extent that his tax payments have been postponed. The five year amortization plan for emergency facilities in the United States provides an illustration.

Assuming the tax rate is 50 per cent on the net income generated by the asset over its service life, the total reduction in taxes resulting from the amortization deductions

on an asset costing $1,000 dollars will be $500 by the end of the useful life of the asset. There is an advantage in amortizing the asset over a shorter period, rather than over a longer period. If the service life of an asset was five years, the discounted present value of the $500 tax saving would be $421.20 (if the current rate of interest is 6 per cent, the deductions are taken according to the straight line method, and that the tax saving is realized in a series of annuities at the end of each year). On an asset amortized over a ten year period, the present value of the tax saving would be $368.00; on an asset with a twenty year period, $286.67; on an asset with a forty year period, $181.10. The advantage to the taxpayer of amortizing an asset with a ten year service life over five years is $53.20, or 5.32 per cent of the original value of the asset. (Computed by subtracting the present value of tax saving spread over a ten year period from the present value of the tax saving spread over a five year period.) Similarly, the gain is found to be 13.45 per cent for a twenty year asset, and 23.31 per cent for a forty year asset. The amount of gain varies directly with the normal service life of the asset, the rate of tax, and interest rates.

In the real world actual computations of the present value of future deductions from taxable income are rarely made. However, it is logical to suppose that all businessmen recognize an advantage in receiving income in the near future as opposed to receiving it in the more distant future.

The greater present value of the tax saving provided by accelerated amortization is in many respects similar to a reduction in the original cost of a capital asset. Under any given set of operating and market conditions, the net return on the investment is supplemented, although, perhaps, the amounts involved would be too small to have significant influence on investment decisions except in situations of high interest and tax rates.

The element of chance. Another, and perhaps more important feature of a program of accelerated amortization is its effect on risk-bearing and uncertainty. In conjunction with normal amortization allowances, a high rate of income or excess profits tax may be a serious handicap to plans of the businessman for protecting himself against risk and uncertainty. An accelerated amortization program will reduce the hazards involved significantly.

Though businessmen may fail to make sufficient allowance for risk and uncertainty in making an actual investment decision, the normal technique of self-protection is an insistence that a new asset be amortized over a period considerably shorter than its normal physical or economic life. The "pay-off" period is the time period over which the asset is to be completely amortized. Usually, but not always, an interest allowance is not included in the "cost" of an asset. In any case, the "pay-off" period is considerably shorter than the service life of the asset. Empirical evidence

suggests that sometimes assets having a normal service life of ten to twenty years have a "pay-off" period as short as two or three years and seldom longer than five years.

The pay-off period concept, despite its obvious lack of sophistication, seems to be a practical method of allowing for risk and uncertainty. A literal interpretation of the concept would assume that risks were so great that there is no possibility of realizing a return on an asset subsequent to the expiration of the pay-off period. Though this may be carrying the argument a little far, it is surely true that risk increases with the length of the capital commitment and that the possibility of being unfavorably surprised is greater in the long run than in the short run future.(1)

The connection between the subjective pay-off period and the normal amortization period for tax purposes is very significant for investors who use a short pay-off period as a device for avoiding risk and uncertainty. Normally the required pay-off period is shorter than the normal tax allowable depreciation period so that the amortization requirements over the pay-off period will exceed the allowable depreciation deductions. The excess is subject to the income or profits tax, and the net "pay-off" realizations will be reduced by the amount of the tax paid. In such situations, it will be impossible to completely amortize marginal projects out of their net yield within the investor's planning period.

If it so happens that the tax allowable amortization period is as long as the pay-off period, the income tax will not be a factor in the amortization.

The significance of accelerated amortization with a short pay-off period can be illustrated by again referring to the five year amortization plan. Under this plan, 20 per cent of the assets value will be amortized each year for the first five years of the life of the asset. Investment opportunities returning somewhat more than 20 per cent annually, before deduction of taxes and depreciation allowances would be attractive to an investor even though the service life of the assets involved may be ten, twenty, or more years. But with the standard straight line depreciation method and a corporate income tax of 50 per cent, a return of 30 per cent on assets amortizable over a ten year period will be required in order to be attractive to an investor who requires a five year pay-off period. The corresponding figure on a twenty year asset is 35 per cent.(2) The adoption by the firm of a five year pay-off period will make attractive ten year assets having a return greater than 30 per cent, and twenty years assets with a greater return than 35 per cent.(3)

So far it has been assumed that no allowance has been made for the possibility that a net loss suffered after the end of a projected pay-off period might result in a refund of taxes paid in earlier years. The inclusion of a carryback

privision in the tax law raises the possibility that tax refunds might be made on net operating losses. Such a provision might significantly alleviate injury done by an amortization period for tax purposes which is longer than a realistic pay-off period. An accounting loss will be incurred at the end of the pay-off period of an asset, if the investment yields no further return at that time. This loss will amount to the normal amortization loss on the investment, or (under most income tax laws) the unamortized balance of cost, minus any salvage value, if the asset is to be discarded. If an unlimited carryback provision was a feature of the tax law, these accounting losses would be deducted against any taxable income earned during the pay-off period, and taxes previously paid by the investor would be refunded. But in situations in which the asset continued to yield a return in years subsequent to the pay-off period, the investor's original estimates would prove to be unduly pessimistic. Under either condition, the income tax would not prevent complete amortization of the asset out of earnings, although complete amortization could not be accomplished within the pay-off period.

As a practical matter the degree to which losses can be carried back to be charged against previous income is generally restricted by statutory provision. However, even a short carryback period may have important results when it covers a significant portion of a brief pay-off period. For

instance, supposing a two year carryback period and a tax rate of 50 per cent, the discounted value of the gross annual return necessary to satisfy a five year pay-off requirement on an asset that has a ten year normal service life (assuming for tax purposes, straight line depreciation) is 26 per cent, or 22.5 per cent, depending on whether the investor expects to retain the asset in use after the pay-off period even if it yields no return, or whether he expects to discard the asset which he assumes will have no salvage value.(4) These rates of return compare with the 30 per cent gross return which would be necessary without the carryback provision. The carryback provision, of course, will be less effective as the fraction of the pay-off period which it covers is reduced.

Nonetheless, a carryback provision for losses will never eliminate all the disadvantages of a long depreciation period. Even under conditions where an unlimited carryback provision was part of the law, a degree of uncertainty would surround its operation simply because it would operate some distance into the future. The possibility that the law might be changed at some future time would enter into the consideration of the taxpayer. Or, the investor might be faced with going out of business at the end of the pay-off period, thusly not qualifying for the advantages of the carry-back provision (i.e., eligibility for carryback refunds frequently will depend on conditions existing subsequent to the projected pay-off period).

Nor will a loss carry forward, as distinguished from a loss carryback, compensate for a discrepancy between the normal amortization and projected pay-off periods. While a carryforward provision would be beneficial in averaging out irregularities in the receipt of taxable income within the pay-off period, it is still defective because it does not allow normal mortization accruals accumulating in years subsequent to the end of the pay-off period to be charged back against the return realized during that period. Thusly, a loss carry forward provision can not outweigh the detrimental effects of the income tax on the possibility of amortizing a capital asset out of the series of annual yields that fall within the investor's planning period.

So far we have dealt only with the impact of the income tax on the possibility of amortizing an investment out of its earnings. To plan on the basis of such a short pay-off period, however, not only tacitly assumes that the planned investment will yield no further return at the end of the pay-off period, but that the asset owner receives no income from other sources as well. In situations where an investor has sufficient taxable income from other sources, the normal amortization allowances on an asset will continue to be a source of tax saving long after the asset itself ceases to yield a return. Thus an investor who finds himself in this situation tends to think of a long amortization period for tax purposes as a postponement rather than a complete deprival

of full amortization. From the point of view of the individual firm, expectation of a continual stream of taxable income over the long run future is not necessarily at odds with a short run pay-off requirement for each individual project because the investor may think of this requirement as insurance against loss under unfavorable conditions rather than as a prediction of average experiences. This is especially likely in situations where individual projects are small in relation to the total invested capital of the firm (i.e., many small investments of a diversified nature) where the investor might well be justified in being more optimistic about the prospects for the enterprise as a whole than about any one particular project.

The extent to which investors depend on completing the amortization of assets with short service lives by deducting their loss from future taxable income is a little understood subject. The safest position that can be taken, perhaps, is to concede that the possibility does reduce the potential benefits of an accelerated amortization program. However, this method always yields less satisfactory results to the investor than would complete amortization within the pay-off period because of the greater degree of risk and time discount applicable to future income.

In actual fact the pay-off is rarely as rigidly drawn as the previous discussion would imply. Nonetheless, as soon as it is conceded that some investors make an allowance for

risk and uncertainty by requiring a pay-off period that is shorter than the normal amortization period, the accelerated amortization allowance introduces itself as a technique of reducing the adverse effect of taxation on new investment.

The investor who insures himself against risk by discounting future returns by a large factor, in the place of adopting a short pay-off period, will also derive benefits from accelerated amortization. If risk were discounted at a uniform annual rate of 15 per cent over the service life of a ten year asset, the result will be a decline in the present value of the normal amortization allowances over the service life of the asset to approximately one-half of the original cost. The enactment of a five year accelerated amortization plan would increase the present value of the amortization charges to about two-thirds of its original cost.

Liquidity. Accelerated amortization allowances may stimulate investment by making financial reserves more available. An accurate picture can not be obtained by reference to interest discount analysis because of the imperfections in the capital market and the hesitancy of many businessmen to seek funds from outside sources. If a growing firm faces high tax rates, it will be able to finance a greater fraction of its investment from retained earnings under an accelerated amortization program than with the normal amortization allowance. The advance of tax savings, which under any circumstances, would be realized in the

future under normal depreciation procedures, does not have to be repaid except in cases where the firm reduces its rate of acquisition of new depreciable property for replacement and growth (or in situations where the guaranteed rate of return exceeds the normal rate of amortization, for example, in public utilities.(5)

In the case of a firm that is neither expanding nor contracting, the annual deductions for normal amortization will exactly equal replacement expenditures. Under these conditions total gross investment expenditures can be financed out of tax-free amortization allowances. A growing firm, however, will be making investment expenditures greater than the annual amortization allowance.

The introduction of an accelerated amortization procedure will permit tax-free deductions of both the static firm and the growing firm to increase in proportion to capital outlays over a period of years. After an initial transition period, however, the allowable deductions of the static firm will return to equality with the gross investment outlays. For a steadily growing firm, the portion of investment outlays covered by amortization deductions will stabilize at a higher level than that in effect under normal amortization procedures. For instance, a firm owning assets with a normal 20 year service life and growing at an annual rate of 5 per cent will eventually be able to finance 87 per cent of its investment outlays from tax free amortization

allowances, in comparison to 63 per cent under normal procedures assuming a normal straight line amortization procedure. All other things being equal, the larger the proportion of new investment the firm will be able to finance internally, the greater the rate of amortization.(6)

But more than this, an accelerated amortization allowance will be of assistance in the raising of outside capital if the firm desires to raise capital in this way. Prospective creditors generally insist on repayment of a loan contracted to purchase plant and equipment in a time period shorter than the normal service life of the assets. The accelerated amortization allowance provides a safety feature in that it facilitates repayment of the loan by increasing tax-free income during the amortization period.

An assumption implicit in this analysis is that average normal life for tax purposes is the same as the average service life of the asset.

Qualifications.--The ultimate effect of a particular accelerated amortization plan is dependent upon the attitudes of investors as these shape the essentially subjective evaluations of time discount and uncertainty.

Tax rates. Perhaps the most important of the subjective factors is the present and future rates of tax on net profits. Other things being considered equal, the higher the tax rate, the greater the benefit an accelerated amortization plan brings to the investor. The accelerated amortization

allowance is merely a technique of liberalizing allowable deductions in determining taxable income and the advantages of the allowance are directly related to the tax rates.

Heretofore we have proceeded under the assumption that the rate of tax is constant throughout the life of the asset. Considering a single asset in isolation, however, accelerated amortization allowances benefit the investor the most when tax rates are expected to fall in the future and are of least benefit when it is expected that future tax rates will rise. Under the latter condition, the larger amount of future tax saving under normal amortization procedures will wholly or partly counterbalance the interest gain and greater certainty of earlier but smaller tax savings connected with an accelerated amortization program. Not withstanding this, the expectation of higher future tax rates may not reduce the attractiveness of an accelerated amortization program to a stable or expanding firm, for the simple reason that the firm's annual allowances on its overall plant and equipment will always be as large under the accelerated amortization procedures as under normal procedures.

Ability to absorb deductions. Amortization allowances, normal or accelerated, are of benefit to the taxpayer only to the extent that they can be deducted from taxable income. An accelerated amortization allowance that causes deductions greater than current taxable income will actually be harmful unless the taxpayer has a carryback privilege which permits

him to charge accounting losses to the income of prior years or to carry losses forward to future years (within the pay-off period). Thus the benefits of an accelerated amortization program will be heightened by liberal provisions for the averaging of accounting losses and profits. If these liberalizing provisions were lacking, a compulsory accelerated amortization procedure would be an impediment to investment in times of depression. Any excessive rate of accelerated amortization suffers from this defect any time. However, if the accelerated amortization allowances were optional this defect would disappear.

As was previously mentioned, a liberal loss carryback provision--distinguished from a loss carry forward--might lessen the necessity for an accelerated amortization allowance because it decreases the possibility that the income tax will interfer with capital recovery even under a program of normal amortization allowances. The loss carryback provision, however, will not lessen the other benefits of accelerated amortization, e.g., the interest on time-discount gain and the assistance rendered to internal financing. As a matter of fact, the combination of an accelerated amortization allowance and a loss carryback provision could conceivably result in tax refunds which provide more internal funds than there would be if there were no tax.

Business conditions. A program of accelerated amortization allowances, like many of the alternative programs which

place primary emphasis on the reduction of barriers to investment rather than on the establishment of a positive stimulus, probably is less effective during the downward phases of the business cycle than in the upward phases. This tendency will be accentuated if, in the implementation of a countercyclical tax program, taxes are reduced in periods of depression and increased in periods of prosperity.

Accelerated amortization will be more important for those firms which are highly capitalized than for those that are not. Therefore, an accelerated amortization allowance will provide greater tax relief to heavy industry (and real estate, if buildings are eligible) than to service industries and trade.

The accelerated amortization allowance, like a reduction in tax rates, will result in reduced tax revenues to the government except in instances where the program stimulates an increase in economic activity sufficiently large to outweigh the reduction in tax rates. The belief that accelerated amortization allowances result in only a postponement of tax revenue with only a temporary loss to the government is erroneous. The error is to be found in the tendency to think in terms of a single asset rather than on the flow of investment over time. For any single asset, increased deductions in the early years of its service life are exactly outweighed by the reduction of deductions in later years.(7) Under such circumstances, when tax rates are constant, income

tax liabilities generated by the asset over the whole period remain unchanged. However, if by the time that the annual amortization allowances fall below the level of normal amortization allowances, or disappear entirely, newly acquired assets will have become subject to the accelerated amortization allowances, the government will suffer an initial revenue loss which it will never recover (assumes both tax rates and an annual rate of investment, both for expansion and replacement remain constant). While tax collections will gradually return to their original level, they will at no time increase beyond their original level to provide an offset to the initial loss in revenue. If eligible investment grows over time the total loss in tax revenue will increase.

The revenue effects of an accelerated amortization program tend to heighten cyclical fluctuations. The effect of the allowance is to reduce taxable income, hence taxes during periods of prosperity when investment is high, and increase tax liability during depression periods when the volume of investment is lower than would be the case under normal amortization allowances. In programs other than those limited to an additional allowance during the first year of use, however, an accelerated amortization allowance effective during prosperity and continued into the beginning of the sownswing would afford some benefit in situations where there was a liberal allowance for carryback of losses (which would mean tax refunds from previous years).

Application to lead and zinc.--So far we have discussed the accelerated amortization program in general terms. We shall now attempt to apply some of the general conclusions we have drawn to the particular markets with which we are primarily concerned. The accelerated amortization allowance is a program designed primarily to affect the long run resource utilization of the lead and zinc industries. This is to say that it was designed to increase plant capacity and not as a technique for increasing output from fixed capacity. The program was set up primarily to facilitate amortization of emergency facilities, so it must be thought of as being temporary in nature. Therefore the appropriate analysis that is applicable is similar to that applying to a single asset rather than to a continuous stream of investment. Since the program required application for a certificate which entitled the firm to use accelerated amortization accounting techniques, we shall consider that the program was optional in nature.

The accelerated amortization allowance is an investment incentive and as such will tend to increase capacity and output. Thus the output of lead and zinc tended to be greater than would have otherwise been the case in the years subsequent to 1950. If an initial condition of optimum allocation of resources is assumed with normal amortization procedures, an artifically rapid amortization allowance will cause a greater than optimum output to be produced.

If demand conditions are assumed to be unchanged, an increased output can be sold only at a lower price. The tendency of this type of investment incentive is to shift the supply curve to the right, i.e. to increase the quantities that producers are willing to supply at all alternative prices, hence to establish price at a lower than optimum level.

Since prices tend to be reduced, consumers are willing to purchase an increased quantity, therefore consumption tends to increase, except in circumstances where the goods which utilize lead and zinc as factors of production are inferior goods, in which case it is conceivable that consumption might be reduced. We previously took the position that this was not a likely situation.

The application of an accelerated amortization allowance to the lead and zinc industries would on balance not affect tax revenues in the long run, although the government would suffer a temporary revenue loss during the early service life of the asset. To the extent that the accelerated amortization allowance tends to encourage the replacement (or scrappage) of assets before the end of their service lives, a revenue loss is involved.

Assuming conditions of perfect competition and no market imperfections separating domestic and foreign producers (and assuming that foreign firms do business under the same original set of amortization rules as domestic firms), the

imposition of an accelerated amortization program would favor domestic producers as opposed to foreign and to this extent would have an adverse effect on the latter. The initial transfer in tax-free revenue would benefit domestic but not foreign firms, and to the extent that the accelerated amortization allowances stimulate investment, would put price pressure on the foreign producer (and those domestic lead and zinc producers who could not benefit from the allowances). The tendency would be to encourage more than an optimum number of domestic firms and less than an optimum number of foreign firms.

As in the case of the depletion allowance, the effect on market structure is uncertain. Output will be increased and to the extent additional output is produced by new firms, competition is stimulated. On the other hand, a certain level of income is necessary in order to enable the firm to take advantage of the accelerated amortization program. This feature discriminates against the marginal firm, thereby tending to reduce competition. Since the program is an investment incentive it will tend to cause a change in the output mix of the firm. More capital and less of the other factors will be used (relatively speaking), and to the extent costs of production have been reduced, the size of the firm will tend to increase. The final effect will be a net of these contradictory forces depending upon which predominate.

The investment incentive nature of the accelerated amortization allowance also results in a redistribution of

income. Clearly, the return to capital will be enhanced relative to the returns to the other factors of production, and as a result the individual firm will become more capital intensive. There will also be a tendency to increase the income of firms able to take advantage of the program relative to those who can not. As was mentioned in the case of the depletion allowance, this conclusion can be affected by supply and demand conditions.

The revenue features of the accelerated amortization program tend to accentuate cyclical fluctuations. Since the program as it applies to lead and zinc is an optional one the fact that the firm will choose that which it feels will benefit itself tends to soften the impact of the program in times of depression. However, if the firm chooses accelerated amortization procedures in the boom and writes off all its capital equipment during that time, the tendency is to deepen the depression in that these is a tendency to increase taxes. (This tendency is historically significant in the lead and zinc industries during the decade 1950-60.) Being an investment stimulus, the accelerated amortization program tends to heighten the boom in two ways: (1) increases the return to capital assets, and (2) provides funds for internal financing.

## The Programs Compared

The two programs discussed in this chapter are both tax incentive programs, one (accelerated amortization)

having only long run effects while the other (depletion allowance) has both long run and short run effects. In the long run both tend to cause a greater than optimum commitment of resources to the lead and zinc industries. Both cause greater than optimum output and consumption and lower than optimum prices, discriminate against foreign producers, and have uncertain effects on the competitive market structure of the industry. Both programs tend to redistribute income to the firms that enjoy the tax advantage and in this way discriminate against the marginal firm. Both programs accentuate the boom in business activity, while the accelerated amortization program also deepens the depression.

## CHAPTER XII: FOOTNOTES

1. The short pay-off period may be a device by which some investors ration a limited capital supply among a large number of attractive investment opportunities. Investors operating under these circumstances will behave differently to accelerated amortization than will those investors who demand rapid repayment as an allowance for risk. Investors whose major concern it is to choose among a number of equally attractive investment opportunities are in no need of tax incentives. If investors operating under these circumstances should predominate at any given time, it would be unnecessary to raise the after tax rate of return on investment, though it might be desirable to make capital more readily available.

2. With a standard straight line depreciation technique, the tax free return on an asset with a ten year life for tax purposes is 10 per cent. The investor, however, requires a 20 per cent return (net of taxes) in order to meet the requirements of a five year pay-off period. The additional 10 per cent needed must come from income which is classified as profit for tax purposes, hence subject to a 50 per cent tax. Hence to get an additional 10 per cent return net of taxes, the investor must get an additional 20 per cent return gross of taxes. A similar computation can be made for 20 year assets.

3. These figures are net of time discount.

4. The taxpayer electing to keep the asset in service even though it produces no income can carryback net operating losses equal to normal depreciation allowances from years 6 and 7 (in this instance, 10 per cent of the original asset cost each year).

5. See Evsey D. Domar, "The Case of Accelerated Depreciation," Quarterly Journal of Economics, Vol. 67 (November, 1953), pp. 493-519.

6. There is an inverse relationship between the fraction that an expanding firm can finance out of accured amortization allowance and the rate of growth and the amortization period. At first amortization will increase relative to investment expenditures and after a period of years will reach a constant proportion of total invested capital depending on the average service life of the assets acquired.

7. Neglecting the possibility that some firms will go out of business or cease to receive taxable income after the end of the accelerated amortization period but prior to the end of the normal service life of the asset.

# CHAPTER XIII

## ANALYSIS OF GOVERNMENT POLICIES II

### General Features of Recent Tariff Policy

The last change in the rates of duty in effect under the provisions of the Tariff Act of 1930 came in 1951. Since that time there has been a great deal of pressure from Congress and the Tariff Commission for upward revision of the tariff schedules with reference to lead and zinc. The Administration has tended, however, to resist any attempt to increase tariffs. The reason it seems safe to say is that increases in tariffs would interfer with the conduct of U. S. foreign policy. The tariff has come to be viewed as an undesirable technique for the expression of a nation's economic self-interest, and the raising of tariffs not only leads to retaliation but causes difficulties in other phases of foreign policy. Consequently, the administration under President Eisenhower was very reluctant to increase tariffs and preferred to resort to other techniques instead. Historically, the lead and zinc industries provide excellent illustrations of this tendency. One of the reasons that was given for the stockpile purchase program was that it was a device designed to provide relief for the distressed lead and zinc industry in lieu of accepting the

recommendations of the Tariff Commission for a higher tariff.

It seems obvious that there is an element of conflict in determination of tariff policy as there have been (and still are) strong pressures being brought to bear for the protection of the domestic industry. This is perhaps partially a consequence of the geographical location of the industry. Consequently, although the main pressure exerted by those in favor of protection is for increased tariffs, the result has been a series of alternate stop gap measures, which were instituted in order to relieve protectionist political pressure.

The tariff that does exist does not apply however to all imports. Substantial amounts of metals have entered duty-free for government use. Here was a situation where the government adopted the policy of buying at the cheapest source while denying other purchasers the same privilege and in so doing negates its own policy of protection and assistance to the domestic industry. It would seem that if it were desirable to adopt a policy of protection for the benefit of the industry, then the industry should be protected; if this policy were thought to be undesirable, then it should be abandoned. The policy of allowing part of the imports to come in duty-free and part subject to duty is discriminatory and is consistant with neither policy.

This chapter will be concerned with the various programs stemming directly from the operation of the reciprocal trade agreements program and is divided along two main lines: (1) the tariff, and its effects and (2) the system of import quotas. A general discussion of each of these subjects will be undertaken in order to provide the reader with a broad understanding of the general features of each of the programs and their implications for the lead and zinc industries.

## The Tariff

### Relationship to Lead and Zinc

In the real world, there is not one tariff applying to lead and another applying to zinc, but many different tariffs having different effects on a large number of subarticles. Thus in the case of lead and zinc (and other articles as well) one must talk about the structure of the tariff rather than about "the" tariff.

Complexity in itself constitutes a cost in that it makes the tariffs more difficult to administer. In addition, it causes businessmen to spend time and money, that could be better spend elsewhere, in interpreting the law, and/or attempting to find loopholes therein. But more important, it superimposes a more or less rigid structure of excises on a market which is constantly changing and as such tends to maintain the industry output mix in the face of changing market conditions. This constitutes an

interference with an optimum allocation of resources. If it is decided that it is absolutely necessary that a tariff with a given degree of protection be imposed, then a further problem arises as to what structure should be imposed. Should the structure be as neutral as possible or should it discriminate against some articles and in favor of others. To the extent that it does discriminate, it imposes a further loss on the economy over and above that caused by the tariff itself. This promotes a tendency towards an inefficient utilization of resources and constitutes a barrier to the adjustment to optimum resource use. One instance that can be cited is the differential between the rate of duty on the lead content of ores and that on lead metal (which is protective of the refining process). To the extent it encourages lead refining in the United States, when it could be done more economically abroad, it constitutes a waste that encourages a non-optimum allocation of resources. Just the opposite situation occurs in zinc, where the tariff favors the import of refined metal as opposed to zinc in ores. The argument in this case is just the reverse of the previous case. To the extent that metal is refined abroad in relatively inefficient refineries, a loss is imposed on the economy due to the inefficient allocation of resources, adjustment to a more efficient allocation of resources is impeded. This situation arises from the fact that technological improvements since 1930

have increased the proportion of zinc recoverable from ore. The tariff structure has not, however, been modified to reflect this change. Furthermore new products are not provided for under the existing tariff legislation. Zinc fume is the prime example, not being specifically classified under the Tariff Act of 1930 (nor subject to the quota restrictions as imposed, nor even until 1960, included in the import statistics of the Tariff Commission). For the lack of a better solution, imports of zinc fume are classified as "earthy or mineral substances wholly or partly manufactured." To the extent that this discriminates against or in favor of this article it constitutes an economic cost, hence encourages an inefficient allocation of resources and represents a barrier to adjustment to optimum conditions.

Another problem is posed by the type of tariff levied. For the most part, the tariffs on lead and zinc have been specified in nature (i.e. in cents per pound of either lead content or gross weight). This causes two, somewhat related, consequences. First a change in relative prices causes a change in the relative incidence of the tariff expressed as a percentage of market price. The tariff thusly discriminates against articles whose prices decline and in favor of those whose price increased. Second, changes in the general price level change the burden of tariff expressed as a percentage of market price. This in effect means that

the tariff is recessive over the business cycle in that the tax burden increases in the downswing and decreases in the upswing. This means that the tariff accentuates cyclical fluctuations, thereby increasing the cost of such fluctuations to society as a whole, and represents a barrier to the most efficient allocation of resources. This is a particularly significant criticism in light of the fact that the lead and zinc markets tend to experience sharp cyclical fluctuations even in the absence of tariffs.

Another feature of the tariff policy of the government has been its inconsistant application. In times of shortages, the tariff has been suspended. For instance, the duties on unmanufactured lead were suspended from June 20, 1948 to June 30, 1949, inclusive, and again from February 12, 1952 to June 25, 1952, inclusive. Duties on unmanufactured zinc were suspended from February 12, 1952 to July 23, 1952, inclusive. This shows the inconsistant nature of tariff policy with respect to these metals.

There are two main problems involved here (a) although the removal of the tariff constitutes a step toward the efficient allocation of resources, a policy of "off again, on again" introduces an element of uncertainty in the market which hampers adjustment to the most efficient allocation of resources. In addition it invites destabilizing speculation which heightens cyclical fluctuations, in addition to directly accentuating these fluctuations by being regressive with

regard to prices over the cycle. In this latter sense, this policy represents a more extreme form of the problem caused by the effect of specific duties over the cycle. (b) It results in discrimination in rates of duty in favor of the articles on which the duty has been suspended, thus tending to cause too much of these articles to be imported and not enough of the articles on which the duty has been maintained.

The duties, although specific in nature are not always consistant in yet another way. Some are levied against the metal content and some against the gross weight of the articles concerned. In case of the latter where the metal content of the imported article varies widely (such as in the case of zinc scrap, dross, and skimmings), discrimination in the incidence of the duty, hence the tendency toward an inefficient use of resources is unavoidable.

Tariffs on lead and zinc articles are subject to U. S. trade agreement commitments under G.A.T.T., so changes in the level of U. S. tariffs have to be accomplished in such a way as not to contravene U. S. treaty obligations. Avoidance of our treaty obligations is not a difficult task in that an escape clause is provided, or it can be claimed that changes in duties are necessary in the national interest (clearly a problem arises only when it is proposed that duties be increased). Despite the case with which our treaty obligations can be avoided, there has been great reluctance to increase tariffs on lead and zinc articles,

so that G.A.T.T. provisions have had a restraining influence in this respect. (This is small consolation, however, because reluctance to raise tariffs has resulted in the implementation of policies which are just as bad, if not worse.)

Conclusions

The tariff is designed to be a barrier to trade, the major reason for its imposition is to erect a barrier to entry of foreign goods into the domestic market and is in this way restrictive of supply, thereby tending to raise price. Like any other excise tax the tariff tends to reduce output in the market as a whole though increasing output of lead and zinc in the domestic market considered separately. Thus total output will tend to be less than the optimum output that would be produced under conditions of perfect competition, hence too few resources would be allocated to lead and zinc production.

The fact that the total quantity available to purchasers would be reduced at all alternative prices means that lead and zinc prices would tend to be higher than would be the case under perfect competition, i.e. the market price would tend to be higher than the optimum price. (This tendency, of course, would be reduced to the extent that the effects of the tariff were backward shifted to the foreign producer. This possibility, however, violates our assumption of perfect competition.

The restrictive features of the tariff, demand taken as given, in raising price, tend to encourage consumers to substitute other commodities for those containing lead and zinc, and thus tend to reduce the consumption of these metals. In addition, the increased cost of these metals may induce manufacturers who use lead and zinc as raw materials to substitute other materials, further reducing consumption. Consequently metal consumption will tend to be less than optimum.

The tariff discriminates against the foreign producer because it levies a tax on the output he sells in the domestic market without putting the same handicap on the domestic producer. The price received by the domestic producer is increased and that by the foreign producer (net of tax) reduced, so that more than an optimum number of domestic firms operate in the domestic market and less than an optimum number of foreign firms. Overall, the number of firms tends to be reduced. Since there is a structure rather than merely a single tariff, discriminatory rates among the various items would also tend to affect the kinds of firms operating in the market. To the extent, that the tariff discriminates against the imports of refined lead, it means that there is a tendency for greater than optimum refinery production to be undertaken by domestic firms and less than an optimum amount to be undertaken by foreign firms. If the tariff differential is the other way, which

it is in the case of zinc, then the effects are reversed. The same thing, of course, holds true for any other two items which are subject to discriminatory tariff treatment.

The tariff is a device which by its very nature is hostile to competition. The imposition of a tariff, therefore, tends to reduce competition in a purely competitive market situation in that it impeded the entry of foreign firms into the domestic market and increases the possibility of domestic firms by artifically promoting a shortage of lead and zinc. One of the side effects of tariff policy, therefore, is to promote monopoly power (with the accompanying implication for the allocation of resources).

The tariff also causes a redistribution of income. The redistribution is usually thought of as occurring between the export and the import-competing industries. Import restrictions reduce the ability of the foreigner to purchase domestic exports by reducing domestic imports. This, in effect, reduces the power of the foreigner to earn the means of payment by which he could purchase domestic products. At the same time, domestic purchasers finding the supplies of foreign metals restricted, are forced to purchase from domestic suppliers. Thus, in effect, there has been an income transfer from the domestic export industries to the import-competing industries (with a concomitant misallocation of resources). In addition, there has been a reduction in total income.

The effect of the tariff on the business cycle is a more complicated problem. The exact nature of the tariff as specified by law plays an important part in the analysis. It will be remembered that, for the most part, the duties are specific as opposed to ad valorem. This means that the duties per unit of physical quantity do not change as prices vary. During the boom, when prices are increasing the tariff change becomes a smaller percentage of the gross operating income of the foreign producer, hence becomes a smaller burden to him. This fact is procyclical in that it tends to remove a hindrance to an increase in output by the foreign producer. At the same time, it affords less protection to the domestic producer, because the reduction in the tariff barrier makes it easier for the foreign producer to hop over the tariff barrier and market lead and zinc in the domestic market. The reduction of the tariff barrier tends to dampen the boom in the domestic market by allowing extra supplies to enter the market. For the foreign producer it tends to accentuate the boom because the lowering of trade barriers tends to widen his market. The effect in the lead and zinc (i.e. import-competing) markets, however, is transmitted to the domestic export markets as foreign producers sell more they are willing to buy more in the domestic market. This will cause expansion in those markets. During depressions, however, the opposite chain of events takes place. Falling prices increase the burden of the

tariff and afford an increasing measure of protection to the domestic producer and shifts the major part of the adjustment to the foreign producer. During the downswing the increasing restriction on foreign supply tends to counteract the downswing from the point of view of the domestic producer and accentuate it from the point of view of the foreign producer. This tendency is transmitted to the export industries, therefore, the program tends to accentuate cyclical fluctuations in those industries. In a nut shell then, the specific type of duty tends to dampen cyclical fluctuations in the domestic lead and zinc industries, tends to heighten fluctuations in the foreign metal and domestic industries, and thusly tends to shift the burden of adjustment to the latter industries.

## Import Quotas

### General

The use of import quotas implies the substitution of government decree for the impersonal workings of the market forces of supply and demand. This is in contrast to tariffs which do not as a rule interfere with the operation of a free enterprise economy and of the market mechanism. This is as true in the lead and zinc industry as it is in general. This is best seen by the pressure being put on the non-integrated zinc smelters, which have been cut off from ore supplies by the quota restrictions. This situation is, of

course, completely independent of smelter cost considerations. The quota restriction is worse than an equally restrictive tariff, so that if it were desirable to restrict imports, the tariff method would be preferable.

If the government were to impose a tariff, it could be administered simply by setting up collecting stations at the various ports-of-entry. The forces of supply and demand still determine the quantities imported, and rations the imported items among the consumers. The result of the imposition of a tariff is to introduce a price differential between the price outside the country and prices inside the country--the difference which is greater than transportation costs is the revenue to the Federal Treasury.

If in a given situation a quota were to be imposed, a price differential would also be created. The price in the importing country will be higher than the price in the exporting country plus transportation costs. In this instance the price differential provides windfall profits to the importers instead of being income to the Treasury, and consequently the quota system causes a rush among importers to import as much as possible until the quota is filled. In order to prevent a wild scramble for the amounts permitted to be imported under the quota, the government necessarily has to turn to rationing and allocation controls. This necessarily means that the governmental authority must determine who will be allowed to import. And the granting

of a license to import bestows a financial reward on the licensee.

Normally, the procedure is to grant import licenses on the basis of the amount of imports in some representative period, which in the case of lead and zinc was the average of the annual imports during the years 1953-57. Under this system, the licensee is granted the proportion of his imports in the base period.

Disadvantages

One can readily see and the experience of countries that have imposed the quota on a large scale has shown the fact that this system is hardly satisfactory. For one thing it creates vested interests, unnecessary windfall profits, and sets up a system that is a hotbed of political intrigue and corruption. For another, the longer the system lasts, the more removed from the base period it becomes, hence the more arbitrary the allocation of import permits. Importing ceases to be a business and becomes a morass of political deals, arbitrary administrative decisions, and uneconomic performance. The efficiency and resourcefulness of the businessman no longer counts, hence the system promotes waste and enhances the arbitrary use of market power. The resulting encouragement of monopoly power makes quota restrictions more costly to the consumer than an equally restrictive tariff. Particularly severe restrictions are imposed on the growth of new firms and

resourceful existing firms because they are prevented from securing foreign supplies for the simple reason that they do not have a history of imports during the base period, hence are denied access to raw material supplies. Perhaps the best example of this is France, a country long addicted to the use of quota restrictions. In this instance, it could be said that the quota system is a prime inhibitor of competitive business and a brake on economic growth which the French economy would have otherwise experienced. The same lesson is clear in the present case in that quota restrictions on lead and zinc have given rise to a squeeze on the non-integrated zinc smelters, thus are a promoter of arbitrary private economic power.

Other disadvantages show themselves in the administration of the quota system. As has been previously mentioned, the quota system sets national quotas with the countries collectively contributing 90 per cent of the imports of lead and zinc in the base period being allocated an individual quota. The problem, here, is to determine which countries are to be picked to make-up the 90 per cent, there being more than one possibility. The countries in the "all other" quota are at a disadvantage, for no other reason than arbitrary administrative decision in that they are subject to a competitive scramble for the imports in the "all other" country classification. There has been considerable disruption of trade in the "all other" country

category depending on which country can enter their imports first. A further feature has been the fact that in many instances the quotas on lead metal and zinc ore and metal have been filled on the first day of the quota period, which prevents domestic importers and consumers from making long-term plans due to uncertainty of supply.

Under the zinc ore quota category of "all other countries" such a scramble ensued that during the period January to September 1959, the Union of South Africa was able to export only 1,032 tons under the quota despite the fact that U. S. imports for consumption from that country had averaged more than 7,000 tons annually during the base period, 1953-57, and approximately 20,000 tons in the first nine months of 1958.

It was a different story with reference to the quota on lead-bearing ores. The quota went unfilled in 1959 and 1960 as the mine in Guatamala which accounted for a large part of the quota in the base period closed down prior to the imposition of the quota, and an alternative source was not found.

An accidental circumstance resulted in the Bolivian quota for the last quarter of 1958 going unfulfilled. The vessel that was carrying lead was delayed, and, instead of arriving in late December as had been scheduled, it arrived on January 1, 1959, the opening day of the next quarter.

In cases where the quota has been completely filled on the opening day for successive quarters as in the case of

lead metal and zine ore and metal from "all other countries," each importer has undergone the serious inconvenience of repeatedly having to enter only a part of his importation, and to postpone the remainder, without ever being able to enter all of it. In some cases, this has driven him out of business as it did an importer of type metal from Denmark (included in the quota for lead for all other countries). Another instance where an import dependent firm was forced out of business in which way was an importer of High Grade Zinc from Australia (included in the quota on zinc metal from "all other countries").

The zinc smelting companies dependent on independent sources of supply have had the most severe difficulties in obtaining adequate supplies of ores and concentrates in order to ensure efficient operations of their smelters. According to reports received by the Tariff Commission, more than 50 per cent of the zinc in ores and concentrates received from domestic sources, and almost 20 per cent of that received from foreign sources by domestic zinc smelters in the first three quarters of 1959 were obtained from mines owned or controlled by the smelting companies. The domestic smelting companies themselves estimate that they control about 75 per cent of the domestic ores and 40 per cent of the foreign ore (including certain mines in which the smelting companies have a substantial financial interest). Smelting companies have adopted the practice of reserving for

themselves the ores from the mines they control, putting the raw material squeeze on the independent smelters.

The Athletic Mining and Smelting Company at Fort Smith, Arkansas, one of the independent smelters, closed in December, 1959, in spite of a rising demand for zinc, due to the import quotas which restricted raw material supplies from foreign sources. During 1959, the National Zinc Company at Bartlesville, Oklahoma maintained operations by smelting imported ore in bond against future release under the quota. The Matthiessen and Hegeler Zinc Co., a third independent, operated its LaSalle, Illinois, plant at about 40 per cent and its Meadowbrook plant, near Clarksburg, at 75 per cent of capacity in January, 1960 because it was impossible to obtain the customary supplies of Canadian ore under the quota. In contrast, the smelters of the integrated companies were believed to be operating at full capacity.(1)

Actions of Foreign Governments in Response to U. S. Quota Restrictions

Another feature that should be discussed in connection with the national quotas is the actions of the various governments in the exporting countries. Lead and zinc shipments to the United States from the countries under the quota allotment can be, and, in effect, have been controlled abroad, either by governmental action, or by action of suppliers. Though these quotas have normally been filled (particularly in the case of lead), shipments have been

spaced more or less evenly throughout the whole quarterly period. In contrast, shipments from "all other countries" are not amenable to control from the source. Consequently the quotas allotted to these countries as a group are frequently filled on the opening day because the quota is usually exceeded by materials already in bonded warehouses.

The quota restrictions imposed by the United States have been greatly complicated by governmental restrictions imposed by the country of origin. Export restrictions have been imposed in Mexico, Peru, and Bolivia to ensure fair allotments of the country quotas among the exporting concerns in these countries. In Peru, for example, governmental restrictions prevented the Santander mine, newly opened, from exporting ores and concentrates to the United States because it did not qualify under the restrictions for a share of that country's quota. Consequently, these ores and concentrates had to be marketed in Europe and Japan despite the fact that a U. S. smelter was a major financial participant in the mine.

Another example is provided by the Chilete mine in Peru, which is owned by the American Smelting and Refining Co. In the years 1953 through 1958, this mine had shipped exclusively to the United States. However, on the imposition of quota restrictions by the United States and their allocation among Peruvian producers, this mine could ship only one-half of its output to the parent company, the other half, of

necessity, being shipped to Europe for treatment. Similarly, Mexican mines which had formerly shipped to U. S. smelters were forced to market part of their concentrates in Europe. And simultaneously, under the quota for "all other countries" some concentrates formerly produced in Europe and smelted there as a matter of course were brought to the United States to satisfy the needs of smelters whose imports from sources in this hemisphere had been restricted. This, of course, exemplifies all the problems mentioned above in connection with the granting of licenses by the importing country. This promotes the growth of monopsony power in the export market in that it facilitates collusion among the export licensees. Or it might be the case, that since the government is already involved in a complex export control system, it may see fit to levy taxes on exported items in order to gain a share of the monopoly profits. Import quota restrictions promote export quota restrictions--monopsony power, monopoly power. This is in addition to the possibility that the exporting country may view the import quota restrictions as a "beggar-thy-neighbor policy" and retaliate somewhere else.

Other Consequences

Another unfortunate feature is that the quota is wasteful in the sense that it tends to promote wasteful and unnecessary shipments of ores and metals to third countries. One feature of the national quota system is to allocate certain

quantities to particular countries. But over time trading patterns change and a particular source country may be unwilling or unable to fill their quota allotment completely. Thus, in this circumstance an incentive to import ores from countries whose quotas have already been filled for re-export to the United States has been provided. A variation of this phenomenon would be for countries whose quotas have been filled to export to third countries in an attempt to enter additional imports under the "all countries" category. As has been previously mentioned, an examination of the "all other country" category perhaps lends some evidence to this possibility.

Quotas also provide arbitrary classification by type of article entered. There are two categories, ores and metals. A quota restriction is applied to each in the same proportion as in the base period. This has a tendency to freeze the import mix in certain predetermined proportions and takes no account of changes in the capabilities of exporters or the wants of importers.

Quota restrictions do not distinguish between the different grades of metal. For instance, the quota for zinc metal does not distinguish between Special High Grade zinc primarily used for die castings and Prime Western zinc chiefly used in galvanizing. In the last six months of 1959, the steel strike sharply reduced consumption of Prime Western zinc and in the last quarter of 1959 a high rate of automobile

production increased the consumption of Special High Grade zinc. This condition in conjunction with a strike closing two of the largest plants primarily engaged in producing this grade of zinc resulted in rapid depletion of supplies. On January 1, 1960, the stocks of producers of Special High Grade zinc were at an extraordinarily low level. A critical shortage seemed imminent. Fortunately the crisis passed, primarily as a result of the settlement of the labor disputes at the producing plants.

Another problem that the quota raises is the price differential between foreign and domestic lead and zinc. The lead and zinc producers in foreign countries to which the import quotas are alloted are so situated as to benefit by the full amount of the differential between the U. S. price and the foreign price. This situation is in contrast to the imposition of tariff duties which are recoverable through drawback. Manufactured items, such as tetraethyl lead, which normally are exported are thus placed at a competitive disadvantage because of the non-recoverable differential in domestic and foreign metal prices.

To have long run effectiveness, quotas must be pervasive in the sense that they cover the whole gamut of lead and zinc articles, both manufactured and unmanufactured. In the case of lead and zinc, quota restrictions were applied solely to unmanufactured products. This, of course, provides an incentive to foreign exporters to avoid the restriction by

sending manufactured items instead of the unmanufactured ones. This is particularly simple to do in the case of lead and zinc where some manufactured items are quickly and with negligible cost produced from unmanufactured metal (e.g., lead shot, which is made by merely passing molten lead through a screen and cooling with water).

Clearly the disadvantages of quota protection are great, and are hostile to the tradition of free enterprise and the competitive market mechanism. The question remains, then, of just why the demand is raised to impose quota restrictions rather than a higher tariff. One of the primary reasons for the extensive use of tariffs in foreign countries in the past has been that import restrictions have been used as a means to equilibrate the balance of payments. Many foreign countries have balance-of-payments problems, primarily, perhaps, because they pursue inflationary policies. The countries, if they persist in following these types of policies and can not or will not depreciate their overvalued currencies, they are forced to impose drastic import restrictions. And they feel, whether correctly or not, that tariffs are too slow and too imprecise in their operation to be successful in this task.

In general, these considerations do not apply to the United States. Since the dollar problem, the gold outflow, and the deficit on the balance of payments, one wonders about this. Was the balance of payments one consideration

in the back of the mind of the administration at the time the quotas were imposed?

Quotas versus Tariffs

It is understandable that protectionist interests who are afraid of foreign competition prefer quota restrictions over tariff protection. For one thing quota restrictions put an absolute limit on the amount of imports while higher tariffs still leave imports variable. If domestic prices of the articles increase, whether from increase in costs or from monopoly pricing, imports from abroad will increase despite tariff protection. And in addition, if foreign countries depreciate their currencies in order to correct fundamental disequilibrium in their balance of payments, American imports will increase under the tariff.

There are no such difficulties under the quota. Quotas, as it were, are much more potent weapons in protecting the domestic markets from imports because they impose an absolute ceiling on imports.

There is, however, an outstanding exception to the general rule that quotas offer stronger protection than tariffs. This is in the case where the domestic demand for the protected commodity shrinks, so that imports fall, and, after a certain point, the quota restriction becomes ineffective. This, perhaps, could be the situation, at least to an extent, in the lead and zinc industry in recent years. In this particular case, the domestic industry loses all

protection unless, of course, the quota is changed. The tariff, however, would still provide some protection as imports in whatever quantity are still subject to duty.

Quantity limitations, of course, are not the only reason why protectionists prefer a quota rather than tariff protection. Quotas are, financially speaking, more profitable to the importer because it is he who received the difference between the artificially high domestic price and the lower world price, while under a tariff the Treasury would receive this differential. It will seldom be the case that the protected industry itself will receive the windfall. It is more likely that the recipients of the gain, i.e., the holders of the import licenses will be middlemen (dealers), or, in some cases, the final consumer. In this latter situation, the consumer will benefit in instances where the imported commodity is not a finished consumer good, but raw materials, semifinished goods, or machinery (giving him an advantage costwise in the sale of the final output). This has special reference to the case of lead and zinc to the extent that the large and integrated producers can secure a share of the imports under the quota. This would give them a cost advantage over the smaller non-integrated producers who, of necessity, must in this situation depend on domestic ore supplies (predominately controlled by the large integrated companies). In all of these situations the opposition of the dealers or consumers of the articles under consideration

against the quota restrictions will be diminished if as a compensation for a lower level of imports they receive lucrative unearned profits to be made under the issuance of import licenses. The quota system therefore has a built-in feature which tends to silence the natural opposition to import restrictions. It is, therefore, true, that quota restriction creates a conspiracy of vested interests in import restrictions, and restraints of trade consisting of the protected industries themselves and of the dealers and users of the import commodity. This conspiracy is directed at the final consumer of the imported commodity or the final consumption goods into the imported item enters as a cost item. The Public Treasury is also victumized because it loses the receipts from import duties, not to mention public morality which must inevitably suffer from the creation of a bureaucratic apparatus for the distribution of lucrative import licenses.

Some of the disadvantages of the quota system could be avoided if the import licenses were sold in free competitive auctions to the highest bidder. This would be relatively simple to arrange and administer in the case of standardized products. The unearned profits would be eliminated from the system along with much of the attraction to special interests and would provide some measure of income to the Treasury. This system, however, would not eliminiate disadvantages of the quota restriction which enforce import ceilings,

eliminates unhealthy foreign competition, and, if generally applied, reduces the adaptability of the balance of payments, and increases the difficulty of foreign countries to acquire the dollars they would need to pay for American exports. Consequently this increases the demand for American foreign aid programs either in the form of loans or grants.

It is difficult to see any justification for quota restrictions, even if a given amount of protection is desired. Quotas lead to administrative bureaucracy, and political and economic manipulation instead of the operation of market forces and competition.

There certainly is no reason why the imports of anyone particular commodity should be treated differently than imports of other commodities. Likewise there is no reason why the imports from any one particular country should be treated differently from the imports from any other country. This is, however, precisely what the quota system does.

Tariff quotas are only slightly less objectionable than the absolute import quota. This is because they do not freeze imports altogether but simply raise their price when they go beyond the quota level. It is, however, true, that tariff quotas like absolute import quotas provide unearned profits to importers who are fortunate enough to have imported quantities of the material before the higher tariff instituted under the tariff quota. If it were the case that the basic quota which is allowed to be imported duty-free or at a low

duty (relative to the amounts in excess of the basic quota) is small compared with the total volume of import, it will be necessary for the authorities to allocate permits among the prospective importers according to the same principles as in the case of absolute import quotas. Just as in the case of absolute import quotas the granting of such licenses is equivalent to giving a cash bonus or subsidy, with, of course, the same undesirable consequences.

What is true for quotas is also true for other types of quantitative restrictions such as exchange control, etc.

In conclusion the imposition of quotas on imports of lead and zinc ores and metal are undesirable from an economic standpoint. First, if a given degree of restriction is desired, tariff protection is better than a quota because a tariff does not completely divorce allocation decisions from the market mechanism, thus the tariff results in greater efficiency. This is not to say that any kind of restriction whether by tariff or by other means is justifiable on economic grounds, only that for a given degree of restriction tariffs are better than quotas.

Quotas with Special Reference to Lead and Zinc

With reference to lead and zinc quotas have proved an unsatisfactory means of controling the imports of these metals. One undesirable feature of quotas is that they are rigid and inflexible and do not allow adjustment to changing

supply and demand conditions. For this reason, quota restrictions exercise a destabilizing influence on market prices (particularly in the upswing) and perhaps tend to encourage unhealthy speculation in the lead and zinc markets. The ordinary businessman, and surely the lead and zinc producers and consumers are no exception, are not in business to speculate on market prices and would prefer not to do so if it could be avoided. In addition, the quota system has not affected all market participants equally, causing unusual and severe difficulties for some and providing windfall gains for others. A second and perhaps more important consequence, has been the tendency to concentrate control over ore supplies in the hands of the few large integrated companies with the resultant increased control over market supplies and prices by these companies. Third, quota restrictions have disrupted the normal trade relations between importers or smelters and their suppliers, and between producers or importers and the consumer. Normal trade practice usually entails the smelter contracting for the entire output of a mine on an annual basis. This is done because ores from different mines vary widely in their natural state, and smelter operations are not sufficiently flexible to allow operations utilizing greatly differing ores. The imposition of quotas has forced adjustments which are uneconomic or injurious.

Conclusions

The quota as an economic policy is similar in some ways to the tariff in that the objective of both is to restrict imports of lead and zinc metal. As was pointed out above, the quota is a more powerful technique for achieving this result.

The quota technique has the effect of reducing total output if it is sufficiently restrictive to be effective. By placing quantity limitations on the amounts of lead and zinc that can be imported, it reduces the available supplies of the metals in the domestic market. Therefore, total output will be less than it would otherwise be under conditions of perfect competition (i.e. output will be less than optimum). Output by domestic firms will be greater than optimum while that of foreign firms will be less than optimum.

The imposition of quota restrictions tends to raise prices by making less metal available at all alternative prices (demand conditions assumed to be unchanged). On balance this will tend to be the overall effect, although the tendency will be for prices in foreign markets to decline as metal, being barred from U. S. markets, is diverted to foreign markets. Since there is little direct connection between foreign and domestic markets, a price differential greater than transportation costs is likely to appear (with the domestic price being higher than the foreign price).

The quotas on lead and zinc are at present, merely quantitative restrictions on the amount of metal than can enter

and as such involve no revenue loss or gain to the government. As was mentioned above, however, if the government issues licenses and auctions them off ot the highest bidder, then there would be a revenue effect. So far, in the case of lead and zinc, this has not been done.

The quota program, by design, has an adverse effect on the foreign producer in that it limits the quantity he can sell in the domestic market. In the present instance, the restriction applies not only to the allowable quantities, but also to the kinds of materials, as there are separate limitations on ores and concentrates, and on refined metal. The foreigner is, therefore, not only prevented from producing an optimum quantity, but he is also forced to produce a non-optimum output mix.

We have said previously that quota restrictions on lead and zinc tend to promote vertical integration by putting a greater squeeze on independent smelting operations than on the domestic integrated smelter. There are other ramifications. The quota system is set up on a country basis instead of being global in nature. This has important implications. Under a global quota arrangement, the importers who have been granted licenses can go into the world market and purchase metal at the world price. The difference between the world price and the artificially high market price in the domestic market would then accrue to the importer as a windfall gain. No foreign producer can limit his offering and thereby gain

a share of the windfall as the importer has a wide range of alternative sellers with whom to deal, and he can avoid any attempt by one producer to get a better price by dealing with his competitors. The country quota system, however, results in a somewhat different set of circumstances. In this situation, the importer is not free to acquire lead and zinc from any source, but must purchase from one particular country as provided by the legal features of the quota restriction. This fact, in itself, narrows the bargaining range of the importer as he must now deal with only one segment of the market or not deal at all. This very fact alone improved the bargaining position of the foreign producer, and, as a result, he may be able to secure a portion of the gain that would go to the importer under a global system. If foreign governments now set up an export quota allocation system, allocating a given share of the country quota to each producer, the importer is not only limited as to how much he can import, but he is also limited as to the source of supply. This puts the foreign supplier in a position of monopoly power, so that we have an instance of bilateral monopoly. To the extent that this proves to be the case, the price of imported metal is seen to be indeterminate (and the above analysis with regard to price must be qualified). Under these circumstances, it could conceivably be the case that the importer would be faced with a complex multiple price system depending upon the policies of foreign

governments and the bargaining ability of the various foreign firms. It is conceivable that foreign governments might even attempt to get a share of the gains by levying an export tax on lead and zinc.

The effect on the distribution of income is uncertain depending on the circumstances arising in response to the quota restrictions. Restricted supply in the domestic market will tend to transfer income to domestic producers and importers. The extent to which foreign producers are able to exert monopoly power will determine whether they too will share in the benefits. It is conceivable that if demand conditions were just right that the foreign producer might be better off under the quota system than he was originally.

The restrictive nature of the quota restrictions tend to cause shortages in periods of high demand and tend to reduce surpluses in times of depression. Therefore, quota restrictions tend to accentuate the boom in the domestic market (by insulating the domestic market from the world market). And the restrictive nature of the quota tends to dampen the depression phase of the cycle. Looking at it from the point of view of the foreigner, the restriction cuts down the extent of his market. This has a dampening effect on the boom (because a greater output is confined to foreign markets than before). The same characteristic will cause depressions in foreign markets to be deeper than otherwise.

## Summary and Conclusions

The tariff and quota restrictions have to be considered within the general framework of the reciprocal trade agreements program of the United States, as the government program with respect to lead and zinc is part of a general overall program. This has two implications: (1) it is impossible to understand the historical aspects of, and the trade restrictions themselves unless one has a thorough understanding of the general overall approach of the various governmental agencies to the problems involved, and (2) the problems encountered in the lead and zinc industry are typical, perhaps, of problems encountered in the application of programs to other areas. This history of the trade agreements program makes it perfectly clear that the United States has not embarked upon a program of promoting free trade. Thus, tariff and quota restrictions continue to be a problem of concern, and will continue to pose a problem in the foreseeable future.

The tariff and quota restrictions are similar in many ways, although the quota is a much more powerful device for restricting trade. Both cause total output and total consumption to be smaller than the optimum output under perfect competition in the absence of the restriction. Domestic production, however, will be higher than the optimum under perfect competition, although domestic consumption will be lower. Foreign output will be lower and foreign consumption will be higher than the optimum levels.

Both tariffs and quotas tend to increase the price in the domestic market and lower it in foreign markets, thus introducing a price differential which is greater than transportation costs, and thus both discriminate against the foreign producer. Both tend to lessen competition and promote monopoly, though the quota restriction tends to have a more severe effect in this regard.

There is some distinction between the two with reference to their effects on the redistribution of income. The tariff tends to redistribute income in favor of the domestic import-competing firms and away from the export industries. In addition it provides tax revenue for the government. The quota restriction tends to enhance the income of the importer and domestic producer and to reduce that of the domestic exporter, but no tax revenue is provided by the reduction itself. This argument has to be qualified to the extent that the foreign producer is given monopoly power and is able to recoup.

The two programs have quite different effects on the business cycle. The tariff, from the viewpoint of the domestic producer dampens the cycle, and from the viewpoint of the domestic exporter and foreign producer, accentuates the cycle. The quota restriction, on the other hand, tends to heighten the boom for domestic producers and dampen the depression. For the foreign producer, it dampens the boom and accentuates the depression.

## CHAPTER XIII: FOOTNOTES

1. United States Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental) Under Section 332 of the Tariff Act of 1930 made pursuant to Senate Resolution 162, 86th Cong., adopted August 21, 1959, Washington, March 1960, pp. 107-108.

# CHAPTER XIV

# ANALYSIS OF GOVERNMENT POLICIES III

## Introduction

In this chapter, we shall consider the stockpile purchase program, the barter program, the government exploration subsidy program, the mines stabilization program, and the government loan program. One distinguishing characteristic of these programs as opposed to those discussed in the previous two chapters is that they involve government expenditures. Previously, we have considered programs which affected tax receipts in one way or another (excepting the import quotas).

The programs with which we are presently concerned require some expenditures of government funds in order to be operative. With the possible exception of the guaranteed loan, all involve a direct subsidy to the lead and zinc producer. We shall analyze each in turn and then make some statements about the effect on the allocation of resources.

## The Stockpile Purchase Program

### Introductory

The stockpile purchase program for lead and zinc was designed as a means of assisting the producers who, at the time it was initiated, were suffering from poor economic

conditions, i.e., low metal prices etc. A detailed description of the market conditions under which the program was first implemented was attempted in Chapters III and IV. It need not be repeated here, nevertheless, a thorough knowledge of the underlying economic circumstances is a necessary prerequisite for an understanding of the program. The actual mechanics were discussed in the chapters on Stockpiling. An attempt will be made at this point to assess the stockpile purchase program as a palliative to a distressed lead and zinc mining industry. Many of the conclusions that we shall draw also apply to the barter program (with some outstanding exceptions which we shall point out later).

## The Stockpile Program and National Security

Before discussing the stockpile program as it specifically applies to lead and zinc, we shall briefly discuss the stockpile program as a general method of providing a measure of national security.

The kind of war and stockpile needs.--The type of stockpile program that would be desirable would depend upon the type of future war that the United States would fight. It is highly probable that a future war would be substantially different from any past war that has been fought. It is difficult, if not impossible, to predict with any degree of precision what a future war would be like. It is safe to

say, however, that there is no good reason to expect that the next war will be like the last. The use of nuclear weapons has to be considered. While it is true that, at times, nations have refrained from using their most powerful weapons in the prosecution of a war (as the reluctance to use poison gas testifies), it is also true that nations have used very frequently their most powerful and deadly weapons (such as the atomic bomb in World War II). A war involving nuclear weapons would presumably be very short, it would result in distruction of a good deal of industrial capacity, so that the demand for raw and semi-finished materials would presumably not be very high.

But there are other possibilities which are important. Recent years have seen a succession of localized "brush-fire" wars in which the major powers are not openly and directly involved but operate behind the scenes. This type of war would be completely different than the all out nuclear wars. But like the nuclear war, they would not result in unmanageably large demands for industrial raw materials. Therefore, the collection of large stockpiles of industrial raw materials may not be an adequate way of meeting defense requirements.

Stockpile for reconstruction after atomic war.--Perhaps there are good reasons for the stockpiling of materials to assist a nation in surviving a short but highly destructive nuclear war. However, such a stockpile program would preclude

the acquisition of large quantities of raw and semi-finished materials. Industrial production and population would probably be reduced to such an extent that the demand for these materials would be much less than it had been during peacetime. A more desirable kind of stockpile program would include things like medical supplies, stores of food in ready-to-eat form stored near large centers of population, etc.

However, many items which would be useful in the aftermath of a nuclear war can not actually be stored, but in some sense they can be accumulated or stockpiled. Peacetime additions to the nation's supply of medical doctors, and improvements in Civil Service, and better coordination among the various governments involved in the control of vulnerable metropolitan areas would be helpful in the effort to survive the effects of a nuclear attack. The allocation of resources on improvement of these types of services, useful in both wartime and peacetime, which can be used and stockpiled at the sametime, would likely bring a higher return than resources devoted to materials which can not be used without being used up, and which, in any case, might be relatively plentiful after a nuclear war. In addition, most raw materials presently stockpiled are obtained from sources widely scattered throughout the United States or around the world, thus suppliers of these materials may be limited less by a nuclear war than the supply of those services provided by people living predominately in the large and vulnerable cities. Even if a stockpile

of raw materials would be helpful after a nuclear war, it still would not be justified unless it would provide a higher rate of return per dollar of cost than alternative types of public spending.

Character of the present stockpile.--A stockpile of the type presently maintained is not only largely useless in the kinds of wars that are likely to be fought in the future but it may be limited value even in prosecuting a war like World War II. A large stockpile of industrial raw materials is not necessarily needed for wars of that type. For instance, in World Wars I and II, Great Britain, the most dependent of all nations on imports, at times had to get along with about half its peacetime tonnage of imports, but yet managed to maintain its war effort without interruption. In World War II, Germany was cut off by the British blockade from most of the rest of the world, and from its traditional sources of many raw materials. Consequently, Germany had to get along with only a minute proportion of its usual supplies of these materials. Nevertheless, that nation managed to wage an all-out war against more powerful adversaries for many years. It seems, therefore, that a modern industrial nation, given the time available in a war of attrition, can get along without most of its customary supplies of any raw materials. It has the ability to perform essential wartime functions with a wide variety of techniques and materials. Nations have easily adapted to shortages which were expected to be fatal.

Even if it were definite that a future war would, like World War II, require complete mobilization for several years, it would not be possible to know what materials would be in the shortest supply in such a future war. With military technology changing at an astounding rate, the materials that would be most important in a future war may not be those that are important now. Nor is it possible to predict with any degree of accuracy which materials will be accessible. Therefore, the stockpiling program must include any and all imported materials that could conceivably be needed in any future war. This is pretty much the policy that has been followed since World War II.

But this raises the fundamental problem. Is it more economical to accumulate almost everything on the ground that there is no way to determine which will be short in a future war, or is it more economical to rely on the substitution process? The cost of a stockpiling program wide enough to protect a nation against any possible contingency is very great; probably much greater than substituting for the few things that will actually be in short supply.(1) With this general statement we not turn to the stockpile program as it applies to lead and zinc.

## The Stockpile Purchase Program as a Price Support Program

The previous discussion has, perhaps, clearly established the fact that a big reason for the implementation of

an expanded stockpile purchase program was that it provided a measure of relief for a distressed lead and zinc industry. It was by design, a price support program for the lead and zinc industries. The similarities between this program and the agricultural price support program are evident. In the case of lead and zinc, however, no production or import controls were instituted at the same time. Maximum benefit to domestic producers, of course, would require import restrictions, but since this was not the case, the implementation of the program resulted in a large increase in imports.

But, aside from these factors, there are important reasons why this type of program is inadvisable. The ultimate result is to make the original problem worse instead of better. It will be convenient to use conventional diagrammatic analysis to support this conclusion.

Let $DD_1$ and $SS_1$ be the short run demand and supply conditions ruling in the metal market, assuming perfect competion (in Figure 11). Price $p_1$ is then the equilibrium price at which the quantity offered will just equal the quantity taken. Suppose, however, that for some reason the price temporarily is $p_2$. In this case, there would be a surplus AB of metal offered over that taken, which, in the absence of governmental interference would tend to drive the price down to $p_1$. This, perhaps, can be taken as being representative of conditions in the lead and zinc markets prior to the implementation of the expanded stockpile purchase program. Let the curve LS

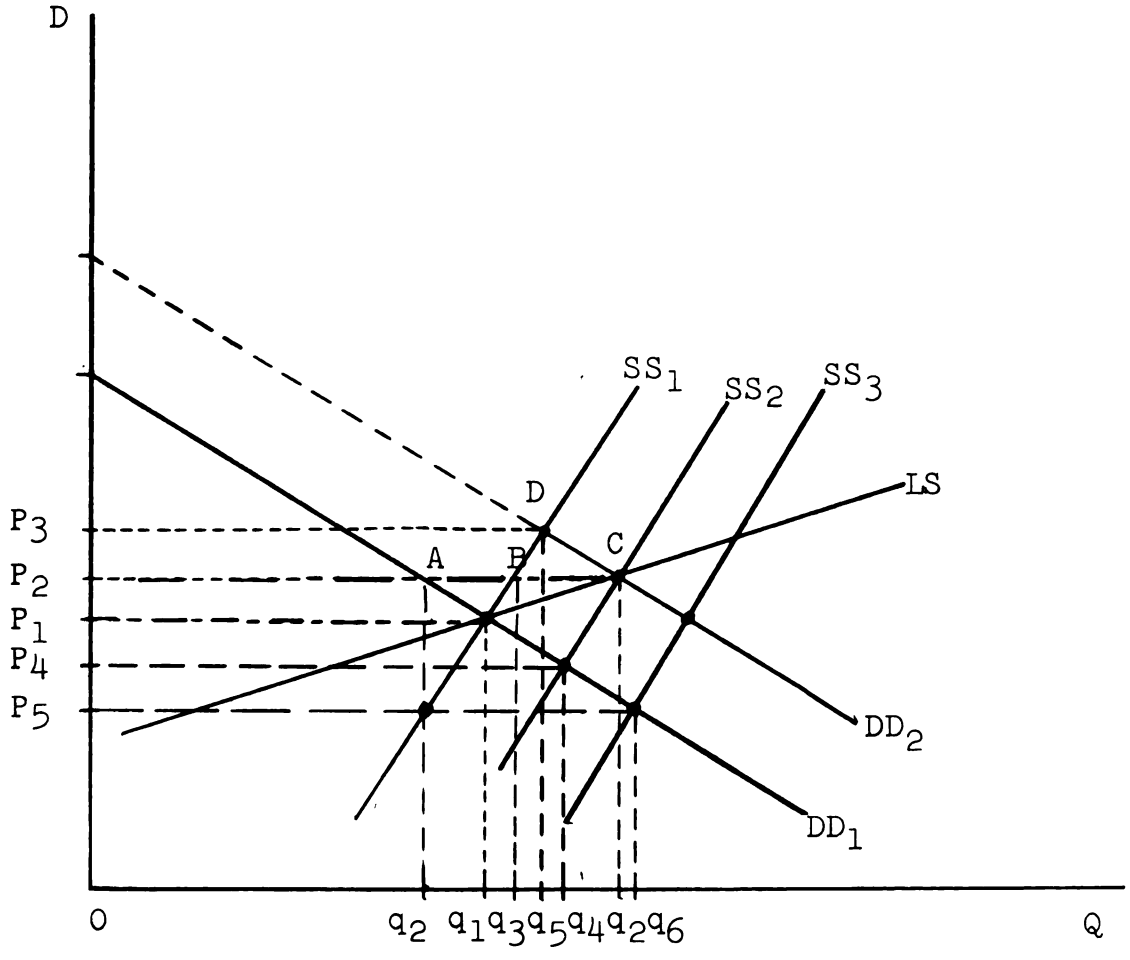



Fig. 11.--The Economic Effects of the Stockpile Purchase Program

represent the long run supply curve of the industry (more elastic than the short run supply curves). Imagine that the government feels that price $p_2$ is a desirable metal price (in order to assure output, adequate to maintain the defense effort, or for any other reason), so it embarks on a stockpile purchase program designed to raise the long-run price to $p_2$. In doing this, the demand curve for the industry is shifted to $DD_2$. It is assumed that the purchase program will go on for an extended period of time, though not permanently.

During the purchase program firms will adjust to the new market conditions, entailing a shift in the short run supply curve from $SS_1$ to $SS_2$, which intersects $DD_2$ at point C, the new equilibrium quantity being $Oq_2$. Of course, the first short run result will be to raise price to $p_3$ because firms will be unable to adapt immediately to the new market conditions. However, as time passes they are increasingly able to adapt, and the short run supply schedule gradually shifts out to $SS_2$. Temporarily, however, the price would be higher that price $p_2$, if the government were to adopt a policy of setting a single rate of purchase and maintaining this policy. However, a closer approximation to reality is to assume that the government will go into the market and purchase quantities for stockpile at the current market price at any time the price lies below $p_2$ (thus establishing a second demand curve consisting of the solid portion of the

demand schedule $DD_2$. Since the government is attempting to support the price at $p_2$, it will not be interested in purchasing at prices higher than $p_2$, so that the demand schedule $DD_2$ will not exist above price $p_2$. Demand schedule $DD_2$ exists in the first place because the government is quantity oriented as opposed to being price oriented. Government is willing to purchase a sufficient quantity at whatever price it can get rather than buying all quantities offered at the price $p_2$.

Initially the amount of metal which the government must purchase in order to get the desired result is $\overline{AB}$. However, to maintain the price at the desired level, the government would have to purchase the metal at an increasing rate as producers became more adapted to the new price, until finally the purchases must equal $\overline{Ac}$. To the extent that increasing amounts must be purchased, the situation is seen to be deteriorating. In addition, as purchases are continually being made, government stockpiles are continually growing, and so, if the program is long continued, very sizeable investments are made in large quantities of lead and zinc metal.

When the government terminates the purchase program the demand schedule shifts back to $DD_1$. At price $p_2$ the surplus is greater after the purchase program than before (prior to the program the surplus was $\overline{AB}$, after, $\overline{AC}$, the amount $\overline{BC}$ having been the additional surplus created by the purchase

program). Thus the adjustment to equilibrium conditions has been made more difficult. Originally equilibrium could have been restored by a reduction in output of $\overline{q_1q_2}$ and a decline in price of $\overline{p_2p_1}$, which entails a simple short run adjustment. After the purchase program, however, a more complicated process to achieve equilibrium is required. The initial market reaction to the termination of the purchase program is a reduction in price $\overline{p_2p_1}$ and a reduction in quantity $\overline{q_1q_2}$. As gradual adjustments are made price will return to $O_{p1}$ and quantity to $Oq_1$. The adjustment process when finally allowed to take place is seen to be more violent than it would have been had the government not interfered. If the industry is subject to sharp cyclical fluctuations (as are the lead and zinc industries), the downard fluctuations are seen to be aggravated if the government abandons the purchase support program at the time of a general decline in business activity (which actually was the case in this instance). Even in a case where we assume no fluctuations in market demand, the cessation of the purchase program is seen to induce a slump.

During the purchase program, however, the industry is temporarily better off because sales are greater and prices higher than they otherwise would have been, had there been no purchase program. Thus firms are better off during but worse off after the program. Whether, on balance, the firms are better or worse off as a consequence of the whole

purchase program (and its after effects) depends upon the weight of the disadvantages connected with the adjustment process undergone after the termination of the purchase program compared to the weight of the benefits to be derived from the increased purchases.

Up to this point we have assumed that the government accumulates the metals purchased and adds them to stockpiles. If at the end of the purchase program it is decided that the metals purchased are no longer need and therefore should be sold, the adjustment problem will be intensified, and the costs made greater. On Figure 11, government sales (on the basis of an orderly disposal program) will shift the supply curve to the right as represented by $SS_3$. This would necessitate an initial decline in price to $p_5$. Bigger adjustments are needed to restore the market to a position of competitive equilibrium.

The purchase program for metals involves the same basic problems as are involved in purchases of agricultural commodities with regard to the social costs involved. When the government purchases the metal, it adds it to the stockpile, thus preventing its use by consumers. In real terms the cost of the metal put into the stockpile is that amount of goods and services that must be forgone in order to acquire the metal. Clearly, if the system is to operate efficiently, this cost should be minimized (assuming, indeed, that it was desirable to purchase the metal in the first place). To the

extent that the stockpile program is not efficiently handled (and in the cases of lead and zinc, the extent is certainly wide indeed) there is a waste of resources. But more than this, the costs also involve maintainance and storage of the items actually purchased for the length of time that these items are kept in the stockpile. These costs include, not only storage costs, deterioration allowance, etc., but also the interest on the invested capital tied up in this manner (which may, in addition, include capital loss at the time of disposal).

The Stockpile Purchase Program as a Method of Maintaining the Mobilization Base

One of the reasons that was used to justify the implementation of an expanded stockpile purchase program was that such a program was necessary in order to maintain the "mobilization base" in the lead and zinc industries. Basically what is involved here is that a certain industrial capacity was felt necessary to assure the country of adequate supplies of lead and zinc for wartime use. It was felt that this minimum industrial capacity, or "mobilization base" was not and could not be maintained by normal peacetime market forces, hence it was argued by supporters of the purchase program that it was necessary for the government to take action in order to maintain the minimum capacity essential for national security.

This program involves a large element of waste as it is not the most efficient and cheapest way to accomplish the desired objective. In actually purchasing the metals full market price must be paid in order to obtain the metal. Market price includes all costs of production, i.e., all the payments to the factors of production, including profits. If the objective of maintainance of capacity is what is desired, certainly there is no reason why the metal must actually be produced and added to stockpile. The desired capacity can be maintained much more cheaply by simply paying a subsidy equal to the difference between the short run fixed costs of the minimum "mobilization base" capacity and the short run fixed costs of the normal market capacity to those firms who maintain the larger capacity. This payment is only a fraction of the initial purchase price of the metal and this approach avoids maintainance costs of the stockpiled materials.

A problem that might be raised in this connection is what actually constitutes the "long run" and what the "short run." This could easily be solved for purposes of national defense in that the projected war period should be used. For instance, since 1958, national defense needs have been based on a projected three year war. For national defense purposes, fixed costs should be the costs of any resource which could not be varied in a three year period.

If the government actually purchases the metals, society is giving up resources which could better be used

in other ways. In other words, society is paying a higher price for a given quantity and quality of national defense than is necessary, and this constitutes a waste. If the actual purchase program can not be avoided, the program still should be tempered by the realization that the accumulation of stocks of metal are somewhat of a substitute for a minimum rate of output (because any projected war that we might fight is finite in length. An indefinite purchase program thusly is not justified under any circumstances.

Some note should be made on the subject of actually establishing the mobilization base. The mobilization base figures were established at an annual output of 350,000 tons of lead and 500,000 tons of zinc. These figures were determined by looking at the previous record of mine production and determining a "reasonable" figure in the best judgment of the Bureau of Mines, the Geological Survey, and the other specialists involved. Clearly, the figures, so determined, were based on past experience and not on present or future need. It would seem impossible to operate on an efficient basis, if the goals that are set have no direct bearing on the actual or projected needs for the program that is being carried out. In this case, the mobilization base was established by using past production. This technique is efficient only to the degree that it reflects the level of production necessary to effectively execute the program that has been set up. It would certainly be a far

more efficient procedure to ase a goal on the basis of future needs, determine what is necessary to achieve that goal, and then to proceed.

## The Timing of the Stockpile Purchase Program

As a matter of historical fact, the stockpile purchase program was poorly timed. The program was undertaken during a period of high consumption of lead and zinc, and was terminated at a time when lead and zinc consumption was low. The government embarked on a program of supporting the lead and zinc industries during a period when the consumption of zinc was at an all time high level, and lead consumption, while not at record breaking levels was, nevertheless, very high. Despite high levels of consumption, the production of lead and zinc during that time was greater than consumption, so that conditions of surplus existed in spite of high consumption levels. When consumption declined to very low levels in the years subsequent to 1951, the government terminated its purchase program. If the policy of the government was to sustain the lead and zinc industries and a minimum level of production essential to national security, the purchase program should have been instituted during a period of low consumption rather than during a period when metal consumption was at the highest level in history.

The stockpile purchase program had the effect of preventing any downward adjustment at all in the levels of metal

output during the early years of its existence. It had the effect of postponing the adjustment until later, under more adverse economic conditions. Thus a fundamentally bad program was badly applied in an attempt to maintain the quality and quantity of the U. S. defense effort. This is, perhaps, the safest thing that can be said, certainly the historical record suggests that stronger allegations of improper conduct might be justified.

### The Stockpile Purchase Program as a Method of Meeting the Maximum (One Year's Normal Consumption) Objective

Lead and zinc were also purchased in order to meet the maximum objective, which in the case of lead and zinc, was "one year's normal use of the metals." It perhaps can be said that this is an arbitrary objective in that it is not directly connected with national defense needs.

Even strategic and critical materials are subject to the law of diminishing marginal utility. The fact that a material is termed strategic and critical means (or ought to mean) that there is some minimum quantity of this material that must be somehow available in order that an adequate level of national security can be maintained. The fact that a material is strategic and critical should not be thought of as license to purchase unlimited quantities. National defense involves social costs in the sense that in order to get more guns butter must be given up. To the extent that too much stockpile material is purchased, consumers will be forced to

get along with less goods and services than they would otherwise be able to enjoy. This constitutes a general and quite unnecessary social cost.

The process of establishing objectives on a basis other than that of need, necessarily means that there is no way to insure the optimum allocation of resources even under circumstances where the program was absolutely essential. There is no reason to expect that the actual goals decided upon using an arbitrary standard will assure setting an objective for purchase policy which has a connection with the projected social goals. Either too much metal will be purchased or too little. Either too few consumer goods will be available, or other national security programs will suffer, or a less than optimum national defense effort will be made.

Therefore, even if the stockpile program was necessary the technique used to set the lead and zinc objectives was faulty and could not have lead to anything but an undesirable result.

Multiplicity of Objectives

Another major problem that is inherent in the stockpile purchase program is the multiplicity of objectives. As has been mentioned previously, there were four alternative stockpile objectives: (1) the long-term objectives, (2) the minimum objectives, (3) maintainance of the mobilization base, and (4) the maximum objective. These were alternative criteria for determining how much metal ought to be stockpiled

and as such gave considerable freedom as to the quantities actually to be purchased. Underlying all this, was the purpose of the expanded stockpile purchase program as a price support program for the lead and zinc industries. The objectives were pursued under various laws, such as the National Stockpile Act, the Agricultural Trade Development Assistance Act, et. Confusion runs rampant when one attempts to trace what action was taken pursuant to which objective under what authorization. In the minds of the Administration these various aspects were all interchangeable in that an action taken pursuant to a given objective might be justified under any of a number of pieces of legislation, or a program set up under one might be carried out under the provisions of another, or with a different objective in mind than had been specified under the act.

For example, purchases designed to maintain the domestic mobilization base were legally justified under the Defense Production Act of 1950. However, one finds that metals purchased in an attempt to "maintain the mobilization base" were added to the National Stockpile, instead of the Defense Production Act Inventory. The reason, perhaps, being that disposal procedures from the National Stockpile were much more difficult than from the Defense Production Act Inventory.

Another problem that was intimately connected with the stockpile objectives arose from the way in which they were

determined. Until recently, stockpile objectives were classified, that is hidden from public scrutiny. The job of determining was exclusively that of various administrative agencies, particularly the Office of Emergency Planning and its predecessor agencies. When all the decisions about the what, why, and when of purchase were being made, all was completely hidden from public view.

## The Stockpile Purchase Program as a Maximum Metal Purchase Program

It can be argued that the stockpile purchase program was used to maximize metal purchases irrespective of national defense needs. In addition to consideration mentioned above, the application of the one year rule as an objective could be used to support this contention. The manipulation of the objectives recounted in the previous discussion strongly suggests this motivation for purchases. Thus both the multiplicity of goals and the varied interpretation of the goals themselves play an important part in the actual purchase program as it was applied.

The first objective for lead that is relevant in this connection was established on February 24, 1953 at 700,000 tons. It remained in force until September 25, 1954 when it was increased to 1,130,000 tons. On December 31, 1953, the inventory and amount on order totaled 720,000 tons of lead or 20,000 tons in excess of the lead objective. Despite the fact that the stockpile objectives were oversubscribed, on

June 7, 1954, the Office of Defense Mobilization directed the General Services Administration to purchase 3,500 tons. Additional purchase directives were issued as follows: June 16, 1954, 3,500 tons; July 8, 1954, 10,000 tons; July 30, 1954, 10,000 tons; and August 27, 1954, 12,500 tons. The last transaction was justified on the grounds that the President had approved the increase in the objectives to 1,130,000 tons, but that the final paper work did not go through until September 28, 1954. No explanation has ever been offered for the previous three purchases. One possible interpretation of this sequence of events is that purchases were first initiated and when it was found that these purchases were over and above the authorized amounts, the objective was raised to accommodate them.

The interpretaion is further supported by the fact that the objective set on Setpember 28, 1954 was established on an entirely new basis, i.e., the one year rule was used for the first time with respect to lead. The objective, which was substantially higher than the previous one, was established on the basis of the average annual consumption for the years 1950, 1951, 1952, and 1953. If the previous year 1953, had been used it would have resulted in a lower objective. The objective was not only substantially increased, but for the first time was established on the basis of a criterion completely independent of consideration of projected need.

It was reaffirmed on November 26, 1954, presumably on the same basis. If the old alternative method of balancing supply against requirements had been used, the result would have been an objective of 437,540 tons, a substantially smaller amount. It, therefore, can be said that the objective wa established at a level substantially greater than that necessary for national defense.

On November 8, 1956, a new objective of 1,154,000 tons was established by the Office of Defense Mobilization again under the one year rule. However, a different interpretation was placed on the one year rule. It was interpreted as meaning the lead consumption of the previous year ("becuse the most objective thing to do was to be governed by the last year's actual consumption"). This change in interpretation caused an increase in the lead objective as 1955 was, up to that time, the highest lead consumption year in history except for 1950. ("But I assumed we were part of a dynamic and growing economy and I didn't indulge in the assumption that it was going to drop in future years.") (I felt that it was the fairest way to interpret or translate '1 year's normal use'.")(2)

Of course, the one year rule was interpreted in still a different way later. It is not our purpose to repeat the whole discussion of a subject previously undertaken. What we have said here is sufficient to show that it is doubtful that the lead purchase program was undertaken with the sole purpose of providing for national security.

A similar story can be told with respect to zinc. The zinc objective was established at 740,000 tons and remained at that level until August 3, 1954 when it was increased to 1,100,000 tons. The one year rule was used for the first time at this juncture and it resulted in a substantial increase in the objectives. The total amount of zinc in inventory or on order was 769,000 tons on June 30, 1954, or 29,000 tons in excess of the objective.

Purchases under the expanded program were begun on June 7, 1954, when the General Services Administration was directed to purchase 5,000 tons despite the fact that commitments were already in excess of the stockpile objective. The purchases of June 7 (5,000 tons), June 16 (5,000 tons), and July 8 (20,000 tons) were made under the same circumstances. The acquisitions of July 30, 1954 also was made before the official increase in the objective (but proponents of the purchase program claim that it was made after the time that the President had made his intentions known as to the expanded scope of the purchase program).

In contrast to the application to lead, where a four year average was used, the last calendar year's consumption was used to determine the objective (thus a higher objective was set than would have been the case had a four year average been used). The next zinc objective was established on November 8, 1956, at which time it was raised to 1,250,000 tons, again using the one year rule. However, the year 1955 was used instead of 1953, and the result was an increase

in the objective as zinc consumption reached its highest level in history in 1955.

Without repeating the whole of the previous discussion, this sequence of events is sufficient to cast doubts on defense essentially as the sole reason for the purchase program in zinc.

To summarize, the following is a table showing the dollar amounts of purchases of lead and zinc which were made in excess of the objectives:

| | | |
|---|---|---|
| Lead. . . | June 7, 1954 . . . . | $ 1,973,000 |
| | June 16, 1954 . . . . | 2,800,000 |
| | June 30, 1954 . . . . | 2,800,000 |
| Zinc. . . | July 7, 1954 . . . . | 2,400,000 |
| | July 8, 1954 . . . . | 4,795,000 |
| | July 30, 1954 . . . . | 4,833,000 |
| | | $19,601,000 |

The safest thing that can be said about these purchases is that had proper administrative procedures been followed these purchases would not have been made under such circumstances.

In the overall stockpile program, the one year rule was used as an alternative method of determining the long-term objectives for only three materials, antimony, lead, and zinc. The one year rule was first suggested on July 6, 1954, at a time when the lead and zinc buying program already had been launched as an alternative to raising the tariff on the two metals. If the one year rule had not been adopted, the buying program in lead and zinc could not have progressed

as it did (and if the interpretations had not been changed at various times the objectives could not have been raised as high as they were). In addition, the expanded purchase program for lead and zinc for stockpile was undertaken against the advice of the Secretary of the Treasury, the Director of the Budget, the Joint Chiefs of Staff, and the Secretary of Defense.

The charge that has been levied against the stockpile purchase program in light of the above considerations is that the program was undertaken solely as a price support program without consideration for national security. This is one possible interpretation that can be given to the evidence.

Stockpile Purchases Now or Purchases at Time of Need

One argument that has been used in support of the stockpile purchase program is that it is advantageous for the government to obtain metals and minerals over and above current needs at times of low prices instead of waiting until emergency conditions force acquisition at premium prices. However, an unqualified argument to the effect that because prices are lower today than they would be in a projected emergency does not of itself justify the purchase of metal today.

To illustrate, let us assume that the metal price today is ten cents a pound, and that it will increase to twenty cents a pound during a projected emergency. We also

know that the emergency is going to arise 15 years from today and that we would need five pounds of metal at that time. We shall assume that the rate of interest is 5 per cent and constitutes the only cost of keeping the metal from now until the projected emergency. The question then arises, shall we buy now in order to avoid having to pay the higher future price. If we purchase now we will have to pay 50 cents in order to obtain the metal, if purchase is posponed until the emergency we will have to pay $1. But if we take the present value of $1 worth of metal that will be used 15 years from now, we find that it is 48 cents. Thus it would be an uneconomic position to pay 50 cents for the metal today (although it might be a wise decision two years from now).

Up to this point, we have assumed that all the variables are known with certainty. However, in the real world, things are seldom this well known. Future events are known only to a degree of probability, e.g. that there is a 75 per cent chance that 5 pounds of metal will be necessary to meet an emergency that has a 50 per cent change of happening 15 years from now, in which the metal price has an 80 per cent chance of increasing from 10 to 20 cents. In this situation the problem of whether to purchase has to be considered in light of discounted values of all the variables involved. Suffice to say, it is not always advantageous to purchase at current low prices in anticipation of an increase in price at some future time.

Conclusions

The stockpile purchase program, by design, was an attempt to support the prices of lead and zinc. Unlike some price support programs, purchases for stockpile were quantity rather than price oriented in that an attempt was made to purchase a sufficient quantity at current prices to push the price up. This is in contrast to an effort to stabilize the price at the desired level by standing ready to purchase all quantities offered at a given price. The purchase program stimulates output and if applied in a perfectly competitive market in equilibrium it would result in a greater than optimum output of metal.

In order to have a successful program the government would have to absorb a share of the output. This share will be greater than the increase in quantity offered by suppliers, so that consumption will be less than the optimum that would be established in a competitive market. This is really saying that the quantity taken by buyers will be less at the higher price than will be the case under the lower optimum price.

Price will be increased and thus will be higher than the optimum price because governmental entry into the market will increase the quantity taken at all alternative prices (below the supportprice). With supply conditions taken as given, an auction among the buyers will cause the price to increase.

Purchases, of course, increase government expenditures. The impact on the foreign producer will be favorable, as he will benefit from higher metal prices just as will the domestic producer. The foreign producer will produce a greater than optimum output and sell it at the higher price, and, so, in effect, the stockpile accumulation of the government will include foreign metals (even though purchase instructions were to acquire metal produced from newly mined domestic ores). It will be remembered that the purchase program was not accompanied by import restructions and that subsequent to its implementation, imports increased significantly.

The expanded purchase program, by itself, should have no effect on the market structure of the industries, unless the government purposely purchased only from selected firms. Even in this case, there would be little influence on market structure (unless there were significant economies of scale), although the purchase procedure might be inefficient in such circumstances. To the extent new firms enter the industry in response to the incentive of higher prices, the number of firms in the industry would be greater than optimum.

Acquisitions entail a redistribution of income in favor of the domestic and foreign lead and zinc producers. Such a transfer is made out of the tax proceeds of government, i. e., is at public expense.

The purchase program, by design, would have the effect of dampening the depression and have no effect on the boom as

the program was designed to maintain the price at a certain level. Thus the program would not be operative in the boom period when prices would naturally be above the support level, but would support prices in periods of recession when otherwise they would be below the support level. In actual application, the program was applied during a period of high metal demand and terminated at a time of sharply reduced demand, thus having a tendency to prevent a downward adjustment under relatively favorable conditions and making the adjustment process worse under conditions of reduced demand. In this sense the purchase program deepened the depression in the lead and zinc industries.

## The Barter Program

Originally the barter program with respect to lead and zinc was instituted in conjunction with the expanded stockpile purchase program and can be considered, in its early phases, as an adjunct to that program. Thus what has already been said about the expanded stockpile purchase program applies equally to the barter program (except that the barter program includes dealings in surplus agricultural commodities of which no mention has been made).

The connection between the barter program and the expanded stockpile purchase program can not be stated, however, on an unqualified basis. Most of the lead and zinc obtained by barter was added to the Supplemental Stockpile, the materials in which did not count against stockpile objectives,

and since 1957 the agencies in charge of the stockpile purchase program have refused to be associated with barter transactions. Thus, the acquisitions of lead and zinc by barter constitute an independent program and must be defended or attacked on this basis. This, however, does not affect the conclusions that we have drawn and discussed previously in connection with the stockpile purchase program as they apply to barter.

The principal general criticism levied against the barter program from the standpoint of agricultural commodity disposal is that barter transactions displace cash sales and disrupt world markets (though less now than in the initial years of the program because of the reduced scale of the program). This criticism is probably well taken. We, however, cannot deal with it in detail as it lies beyond the scope of the present effort.

Since the barter program in independent of the stockpile purchase program condemnation or justification has to be made on a basis independent of the stockpile program, i.e. the argument that the materials are necessary for national security can not be directly used in support of the program.

Supporters of the program of exchange of surplus agricultural commodities for "strategic and critical" materials for the Supplemental Stockpile (and for other purposes) make four main points in support of their position. First they maintain that the United States produces only a fraction of

the annual domestic consumption needs of primary lead and zinc. Second, lead and zinc do not deteriorate in storage while agricultural commodities do. Third, the government reduces storage costs when it barters surplus agricultural commodities for metals. Fourth, barter reduces the market surpluses of lead and zinc, raising the prices of the metals, thus, relieving depressed conditions in the industry. In order to better assess the barter program, we shall take each of the arrangements in turn.

The fact that the United States does not produce sufficient primary lead and zinc to meet consumption needs does not mean that the deficit should be acquired by barter. Cash purchases are much easier to make than barter transactions. (Even if it was desirable to accumulate metal stockpiles, cash transactions would be a more efficient way of accomplishing this end.) In any case, the bulk of the lead and zinc acquired through barter was added to the Supplemental Stockpile, so that it was not and could not be consumed. Thus the barter program in actual application has little to do with consumption and certainly is an unnecessarily clumsy way to do business.

With reference to storage, it is estimated that it costs 12 cents a year to store a ton of lead or zinc metal, while it costs $.50 a year to store wheat and $4.82 to store a ton of corn in approved commercial storage. If the only choice were between storage of metal or agricultural commodities, metals would be cheaper. But the choice is not limited

to these alternatives. The best choice would be to store nothing, in which case, storage cost would be zero. The obvious solution is to avoid accumulating agricultural surpluses altogether. If this is impossible and the accumulated surpluses must be disposed of under the barter program, the least that could be done is to barter for something that will serve some practical useful purpose. The practice of trading one useless commodity for another is no solution to any of the problems involved, but simply makes the surplus of one commodity a little more and has no effect on the surplus of the other (to the extent that the sale of surplus agricultural commodities displace cash sales).

Barter of surplus agricultural commodities for lead and zinc metal is designed to reduce the surplus of metal overhanging the market and to act as a price support program for distressed world and domestic markets. This certainly did not prove to be the case in the 1961 program of bartering surplus agricultural commodities for lead. In order for a program of this type to achieve its objective <u>all</u> producers have to agree to reduce production. In the 1961 program, U. S. and Soviet producers expanded output by an amount equal to the barter acquisition, so that the program had no effect on the world surplus of metal. An additional disadvantage to those who believe in the free play of the market mechanism is the tendency toward monopoly in this type of dealing. In fact, the Department of Interior was precluded

from making an agreement limiting output with the domestic producers only by the objection of the Department of Justice.

In addition to these problems, the barter program is a very complicated way of doing business. The actual mechanics of disposal of surplus agricultural commodities frequently develop into complicated multilateral transactions which are extremely difficult to arrange and tend to disrupt normal trade channels for many other commodities besides those directly involved. All in all the barter program can be characterized as an overly complicated way of accomplishing something that ought not to be accomplished or that could be accomplished much more easily by alternative techniques.

## Other Programs

### Government Exploration Program

Under the Defense Production Act of 1950, the government adopted a program of matching dollar for dollar private exploration expenditures for lead and zinc. This subsidy had the effect of reducing the exploration costs of firms by one-half, and this change in relative prices will cause an increase in the amount of exploration activity relative to the other activities of the lead and zinc producing firms. Over the long run, increased exploration will presumably lead to increased discovery and development of ore reserves,

i.e., to a capacity greater than the optimum capacity that would have been established had market forces been allowed free rein (i.e., capacity will be greater than it could be under perfect competition and a netural policy.

The exploration program will over the long run have a tendency to make output greater than the output that would have been established under conditions of perfect competition. This tendency will express itself in the willingness of the firms to offer greater quantities at all alternative prices (shift the supply curve to the right). Assuming conditions of demand to be constant, metal prices will be reduced and as a result of the lower prices consumption will tend to increase as the substitution process works itself out. Metal prices, hence, will be lower and consumption will tend to be greater than optimum.

Payment of the subsidy will, of course, increase government expenditures over what they otherwise would have been. To the extent that the program is confined to the domestic market, domestic firms gain a cost advantage over foreign firms (assuming equal initial positions) and thus foreign producers will be adversely affected by having to compete with lower cost domestic firms.

This program tends to favor the large producer who has ample funds for exploration projects and discriminates against the small or marginal producer. Thus the program tends to enrich those producers who are already endowed with ample resources and in this way tends to lessen competition.

Since the program is essentially a subsidy, it transfers income from the taxpayer to the domestic lead and zinc producer.

The effect on the business cycle is only indirect as this is essentially a long range program. To the extent that capacity is increased through discovery of new mineral deposits, the boom periods are dampened and the depression periods are deepened.

## The Government Subsidy Program to Small Mines

The government subsidy program to small mines has some interesting policy implications. This program attempts to aid the small domestic mine producer by paying him a subsidy equal to 75 per cent of the difference between the market price of lead and 14-1/2 cents a pound, and 55 per cent of the difference between the market price of zinc and 14-1/2 cents a pound. The payment of this type of subsidy solely to small producers is obviously discriminatory. But more than this, it results in lower market prices and larger out.

This situation can be analyzed using the simple tools of supply and demand as represented in Figure 12. The line D represents the demand schedule of the industry, i.e., the amounts that consumers are willing to take off the market at all possible alternative prices. The line $D^1$ represents the receipts schedule faced by firms at all possible alternative

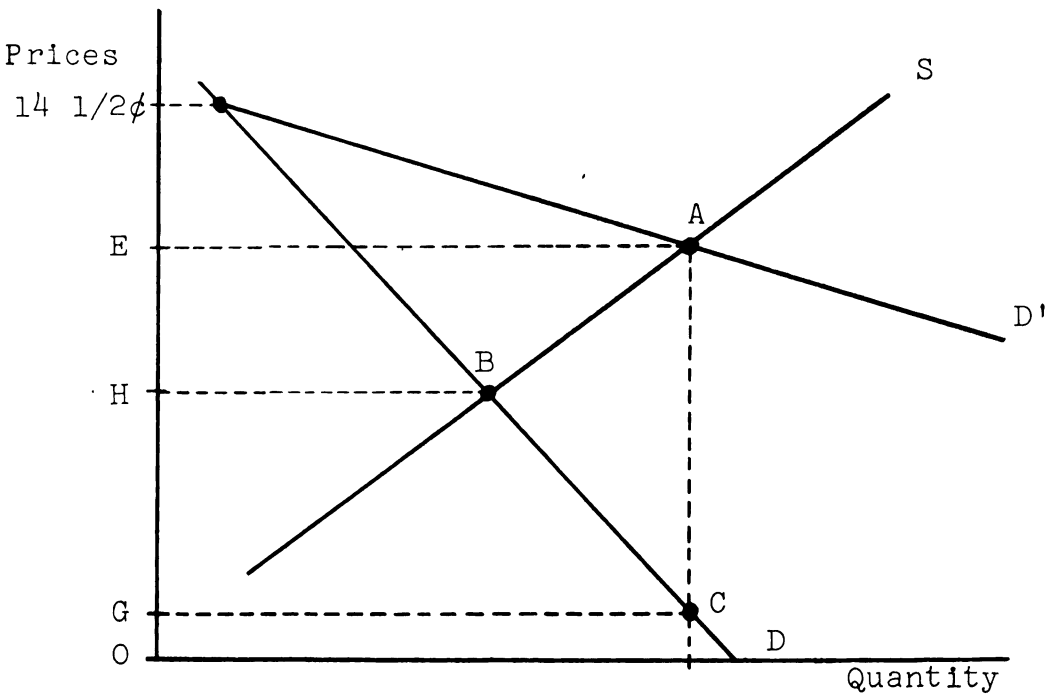



Fig. 12.--The Economic Effects of the Small Mines Stabilization Program

quantities. The difference between D and $D^1$, at any given price and quantity, represents the subsidy payment to producers.

Point B represents market equilibrium under the condition of no subsidy. The application of the subsidy would cause the market price to be $\overline{OG}$ and output to be $\overline{OF}$. The price received by the producers would be $\overline{OE}$ and that paid by consumers, $\overline{OG}$, the difference $\overline{EG}$ would be the amount of the subsidy. Equilibrium will be established at point A. The $D^1$ schedule will be more elastic than the D schedule, hence equilibrium price (including the subsidy) will be higher than the optimum price established under competitive conditions. The price paid by the consumer will be lower than that which would have been established under competitive conditions. The gap between the D schedule and the $D^1$ schedule is, of course, related to elasticity conditions of the D schedule, i.e. the less the elasticity of the D schedule the greater the gap at any given output.

This form of assistance tends to lower market price and increase output. If only part of the industry is subsidized in this way, pressure will be put on the other firms in the market. This discrimination will apply to domestic firms unable to qualify for the subsidy as well as foreign firms. Since the subsidy is limited to small producers, it will tend to favor them as opposed to the larger producer and as a result disproportionately large number of

small firms correspondingly (and a small number large firms) will be supported as active producers. Since the subsidy will be paid out of tax receipts, the effect will be to transfer income from the taxpayer to the small producer. The program is designed to dampen the recession for the small producer, but in assisting the small producer it increases output and lowers price, which would worsen the recession for firms ineligible to receive benefits under the subsidy. Its effect on the recession phase of the business cycle, therefore, depends upon which influence is stronger. In periods of boom this type of program would have no effect (because presumably price would be grater than 14-1/4 cents a pound).

Loans to Increase Production

The V-loan program allows the Federal Reserve to guarantee loans to firms supplying materials essential for national defense. This provision of loan credit has various effects depending upon the conditions under which the loans are made. If the loans are made at less than the market rate of interest, then costs will be lower and output greater than would otherwise be the case. It is more likely, however, that such loans will be made at the current rate of interest to firms who could not otherwise finance production (due to lack of collaterial, etc.).

The application of such a program under conditions of perfect competition will encourage the entry of firms

who otherwise would not be able to enter the industry. In such circumstances, output will be greater, and prices lower than the optimum. Lower prices will tend to induce more than optimum consumption. To the extent that the borrowing firms default, the various government agencies guaranteeing the loans will have to make them good (hence government expenditures will tend to increase, as it is actually assuming part of the costs of production). To the extent prices are forced down, the foreign producer is discriminated against if he can not avail himself of the same privilege. The immediate effect of such a program is to redistribute income from tax revenues to the producer benefiting from the loan.

It is unlikely that the government would apply such a program in times other than shortage, or boom periods, as, at other times, they can acquire metals cheaper and easier by purchasing them on the open market. Increased investment, particularly that financed by bank credit, stimulates the boom in economy in general. This tendency may be dampened, however, if there is a very short time lag between the initial investment and the resultant increase in output. The program presumably would not have been operative in times of slump, so that it would have no direct effects on this phase of the cycle. The slump would be worsened, however, if substantial idle capacity was the result of the operation of the program during boom periods.

## Conclusions

This chapter considers five governmental programs, the stockpile purchase program, the barter program, the exploration subsidy program, the mines stabilization program, and the guaranteed loan program. All these programs involve some form of government expenditure.

All these programs tend to increase output so that taken in isolation, the imposition of any one of them under perfect market conditions would cause a greater than optimum output. The effect on consumption, however, is mixed. The stockpile purchase and barter programs tend to diminish consumption, while the effect of the other three programs is to increase it.

As all the programs are subsidy in character they entail an increase in government expenditures. Even the barter program pre-suppose government expenditures in the accumulation of agricultural surpluses. Since we have assumed that disposal of surpluses have exactly displased cash sales, the barter program involves new government expenditures, the agricultural price support program taken as given (to the extent storage costs are saved, government expenditures are reduced).

In surveying the effects of the programs as applied, it is found that the consequences are mixed. Two of the programs, the stockpile purchase and barter programs are favorable to the foreign producer, while the effects of the three tend to discriminate against him.

The effect on the market structure of the industry is also mixed. It was concluded that the stockpile purchase program had no effect on the market structure (except under restrictive assumptions). The barter program as it has been applied has tended to promote monopoly, in that in some instances barter arrangements were set up on the condition that firms agree to restrict output, so that lead prices might be increased. The exploration subsidy program also tends to distort the natural market structure in that it encourages the activities of the larger, healthier firms as opposed to the smaller marginal firm. The small mines stabilization program, on the other hand, encourages the small firm at the expense of the large one. The guaranteed loan program tends to encourage the entry of new firms into the industry in that it makes financing available in situations where it otherwise would not be.

The programs have various effects on the redistribution of income. The stockpile purchase program transfers income from the general public to both foreign and domestic producers. The barter program in the final analysis, tends to transfer income from the public treasury to foreign producers. The exploration subsidy program tends to transfer income from tax revenues to the domestic producer. The small mines stabilization program tends to transfer income from the general public to the small lead and zinc mine producers. The guaranteed loan program tends to benefit the new firm out of public funds.

The programs also have an impact on the business cycle. As they actually have been applied, the stockpile purchase and barter programs have tended to worsen the recession. The exploration subsidy program tends to dampen the boom and deepen the recession to the extent that additional capacity is created. The mines stabilization program has no effect on the boom, and the effects on recession are indeterminant. The guaranteed loan program as applied tends to heighten the boom, but has no direct effect on the recession.

Thus it can be seen that the various subsidy and subsidy-like programs often have contradictory effects on the allocation of resources, although all of them have the ultimate effect of misallocating resources.

## CHAPTER XIV: FOOTNOTES

1. For a more complete analysis of the stockpile program see Mancur Olson, Jr., "American Materials Policy and the 'Physiocratic Fallacy'," Orbis, Vol. 6, pp. 670-688.

2. Quotations from the testimony of Arthur S. Flemming, Hearings, Part 9, p. 3821 et seq.

# CHAPTER XV

# SUMMARY AND CONCLUSIONS

## Introduction

One of the most significant aspects of the history of the lead and zinc industries in recent decades has been the far reaching governmental programs affecting these industries. Perhaps the most outstanding characteristic of governmental policy is the complexity of the total pattern of programs. We have seen that in the years since 1940, a large number of different types of programs have been employed concurrently rather than consecutively, so that at any given time the analyst is faced with a constellation of policies, the effects of which are not always consistent (we have gone to the other extreme for purposes of analysis in assuming that all the programs were in operation simultaneously.) This, of course, is not true, therefore chronological discussion of market conditions and the implementation of the programs is a necessary aspect of the analysis.

## General Considerations

In analyzing the government programs with respect to the lead and zinc markets several economic and political factors must be kept in mind. In order to summarize the general background necessary for a complete understanding

of the impact of the government programs, we shall briefly discuss some of the issues that are involved.

National Security

Since World War II the security of the United States has been dependent upon an adequate supply of imported lead and zinc. However, two of this country's largest suppliers are Canada and Mexico. These two countries ship most of their metals and concentrates to the United States by rail, and in an emergency, could make all rail shipments (as do most of the domestic producers). Therefore, shipments from these two countries would be no more subject to interruption than would domestic shipments and, in addition, they would be able to supply more of these metals to the United States in war than they normally do in peace.

The government, through its various stockpiling programs has acquired substantial tonnages over the past decade, tonnages in all probability, much greater than will ever be needed. This despite the fact that, as a modern industrial nation, the United States is not bound strongly in times of emergency to lead and zinc as irreplaceable raw materials, but is in large measure able to substitute other materials in times of short supply. Thus even in the improbable situation that lead and zinc would come to be in short supply, no insurmountable problem would present itself.

Thus one can safely conclude that the national security issue is not one which has particular applicability to lead

and zinc despite the frequency with which it is used in defense of various governmental programs.

## Lead and Zinc and an Expanding Economy

One argument for the various government programs with reference to lead and zinc has been the assertion that adequate supplies of these metals are necessary in order to meet the needs of an expanding economy. However, the statistical records of U. S. mine production show peak production was attained in both lead and zinc in 1926. Since that time mine production has shown a downward trend as the better grade and more accessible deposits were depleted. Industrial requirements continued to expand with industrial growth so that self-sufficiency in these metals had been lost by World War II. Despite premium payments, U. S. mine production of these two metals did not increase during the wartime period but declined steadily.

Within the last few years, large new deposits of lead and zinc have been discovered in Canada, in some cases just across the U. S. border. These deposits, in the absence of government policy to the contrary, would be available to meet U. S. needs.

Some U. S. smelters are almost wholly dependent on imported ores. Some thought must be given to the injury that unwise government programs will do to this segment of the lead and zinc industries. In view of this consideration, it is inadvisable for the government to adopt

policies which will result in long range restriction of supply. Import restrictions will discourage exploration and development of foreign supplies essential to our expanding economy.

Wise Use of Lead and Zinc Resources

No matter how orderly and wisely we use our lead and zinc resources, they are inadequate now and will become increasingly inadequate in the future. The greatest difficulty confronting the domestic lead and zinc mining industries today is the depletion of the easily accessible high-grade ore reserves, the substantially increased costs that go with the mining of low grade ores, and the difficulties encountered in the search for and mining of more deeply buried ore deposits. It is generally conceded that the obvious, large, and easily worked mineral deposits have been found.

The prime resource of any mine is the ore that is in the ground. Once it has been extracted, the ore can not be replaced. The higher the price for the metals involved the greater is the quantity of ore that is economically recoverable, but as the United States' ore reserves get further and further depleted with continued mining, more mines will become marginal and will require ever increasing prices to make their operations profitable. At present, higher prices are being advocated as essential for the profitable operation of U. S. lead and zinc mines. The question remains as to

what prices will be necessary five, ten, or twenty years from now, when existing resources are further depleted.

### Government Policy and International Relations

The government programs have both economic and political implications in the conduct of U. S. foreign policy. Outside of the effects of the various government programs on the allocation of resources and economic efficiency, the programs have adverse effects on U. S. international relations, i. e., the economic policies have political repercussions. All other things considered equal, programs which are contrary to healthy relations with foreign countries are disadvantageous and should be avoided, particularly in instances where alternatives exist which do not have such implications.

## Economic Conclusions

From the point of view of an optimum allocation of resources and economic efficiency, the programs of government are consistently undesirable. Every one of the programs that has been discussed tends to misallocate resources in one way or another. Any single program taken by itself, therefore, causes inefficient operation and a waste of resources. What applies to any single program is compounded when the effects of all the programs are considered as a group.

The various programs not only misallocate resources when taken singularly, but they are inconsistent and contradictory in their effects on output, consumption, prices, etc. when taken as a constellation. (This aspect is summarized in Table 31.) The design of the overall government program is inconsistent, and this fact alone prevents an efficient allocation of resources. The explanation of how this came about in large measure lies beyond the strict purview of economics. Nevertheless, an attempt will be made to shed some light on the situation in a subsequent section, as the policy making process itself has definite economic implications.

Perhaps the only consistent reason behind all parts of the government program is to promote domestic production, but even this is not done in all instances. The small mines stabilization program, as was pointed out previously, stimulates production by some producers, but discourages it in the case of others. In any case, an attempt to stimulate production is an unrealistic policy in that the major problem in the domestic mining industry is the depletion of ore reserves. The promotion of domestic production is an unrealistic program directed toward an impossible end. Even if this were not the case and it was desirable for some reason to stimulate the output of the domestic lead and zinc industries, certainly a simpler, more efficient program could be found to achieve this objective. Such a great effort,

TABLE 31.--Government Policies and Their Impact

| | Depletion Allowance | Accelerated Amortization* | Tariff | Quota | Stockpile Purchase Program | Barter Program | Exploration Subsidy Program | Small Mines Stabilization Program | Guaranteed Loan Program |
|---|---|---|---|---|---|---|---|---|---|
| Output | Greater than optimum | Greater than optimum | Less than optimum | Less than optimum | Greater than optimum | Greater than optimum | Greater than optimum | Greater than optimum | Greater than optimum |
| Consumption | Greater than optimum | Greater than optimum | Less than optimum | Less than optimum | Less than optimum | Greater than optimum | Greater than optimum | Greater than optimum | Greater than optimum |
| Prices | Less than optimum | Less than optimum | Greater than optimum | Greater than optimum | Greater than optimum | Greater than optimum | Less than optimum | Less than optimum | Less than optimum |
| Government Revenues or Expenditures | Decreases revenue | Short run, but no long run revenue loss | Increases revenue | No effect | Increases expenditures | No effect | Increases expenditures | Increases expenditures | Increases expenditures |
| Impact on the foreign producer | Adverse | Adverse | Adverse | Adverse | Favorable | Favorable | Adverse | Adverse | Adverse |
| Distribution of income | Increase incomes of mineral producing firms at the expense of other firms | Increases incomes of mineral producers and that of capital relative to other factors of production | Increases income of the domestic producer and reduces that of foreign producers &domestic importers | Increases income of domestic producer & importer; reduces that of foreign producer & domestic exporter | Increases the income of domestic and foreign producers at public expense | Increases the income of foreign producers at public expense | Increases the income of the domestic producer at public expense | Increases the income of the small domestic producer at public expense | Increases income of new and expanding firms |
| Market Structure | Uncertain | Uncertain | Reduces competition | Reduces competition | No effect | As applied, has on occasion tended to promote monopoly | Tends to reduce competition | Encourages the small firm at the expense of the large one | Tends to encourage the entry of new firms and the expandion of old ones |
| Effect on Business Cycle | Heightens the boom | Heightens the boom (and indirectly deepens the depression) | Dampens the cycle in domestic market;accentuates cycle for foreign producer (&domestic exporter) | Heightens boom in domestic market,dampens recession; in foreign market dampens boom & accentuates depression | As applied, purchase program tend to worsen recession | As applied, barter program tended to worsen the recession | Indirectly dampens boom and deepens recession | No effect on boom, effect on recession is indeterminent | Heightens boom; no direct effect on recession; may indirectly deepened recession |

*Includes deductions for exploration and development expenditures.
NOTE: Table is drawn up with the assumption that programs are applied singly under optimum conditions (i.e. equilibrium under conditions of perfect conception and optimum government tax and expenditure policies).

entailing the waste of so many resource, to implement a group of policies with no really clear overall underlying objective is not only an extraordinarily costly attempt to maintain an industry that is unmaintainable, but tends to promote secondary misallocation of resources by providing a fertile spawning grounds for the growth of monopoly power.

## The Decision-Making Process

The complexity of the overall government program can be explained in part by the nature of the decision-making processes. Generally speaking, the policy making processes are curative rather than preventative, i.e., meaning that policy makers, as a rule, disbelieve the old adage, "an ounce of prevention is worth more than a pound of cure." In other words, government seldom takes action until actually confronted with a problem, so that one might say that the government normally uses a "finger in the dike" approach to policy making. Most government policies are designed to meet the exigencies of a problem that happens to be facing the policy maker at the moment he is making policy, hence policy decisions are short run in their horizon and scope. Unfortunately, there are serious difficulties involved. First, it is generally easier to make new policy and to embody this into legislation and regulation than it is to secure the repeal of old legislation which may have the support of a well entrenched vested

interest. Since new problems are arising continually and new policy is being made to meet these new problems, over a period of time the number of programs in effect becomes large, and since these programs were designed to meet different problems, the overall approach of the government becomes varied and complex and not infrequently inconsistent. Second, the policy makers are not unified, hence policy recommendations are underlain with a multiplicity of motives which result in a multiplicity of programs. This is to say that different policy makers are responsible for making different segments of policy. Under these circumstances there is no reason to expect a simple and consistent approach to any overall problem. Third, policy makers are not always experts in the areas in which they are making policy and consequently government policy may not be consistent, have harmful side effects, or even fail to accomplish the objective which it was designed to attain. Perhaps government policy making with reference to lead and zinc is as good an example of these influences as can be found.

But clearly a system that allows short run policies to continue long after the time that the problem the policy was designed to solve has disappeared, allows inconsistent policies to be made, or will suffer from inexpert policy design. It will be a system in which the allocation of resources is adversely effected if one uses efficiency as a criterion of performance. In other words, the result

of inefficient policy making (or of efficient policy making) is likely to be a nonoptimum allocation of resources, or to say the same thing, to present barriers to the optimum allocation of resources. We might think of it in terms of speed and efficient operation of an automobile. Given certain specifications, i.e., horsepower, etc., there is a optimum efficiency in terms of gasoline consumption of which the automobile is capable. Now, if the driver of the automobile decides that he wants to get greater speed, he can make certain adjustments that will achieve this result but will cut down the operating efficiency. The more different objectives the owner has and the more policies that he adopts to attain these objectives, the greater is the likelihood that the maximum efficiency will be reduced. Likewise, the greater number of owners who follow their own policies with respect to the automobile, the less efficient the operation.

Government programs must be considered in their totality as well as individually. The total effect of several concurrent programs may be different than could be expected from analysis of each of the programs individually. The effect may be completely different from what had been intended by any of the policy makers. Policy measures may even conflict. Perhaps the best example of this lies in the 1950-1951 complex of government policies. At this time, markets were characterized by shortages and the government attempted to reduce the seriousness of these shortages during the emergency

period by adopting direct controls over the allocation and use of lead and zinc. Duties were suspended, a mine exploration subsidy program was initiated, an accelerated amortization program was set up, and ceiling prices were instituted. If the objective of the government was to increase the available supplies of lead and zinc, then these policies do not do as effective a job as could be done. (They were inconsistent under any circumstances.) Subsidies for exploration, the accelerated amortization program, and the duty suspension all tend to stimulate output, hence increase the supply. On the other hand, the ceiling price regulation tends to prevent supply from being increased, therefore the programs conflict. One can not even make a sensible pattern out of this policy pattern if one were an ardent protectionest seeking the maximum benefits for the U. S. mining industry (for in that case, one would oppose the imposition of ceiling prices and the suspension of duties). A more recent example of this type of conflict lies in the adoption of quota restrictions on imports and the small mines stablization program. Quotas are designed to restrict supply and raise price in the domestic market while the small mines stabilization program increases supply and lowers price (see the discussion of the small mines stabilization program in a previous section above). Under these circumstances it is impossible to utilize resources in an efficient manner.

The markets for lead and zinc are erratic in that supply and demand conditions frequently change with the result that

prices fluctuate sharply. There is a strong tendency for changes in government policy to occur at each change in market conditions. In times of shortage and high prices, the government adopts measures (not always well designed) to alleviate the shortage. For example, during the years 1950-1951, the government suspended import duties and imposed price, use, and allocation restrictions in order to combat market shortages. In addition, token amounts of metal were released from stockpile, and various programs were undertaken under the Defense Production Act, i.e., aid for exploration, accelerated amortization. During periods of market surplus and declining prices assistance programs tend to be instituted (quotas, increased stockpile purchases, small mines stabilization programs, etc.). The frequency with which government programs change is heightened by the delegation to the Executive branch of government discretionary powers over some phases of economic policy (for example, the Executive branch has considerable leeway in adjusting tariffs under the various Trade Agreements Extension Acts, the Defense Production Act, etc.).

This causes a basic difficulty in the adjustment of economic resources to optimum conditions. Changes in the legal framework in which the industries operate change the basis on which firms do business and require adaptation to changed conditions. Frequent change in itself creates a barrier to efficient use of resources, and introduces an

element of uncertainty which has to be considered as an economic cost to the firms operating in the industry. If it were absolutely necessary for the government to play a large part in the industry, it is much better to develop a long range policy that will accomplish the desired result than to change policies at every market fluctuation (this argument is predicated on the usual certeris paribus assumption).

The frequency of change is perhaps aided and abetted by the constant din kept up by interest groups before various policy making agencies for changes in policy. Congressional committees are constantly considering new programs to assist the lead and zinc industry. Various executive agencies also are being constantly besieged with requests for additional programs or modifications of present programs. This is perhaps in part due to the fact that the lead and zinc producers are concentrated in a few geographic areas in the United States and thus form an important part of the economy of certain Congressional districts. Consequently, lead and zinc interests are espoused by Congressmen, who find it politically profitable to represent vigorously these interests. If the lead and zinc producers (and other mining interests) were more widely dispersed, perhaps they could not have as effective a voice representing them in Congress and the Executive branch. But more important, the primary benefits of governmental programs are concentrated

in a few restricted geographical areas, while the costs of such programs are much more widespread.

The policies that are finally decided upon are almost always the outcome of the clash of opposing interests, i.e., they are compromises of many and varied policy proposals. In the give and take of political dealing, features of several programs are sometimes interwoven, making more or less a polyglot type program.

We started this investigation with the objective of examining some of the various programs with respect to lead and zinc to see what effect they would have on the allocation of resources. Upon examining the programs, we saw that each program taken individually caused a misallocation of resources, and taken together they are inconsistent. Some of the programs, such as the tariff, are even internally inconsistent. Moreover this situation seems to be an unavoidable result of the present process of decision-making. Under the circumstances, misallocation of resources in the lead and zinc industries is inevitable.

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# APPENDICES

TABLE A-1.--Lead: Mine Output, Smelter Output of Primary Metal, and Consumption of Primary Metal in the United States, Outside the United States, and in the World, Average, 1937-1938 Annual 1946-1960

| Period | Mine output | | | Primary smelter output | | | Consumption of primary metal | | | Ratio of United States to world-- | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | United States 1/ | Outside United States | World 2/ | United States 3/ | Outside United States | World 4/ | United States 5/ | Outside United States | World 6/ | Mine output | Smelter output | Consumption |
| | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | 1,000 short tons | Percent | Percent | Percent |
| Average 1937-38 | 418 | 1,484 | 1,902 | 416 | 1,440 | 1,856 | 476 | 1,370 | 1,846 | 22.0 | 22.4 | 25.8 |
| Annual: | | | | | | | | | | | | |
| 1946 | 335 | 933 | 1,268 | 338 | 842 | 1,180 | 542 | 810 | 1,352 | 26.4 | 28.6 | 40.1 |
| 1947 | 384 | 1,114 | 1,498 | 441 | 1,047 | 1,488 | 744 | 861 | 1,605 | 25.6 | 29.6 | 46.4 |
| 1948 | 390 | 1,181 | 1,571 | 400 | 1,138 | 1,538 | 745 | 833 | 1,578 | 24.8 | 26.0 | 47.2 |
| 1949 | 410 | 1,299 | 1,709 | 476 | 1,209 | 1,685 | 579 | 899 | 1,478 | 24.0 | 28.2 | 39.2 |
| 1950 | 431 | 1,419 | 1,850 | 505 | 1,346 | 1,851 | 885 | 1,037 | 1,922 | 23.3 | 27.3 | 46.0 |
| 1951 | 388 | 1,502 | 1,890 | 415 | 1,395 | 1,810 | 678 | 1,131 | 1,809 | 20.5 | 22.9 | 37.5 |
| 1952 | 390 | 1,640 | 2,030 | 472 | 1,518 | 1,990 | 782 | 994 | 1,776 | 19.2 | 23.7 | 44.0 |
| 1953 | 343 | 1,757 | 2,100 | 468 | 1,592 | 2,060 | 784 | 1,182 | 1,966 | 16.3 | 22.7 | 39.9 |
| 1954 | 325 | 1,945 | 2,270 | 487 | 1,723 | 2,210 | 764 | 1,423 | 2,187 | 14.3 | 22.0 | 34.9 |
| 1955 | 338 | 2,092 | 2,430 | 479 | 1,771 | 2,250 | 810 | 1,512 | 2,322 | 13.9 | 21.3 | 34.9 |
| 1956 | 353 | 2,137 | 2,490 | 542 | 1,858 | 2,400 | 743 | 1,535 | 2,278 | 14.2 | 22.6 | 32.6 |
| 1957 | 338 | 2,272 | 2,610 | 533 | 1,982 | 2,515 | 702 | 1,642 | 2,344 | 13.0 | 21.2 | 29.9 |
| 1958 | 267 | 2,293 | 2,560 | 469 | 2,021 | 2,490 | 707 | 1,663 | 2,370 | 10.4 | 18.8 | 29.8 |
| 1959 | 256 | 2,274 | 2,530 | 341 | 2,069 | 2,410 | 672 | 1,783 | 2,455 | 10.1 | 14.1 | 27.4 |
| 1960 | 247 | 2,313 | 2,560 | 382 | 2,148 | 2,530 | 582 | 1,922 | 2,504 | 9.6 | 15.1 | 23.2 |

1/ Recoverable content of ores and concentrates produced.
2/ Partly estimated; data represent principally lead content of ores and concentrates produced.
3/ Refined lead from domestic and foreign ores; refined lead produced from foreign base bullion not included.
4/ Partly estimated; includes some production from scrap.
5/ Not including tonnages which went to the Government permanent stockpile. The figures represent mostly primary lead, although a small amount of secondary lead may be included.
6/ Partly estimated; includes some consumption of secondary lead.

Source: Mine and smelter output, compiled from official statistics of the U. S. Bureau of Mines; consumption, from American Bureau of Metal Statistics, except as noted. Printed as Table 21 in U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 2) Under Section 332 of the Tariff Act of 1930, made Pursuant to Senate Resolution 206, 87th Congress, adopted Sept. 23, 1961, TC Publication 58, Washington, May 1962.

TABLE A-2.--Lead Articles: U. S. Imports for Consumption, by Kinds, 1958-1961

(Quantity data for lead pipe, sheet, shot, wire, glaziers' lead, and lead mill products in terms of gross weight; for others in terms of lead content)

| Item and year | Unmanufactured lead | | | | Other lead articles | | | | | | | | | Grand total or average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lead pigments | | | | | Babbitt metal and solder | Lead pipe, sheet, shot, wire and glaziers' lead | Lead mill products, not elsewhere specified 2/ | Total or average other lead articles | |
| | Lead-bearing ores | Lead pigs and bars | All other 1/ | Total or average | Litharge | Red lead | White lead | Other lead pigments | Total or average | | | | | |
| Tariff paragraph | 391 | 392 | 392 | | 72 | 72 | 72 | 72 | | 392 | 392 | 397 | | |
| 1958: | | | | | | | | | | | | | | |
| Quantity--short tons | 241,890 | 351,759 | 14,246 | 607,895 | 7,157 | 58 | 580 | 2 | 7,797 | 1,006 | 2,625 | 986 | 12,414 | 620,309 |
| Percent of total | 39.0 | 56.7 | 2.3 | 98.0 | 1.1 | 3/ | 0.1 | 3/ | 1.2 | 0.2 | 0.4 | 0.2 | 2.0 | 100.0 |
| Foreign value | | | | | | | | | | | | | | |
| 1,000 dollars | 51,856 | 71,404 | 3,109 | 126,369 | 1,509 | 13 | 236 | 1 | 1,759 | 2,375 | 596 | 159 | 4,889 | 131,258 |
| Percent of total | 39.5 | 54.4 | 2.4 | 96.3 | 1.1 | 3/ | .2 | 3/ | 1.3 | 1.8 | 0.5 | 0.1 | 3.7 | 100.0 |
| Average value per pound 4/ | 5/ 10.7 | 10.1 | 10.9 | 10.4 | 9.8 | 10.3 | 16.3 | 15.5 | 10.3 | 56.6 | 11.4 | 8.1 | 17.2 | 10.5 |
| 1959: | | | | | | | | | | | | | | |
| Quantity--short tons | 136,962 | 262,632 | 13,665 | 413,259 | 10,562 | 425 | 859 | 29 | 11,875 | 2,849 | 3,608 | 737 | 19,069 | 432,328 |
| Percent of total | 31.7 | 60.7 | 3.2 | 95.6 | 2.4 | 0.1 | 0.2 | 3/ | 2.7 | 0.7 | 0.8 | 0.2 | 4.4 | 100.0 |
| Foreign value | | | | | | | | | | | | | | |
| 1,000 dollars | 27,132 | 54,667 | 2,859 | 84,658 | 2,218 | 95 | 323 | 4 | 2,640 | 14,772 | 850 | 122 | 18,384 | 103,042 |
| Percent of total | 26.3 | 53.1 | 2.8 | 82.2 | 2.2 | 0.1 | 0.3 | 3/ | 2.6 | 14.3 | 0.8 | 0.1 | 17.8 | 100.0 |
| Average value per pound 4/ | 9.9 | 10.4 | 10.5 | 10.2 | 9.7 | 10.1 | 15.1 | 8.0 | 10.2 | 73.5 | 11.8 | 8.3 | 35.0 | 11.7 |
| 1960: 6/ | | | | | | | | | | | | | | |
| Quantity--short tons | 137,540 | 213,347 | 9,868 | 360,755 | 12,408 | 497 | 1,199 | 22 | 14,116 | 1,449 | 2,855 | 1,210 | 19,630 | 380,385 |
| Percent of total | 36.1 | 56.1 | 2.6 | 94.8 | 3.3 | 0.1 | 0.3 | 3/ | 3.7 | 0.4 | 0.8 | 0.3 | 5.2 | 100.0 |
| Foreign value | | | | | | | | | | | | | | |
| 1,000 dollars | 27,911 | 45,065 | 2,340 | 75,316 | 2,581 | 111 | 461 | 9 | 3,162 | 15,982 | 696 | 232 | 20,072 | 95,388 |
| Percent of total | 29.3 | 47.2 | 2.5 | 79.0 | 2.7 | 0.1 | 0.5 | 3/ | 3.3 | 16.8 | 0.7 | 0.2 | 21.0 | 100.0 |
| Average value per pound 4/ | 10.1 | 10.6 | 11.9 | 10.4 | 9.7 | 10.3 | 15.4 | 19.6 | 10.2 | 87.0 | 12.2 | 9.6 | 51.1 | 12.5 |
| 1961: 6/ | | | | | | | | | | | | | | |
| Quantity--short tons | 137,249 | 247,328 | 10,203 | 394,780 | 14,282 | 414 | 1,499 | 1 | 16,196 | 1,101 | 2,845 | 1,900 | 22,042 | 416,822 |
| Percent of total | 32.9 | 59.3 | 2.5 | 94.7 | 3.4 | 0.1 | 0.4 | 3/ | 3.9 | 0.3 | 0.7 | 0.4 | 5.3 | 100.0 |
| Foreign value | | | | | | | | | | | | | | |
| 1,000 dollars | 24,458 | 45,863 | 3,407 | 73,728 | 2,791 | 88 | 535 | 7/ | 3,414 | 14,103 | 641 | 319 | 18,477 | 92,205 |
| Percent of total | 26.5 | 49.8 | 3.7 | 80.0 | 3.0 | 0.1 | 0.6 | 3/ | 3.7 | 15.3 | 0.7 | 0.3 | 20.0 | 100.0 |
| Average value per pound 4/ | 8.9 | 9.3 | 16.7 | 9.3 | 9.1 | 9.6 | 14.3 | 8/ | 9.6 | 92.9 | 11.3 | 8.4 | 41.9 | 11.1 |

1/ Includes lead bullion, scrap, alloys and combinations of lead, not specially provided for, type metal, and antimonial lead.
2/ Data estimated on sample analysis of consumption entry documents for all lead manufactures, not specially provided for, entered under par. 397 of the Tariff Act of 1930. In 1958, 1959, and 1960, imports of lead mill products consisted principally of lead in balls, and in 1961 of lead powder and lead in balls. Data for 1960 include an estimated 39 short tons of lead wire, valued at 14.6 thousand dollars, and those for 1961, an estimated 46 short tons of lead wire, valued at 15.7 thousand dollars, erroneously classified under par. 397.
3/ Less than 0.05 percent.
4/ Per pound gross weight except for unmanufactured lead; the average unit values for the latter represent averages per pound of lead content.
5/ Appears to reflect errors in reported value of ores; since imports are subject to specific duties on lead content, reported values are apt to be less reliable than quantity data on lead content.
6/ Preliminary.
7/ Less than $500.
8/ Imports too small to yield significant average unit value.

Source: Compiled from official statistics of the U. S. Department of Commerce, except as noted. Printed as Table 67 in U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 12) Under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

TABLE A-3.--Zinc Articles: U. S. Imports for Consumption, by Kinds, 1958-1961

(Quantity data for zinc ores, zinc pigments, and zinc fume in terms of zinc content; for others in terms of gross weight)

| Item and year | Unwrought zinc | | | | Other zinc articles | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Zinc pigments | | | | | | | | | |
| | Zinc-bearing ores | Zinc blocks, pigs or slabs | Zinc scrap, dross, and skimmings | Total or average | Zinc white and leaded zinc oxides | Other 1/ | Total or average all zinc pigments | Zinc fume | Zinc wire 2/ | Zinc plates, engraved 3/ | Zinc dust | Zinc sheets, including unwrought zinc plates | Zinc alloys and all products not elsewhere specified 4/ | Total or average, other zinc articles | Grand total or average |
| Tariff paragraph----- | 393 | 394 | 394 | ---------- | 77 | 77 | ---------- | 214 | 315(a) | 341 | 394 | 394 | 397 | ---------- | ---------- |
| 1958: | | | | | | | | | | | | | | | |
| Quantity | | | | | | | | | | | | | | | |
| short tons-- | 541,416 | 185,693 | 971 | 728,080 | 6,134 | 16 | 6,150 | 35,934 | 109 | 2/ | 96 | 5/ 823 | 393 | 43,705 | 771,785 |
| Percent of total-- | 70.1 | 24.1 | 0.1 | 94.3 | 0.8 | 1/ | 0.8 | 4.7 | 2/ | 1/ | 1/ | 0.1 | 0.1 | 5.7 | 100.0 |
| Foreign value | | | | | | | | | | | | | | | |
| 1,000 dollars-- | 51,902 | 35,512 | 108 | 87,522 | 2,264 | 9 | 2,273 | 3,396 | 39 | 2/ | 9 | 5/ 262 | 130 | 6,125 | 93,645 |
| Percent of total-- | 55.5 | 37.9 | 0.1 | 93.5 | 2.4 | 1/ | 2.4 | 3.6 | 0.1 | 1/ | 1/ | 0.3 | 0.1 | 6.5 | 100.0 |
| Average value per pound 2/--cents-- | 4.8 | 9.6 | 5.6 | 6.0 | 9.6 | 6.8 | 9.6 | 4.7 | 17.8 | 2/ | 7.1 | 15.9 | 16.5 | 6.8 | 6.0 |
| 1959: | | | | | | | | | | | | | | | |
| Quantity | | | | | | | | | | | | | | | |
| short tons-- | 437,156 | 164,463 | 1,138 | 602,861 | 8,915 | 18 | 8,933 | 60,050 | 151 | 2/ | 44 | 951 | 468 | 70,597 | 673,458 |
| Percent of total-- | 64.9 | 24.4 | 0.2 | 89.5 | 1.3 | 1/ | 1.3 | 8.9 | 2/ | 1/ | 1/ | 0.1 | 0.1 | 10.5 | 100.0 |
| Foreign value | | | | | | | | | | | | | | | |
| 1,000 dollars-- | 38,200 | 33,956 | 142 | 72,298 | 3,301 | 9 | 3,310 | 5,494 | 54 | 2/ | 8 | 311 | 167 | 9,190 | 81,488 |
| Percent of total-- | 46.8 | 41.6 | 0.2 | 88.6 | 4.0 | 1/ | 4.0 | 6.7 | 0.1 | 1/ | 1/ | 0.4 | 0.2 | 11.4 | 100.0 |
| Average value per pound 2/--cents-- | 4.4 | 10.3 | 6.2 | 6.0 | 10.0 | 6.0 | 10.0 | 4.6 | 17.8 | 2/ | 7.3 | 16.4 | 17.9 | 6.6 | 6.1 |
| 1960: 10/ | | | | | | | | | | | | | | | |
| Quantity | | | | | | | | | | | | | | | |
| short tons-- | 448,105 | 120,925 | 1,204 | 570,234 | 6,828 | 12 | 6,840 | 16,444 | 230 | 2/ | 19 | 905 | 560 | 25,273 | 595,594 |
| Percent of total-- | 75.3 | 20.3 | 0.2 | 95.8 | 1.1 | 1/ | 1.1 | 2.8 | 2/ | 1/ | 1/ | 0.2 | 0.1 | 4.2 | 100.0 |
| Foreign value | | | | | | | | | | | | | | | |
| 1,000 dollars-- | 42,729 | 29,639 | 190 | 72,558 | 2,632 | 8 | 2,640 | 1,319 | 81 | 2/ | 8 | 302 | 254 | 4,611 | 77,169 |
| Percent of total-- | 55.4 | 38.4 | 0.2 | 94.0 | 3.4 | 1/ | 3.4 | 1.7 | 0.1 | 1/ | 1/ | 0.4 | 0.4 | 6.0 | 100.0 |
| Average value per pound 2/--cents-- | 4.8 | 12.3 | 7.9 | 6.4 | 10.4 | 6.5 | 10.3 | 4.0 | 20.0 | 2/ | 17.2 | 16.7 | 14.8 | 9.1 | 6.5 |
| 1961: 10/ | | | | | | | | | | | | | | | |
| Quantity | | | | | | | | | | | | | | | |
| short tons-- | 395,054 | 109,186 | 1,410 | 521,650 | 5,320 | 14 | 5,334 | 28,934 | 136 | 2/ | 96 | 1,183 | 67 | 35,940 | 557,590 |
| Percent of total-- | 70.8 | 19.6 | 0.3 | 93.6 | 1.0 | 1/ | 1.0 | 5.2 | 2/ | 1/ | 1/ | 0.2 | 1/ | 6.4 | 100.0 |
| Foreign value | | | | | | | | | | | | | | | |
| 1,000 dollars-- | 34,653 | 27,541 | 177 | 62,401 | 1,962 | 9 | 1,971 | 2,996 | 53 | 2/ | 8 | 384 | 23 | 5,035 | 67,436 |
| Percent of total-- | 51.4 | 40.8 | 0.3 | 92.5 | 2.9 | 1/ | 2.9 | 3.9 | 0.1 | 1/ | 1/ | 0.6 | 1/ | 7.5 | 100.0 |
| Average value per pound 2/--cents-- | 4.4 | 11.0 | 6.3 | 6.0 | 9.6 | 6.0 | 9.6 | 4.5 | 20.0 | 2/ | 16.4 | 15.0 | 17.2 | 7.0 | 6.0 |

1/ Lithopone and other combinations of zinc sulfide and barium sulfate.
2/ Data for all years estimated on the basis of a sample analysis of consumption entry documents for all wire that was classified under par. 316(a).
3/ Data for all years estimated on the basis of a sample analysis of consumption entry documents for all printing plates engraved or otherwise prepared for printing, classified under par. 341.
4/ Data for all years estimated on the basis of a sample analysis of consumption entry documents covering imports of "manufactures of zinc, not specially provided for" dutiable under par. 397. In order of importance, imports consisted of zinc sticks, zinc strip, and zinc alloys in 1958; zinc sticks and zinc alloys in 1959; zinc alloys, zinc in bars, and zinc strip in 1960; and zinc strip, zinc alloys and zinc anodes in 1961.
5/ Estimated at less than 1/2 short ton.
6/ Data of U.S. Department of Commerce after downward adjustment to exclude articles entered as sheet and so tabulated by the agency but subsequently classified as strip by the U.S. Bureau of Customs.
7/ Less than 0.05 percent.
8/ Gross weight per pound except for zinc-bearing ores and zinc fume; the average unit values for the latter represent average values per pound of zinc content.
9/ Estimated at $35 per pound.
10/ Preliminary.

Source: Data for the zinc fume, from reports of individual importers to the U. S. Tariff Commission; other data, compiles from official statistics of the U. S. Department of Commerce, except as noted. Printed as Table 68 in U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 2) Under Section 332 of the Tariff Act of 1930, made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

TABLE A-4.--Lead and Zinc Mining and Milling: Average Number of Production and Related Workers, Wages Paid, and Man-Hours Worked in the United States, Specified Years 1952 to 1961[1]

| Year | Average number of production and related workers employed and proprietors and firm members performing manual labor 2/ | | | Production and related workers 2/ | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Total wages paid 3/ | Man-hours | | Average wages paid per hour | | Hours actually worked per man per month 4/ |
| | Total | Production and related workers | Proprietors and firm members | | Actually worked 3/ | Total 5/ | Actually worked 3/ | Total 5/ | |
| | | | | 1,000 dollars | 1,000 man-hours | 1,000 man-hours | | | |
| 1952 | 19,747 | 3/ | 3/ | 85,187 | 43,791 | 3/ | $1.95 | 3/ | 3/ |
| 1953 | 13,935 | 13,592 | 343 | 53,676 | 27,554 | 3/ | 1.95 | 3/ | 3/ |
| 1956 | 14,457 | 14,251 | 206 | 66,595 | 30,351 | 3/ | 2.19 | 3/ | 177 |
| 1958 | 8,631 | 8,566 | 65 | 38,089 | 16,357 | 17,430 | 2.33 | 2.19 | 159 |
| 1959 | 8,248 | 8,155 | 93 | 38,008 | 15,985 | 16,928 | 2.38 | 2.25 | 163 |
| 1960 | 7,872 | 7,752 | 120 | 37,207 | 15,308 | 16,228 | 2.43 | 2.29 | 165 |
| 1961 | 7,903 | 7,803 | 100 | 37,695 | 15,459 | 16,345 | 2.44 | 2.31 | 165 |

3/ Data are for operations which were engaged in producing ores or concentrates in which the value of recoverable lead-plus-zinc content was greater than the value of any other single metal contained, and for nonproducing lead and zinc operations engaged in maintenance, development, and construction work. Operations which were engaged in producing lead and zinc ores and concentrates (as defined above) and which reported to the U.S. Tariff Commission, accounted for the following percentages of total production of recoverable lead and zinc from ores or concentrates valued chiefly for their lead-plus-zinc content:

| Year | Lead | Zinc |
|---|---|---|
| 1952 (of newly mined ore only) | 91.9 | 92.9 |
| 1956 | 99.1 | 99.3 |
| 1958 | 99.7 | 98.1 |
| 1960 | 99.7 | 99.8 |

Data have not been adjusted to account for unreported operations.

2/ Companies were instructed to report as production and related workers those employees who were engaged directly in production, and other employees engaged in development, exploration, maintenance, repairs, shipping, power plant, record keeping, and related activities, excluding officers, proprietors, partners, supervisory employees (above the working-foreman level), technical employees, salesmen, general office workers, and force-account construction workers utilized as a separate work force. The average number of workers was calculated for each year by dividing the total of actual number of workers reported on payroll in pay period ending nearest the 15th of each month of the year by 12

3/ Companies were instructed that wages paid production and related workers should be their gross earnings before deductions were made for employees' contributions for old-age and unemployment insurance, withholding tax, bonds, union dues, etc., but after deductions for cost of smithing, explosives, fuses, electric cap lamps, and mine supplies used in production and development work but charged to employees and deducted from their wages. In addition, they were instructed that wages paid should include pay for sick leave, holidays, and vacations taken; but wages paid should not include cash payments for vacations not taken, retroactive pay not earned during the month reported, company contributions to welfare funds and insurances or pension plans, and bonuses unless earned and paid regularly each month.

4/ Companies were instructed that man-hours reported should represent the hours for which wages (as defined in footnote 3) were paid, except that they should exclude hours paid for holidays, sick leave, and vacations taken. They were further instructed not to convert overtime hours to equivalent straight-time hours.

5/ Includes man-hours paid for holidays, sick leave, and vacation taken.

6/ Computed from unrounded figures.

7/ Comparable data not available.

Source: Data for 1954 from the 1954 Census of Mineral Industries; data for other years compiled from reports by companies engaged in lead and zinc mining and milling to the U. S. Tariff Commission. Printed as Table 34 in U. S. Tariff Commission, Lead and Zinc, Report to Congress on Investigation No. 332-26 (Supplemental 2) Under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, adopted September 23, 1961, Washington, May, 1962.

TABLE A-5.--Lead and Zinc Smelting and Refining: Employment[1/] Wages, and Man-Hours Worked at Primary Lead and Zinc Smelters in the United States, Specified Years 1952 to 1961

| Year | All employees (average number) | Production and related workers | | | | Average wages paid per hour | |
|---|---|---|---|---|---|---|---|
| | | Average number [2/] | Total wages paid | Man-hours: Actually worked | Man-hours: Total [3/] | Actually worked | Total [3/] |
| | Lead smelters and refineries [4/] | | | | | | |
| 1952 | 4,757 | 3,885 | [5/] | [5/] | [5/] | [5/] | [5/] |
| 1956 | 4,853 | 3,939 | $18,007,255 | 8,128,324 | [5/] | $2.22 | [5/] |
| 1958 | 3,778 | 3,009 | 14,066,950 | 5,854,801 | 6,320,327 | 2.40 | $2.23 |
| 1959 | 2,844 | 2,156 | 10,017,433 | 4,040,086 | 4,369,206 | 2.48 | 2.29 |
| 1960 | 3,030 | 2,334 | 12,048,706 | 4,733,566 | 5,068,957 | 2.55 | 2.38 |
| 1961 | 2,946 | 2,323 | 11,965,251 | 4,616,997 | 4,952,805 | 2.59 | 2.42 |
| | Zinc smelters and refineries [6/] | | | | | | |
| 1952 | 13,132 | 11,135 | [5/] | [5/] | [5/] | [5/] | [5/] |
| 1956 | 12,303 | 10,190 | $46,530,879 | 20,867,275 | [5/] | $2.23 | [5/] |
| 1958 | 9,863 | 7,852 | 36,870,125 | 15,542,213 | 16,582,372 | 2.37 | $2.22 |
| 1959 | 10,464 | 8,647 | 41,943,742 | 17,184,471 | 18,348,856 | 2.44 | 2.29 |
| 1960 | 10,273 | 8,418 | 43,373,309 | 16,988,768 | 18,214,231 | 2.55 | 2.38 |
| 1961 | 10,389 | 8,620 | 44,676,374 | 17,161,534 | 18,402,069 | 2.60 | 2.43 |

1/ The average number of all employees and production and related workers was calculated for each year by dividing the total of actual number of employees on the payroll in pay period ending nearest the 15th of each month of the year by 12.

2/ For 1956-61, companies were instructed to report as production and related workers those employees who were engaged directly in production, and other employees engaged in maintenance, repairs, shipping, power plant, record keeping, and related activities, excluding officers, supervisory employees (above the working-foreman level), technical employees, salesmen, general office workers, and force-account construction workers utilized as a separate work force.

3/ Includes man-hours paid for holidays, sick leave, and vacations taken.

4/ Statistics through 1956 are for 13 plants: 2 in Utah, and 1 each in California, Colorado, Idaho, Illinois, Indiana, Kansas, Nebraska, New Jersey, Missouri, Montana, and Texas. Data are for 12 plants in 1958 (plant in Kansas closed in 1957); 11 plants in 1959 (1 plant in Utah closed in 1958); 10 plants in 1960 (plant in Illinois closed in 1959); and 9 plants in 1961 (plant in Colorado closed in 1960).

5/ Comparable data not available.

6/ Statistics through 1956 are for 18 plants: 1 each in Arkansas, Idaho, and West Virginia; 2 in Montana; 3 each in Oklahoma, Pennsylvania, and Texas; and 4 in Illinois. Data for 1958-61 are for 16 primary smelting and refining plants (1 plant closed in Pennsylvania and 1 plant in Illinois changed to roasting of concentrates only) plus 3 roasting and sintering plants, located in Kansas, Colorado, and Illinois respectively, and 1 slag-treating plant located in Montana.

Source: Compiled from data submitted to the U.S. Tariff Commission by primary lead and zinc smelting and refining companies.

Note.--Employment was reduced because of labor difficulties, as follows: In 1959, 6 lead plants reduced employment from approximately mid-August to mid-December, and 1 plant reduced employment from mid-June to mid-September; in 1960, 1 lead plant reduced employment from early May to mid-December. In 1959, 2 zinc smelters reduced employment from 2 to 3 months, and another plant was closed from September 1959 to March 1960; in 1960, 1 zinc plant was struck from early May to mid-December and another from early August to the end of November; in 1961, 1 zinc plant reduced employment during July-September.

One lead smelter was inactive from August 1959 through February 1960, 1 zinc plant was inactive for 10 months in 1960, and 1 plant shut down operations beginning in February 1961, for reasons other than labor difficulties.

Source: Printed as Table 33 in U. S. Tariff Commission, Lead and Zinc, Report to Congress on Investigation No. 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, Washington, May, 1962.

TABLE A-6.--Unmanufactured Lead and Zinc Articles Subject to U. S. Specific Rates of Duty: U. S. Imports, 1934 and 1961, Specific Rates in Effect on July 1, 1934, and April 1, 1962, and Average Ad Valorem Equivalents of those Rates

| Tariff par. | Article | Dutiable imports, 1934 | | Duty on July 1, 1934 | | Dutiable imports, 1961 | | Duty on Apr. 1, 1962 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Quantity | Foreign value | Specific rate | Ad valorem equivalent based on 1934 imports | Quantity | Foreign value | Specific rate | Ad valorem equivalent based on 1961 imports |
| | | Short tons | 1,000 dollars | | Percent | Short tons | 1,000 dollars | | Percent |
| | Unmanufactured lead (lead content): | | | | | | | | |
| 391 | Lead-bearing ores, flue dust, and mattes. | 10,760.0 | 558.6 | 1-1/2¢ per lb. on lead content. | 57.8 | 133,033.4 | 23,718.4 | 3/4¢ per lb. on lead content. | 8.4 |
| 392 | Lead bullion or base bullion--- | 2,219.7 | 117.7 | 2-1/8¢ per lb. on lead content. | 80.1 | 235.8 | 1,370.9 | 1-1/16¢ per lb. on lead content. | .4 |
| 392 | Lead pigs and bars---------- | - | - | 2-1/8¢ per lb. on lead content. | 1/ | 212,765.9 | 40,333.9 | 1-1/16¢ per lb. on lead content. | 11.2 |
| 392 | Reclaimed lead, scrap lead, and lead dross. | 284.7 | 10.7 | 2-1/8¢ per lb. on lead content. | 113.0 | 3,863.9 | 587.4 | 1-1/16¢ per lb. on lead content. | 14.0 |
| 392 | Type metal and antimonial lead. | 94.2 | 6.8 | 2-1/8¢ per lb. on lead content. | 59.0 | 4,157.3 | 1,018.2 | 1-1/16¢ per lb. on lead content. | 8.7 |
| 392 | Alloys or combinations of lead, not specially provided for. | - | - | 2-1/8¢ per lb. on lead content. | 1/ | 308.3 | 104.0 | 1-1/16¢ per lb. on lead content. | 6.3 |
| | Total or average---------- | 13,358.6 | 693.8 | ---------- | 62.4 | 354,364.6 | 67,132.8 | ---------- | 10.3 |
| | Unmanufactured zinc: | | | | | | | | |
| 393 | Zinc-bearing ores of all kinds, except pyrites containing more than 3% zinc (zinc content). | 6,736.0 | 185.3 | 1-1/2¢ per lb. on zinc content. | 109.1 | 356,695.0 | 31,812.8 | 3/5¢ per lb. on zinc content. | 13.5 |
| 394 | Zinc blocks, pigs, or slabs---- | 1,725.4 | 112.9 | 1-3/4¢ per lb. | 53.5 | 124,099.4 | 27,270.2 | 7/10¢ per lb. | 6.4 |
| 394 | Zinc scrap, dross, and skimmings. | - | - | 1-1/2¢ per lb. | 1/ | 1,410.1 | 177.4 | 3/4¢ per lb. | 11.9 |
| | Total or average---------- | 8,461.4 | 298.2 | ---------- | 88.0 | 482,204.5 | 59,260.4 | ---------- | 10.2 |

1/ No imports in 1934.

Source: Compiled from official statistics of the U. S. Department of Commerce--final for 1934, preliminary for 1961. Printed as Table 2 in U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation No. 332-26 (Supplemental 12) Under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

TABLE A-7.--Unmanufactured Zinc: U. S. Imports for Consumption, by Principal Sources, 1952-1961

| Country | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 1/ | 1961 1/ |
|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity (short tons--zinc content of ores, gross weight of other materials) | | | | | | | | | |
| Canada | 250,912 | 278,177 | 285,129 | 270,738 | 265,796 | 323,272 | 265,800 | 227,082 | 208,763 | 183,486 |
| Mexico | 296,121 | 174,690 | 196,853 | 186,329 | 215,135 | 285,463 | 231,383 | 170,123 | 199,360 | 175,669 |
| Peru | 55,273 | 77,835 | 100,258 | 70,579 | 104,043 | 169,999 | 120,109 | 93,438 | 82,843 | 80,188 |
| Union of South Africa | 14,543 | 5,875 | 10,879 | 7 | 2,302 | 20,119 | 28,007 | 4,629 | 10,409 | 6,290 |
| Belgian Congo 2/ | - | 8,820 | 13,895 | 15,228 | 17,782 | 33,007 | 20,991 | 12,790 | 9,308 | 11,420 |
| Belgium and Luxembourg | 6,674 | 21,728 | 8,422 | 19,294 | 33,214 | 34,163 | 17,969 | 11,648 | 5,724 | 12,381 |
| Australia | 3,888 | 15,737 | 5,286 | 6,614 | 23,050 | 15,234 | 8,327 | 25,878 | 15,164 | 9,254 |
| Bolivia | 15,383 | 16,323 | 15,590 | 1,058 | 5,661 | 8,674 | 6,838 | 1,704 | 1,690 | 1,018 |
| Guatemala | 10,372 | 6,395 | 1,819 | 8,137 | 13,272 | 10,337 | 6,093 | 10 | 1,811 | 8,088 |
| Italy | 5,314 | 29,332 | 8,690 | 6,333 | 13,486 | 10,010 | 5,816 | 17,104 | 8,478 | 4,009 |
| Yugoslavia | 4,054 | 14,677 | 4,801 | - | 500 | 10,572 | 5,009 | 3,384 | 5,640 | 3,277 |
| Norway | 276 | 6,323 | 716 | 504 | - | - | 2,600 | 329 | 7 | - |
| West Germany | 6,958 | 14,568 | 3,108 | 6,642 | 15,257 | 8,780 | 2,035 | 7,952 | 1,619 | 1,444 |
| Japan | 963 | 3/ | 628 | - | 4,883 | 2,887 | 1,734 | 355 | - | - |
| Honduras | 643 | 8 | 613 | 79 | 691 | 3,562 | 1,478 | 1,116 | 2,140 | 4,119 |
| Spain | 13,656 | 17,501 | - | - | - | - | - | 13,476 | 14,598 | 14,833 |
| All other | 13,479 | 9,907 | 9,228 | 11,540 | 14,255 | 15,268 | 3,891 | 11,843 | 2,680 | 6,174 |
| Total | 698,509 | 697,896 | 665,995 | 603,082 | 729,327 | 951,347 | 728,080 | 602,861 | 570,234 | 521,650 |
| | Foreign value (1,000 dollars) | | | | | | | | | |
| Canada | 57,981 | 48,978 | 44,989 | 45,980 | 50,195 | 52,646 | 38,014 | 35,117 | 33,978 | 26,931 |
| Mexico | 57,144 | 16,702 | 14,683 | 14,467 | 19,540 | 32,846 | 15,162 | 10,122 | 14,781 | 11,714 |
| Peru | 11,793 | 9,486 | 14,961 | 10,023 | 16,283 | 28,451 | 15,742 | 10,354 | 9,972 | 9,127 |
| Union of South Africa | 4,904 | 917 | 1,988 | 2 | 496 | 4,591 | 4,043 | 796 | 1,563 | 1,543 |
| Belgian Congo 2/ | - | 168 | 2,942 | 3,696 | 4,849 | 7,471 | 4,179 | 2,689 | 2,438 | 2,426 |
| Belgium and Luxembourg | 1,749 | 4,507 | 1,718 | 4,574 | 8,764 | 8,439 | 3,300 | 2,306 | 1,321 | 2,601 |
| Australia | 1,274 | 1,722 | 1,017 | 1,402 | 4,059 | 3,767 | 1,474 | 3,226 | 1,518 | 1,351 |
| Bolivia | 3,637 | 1,889 | 1,955 | 134 | 772 | 1,094 | 639 | 192 | 145 | 199 |
| Guatemala | 987 | 196 | 70 | 986 | 1,537 | 1,320 | 734 | 3 | 217 | 930 |
| Italy | 2,150 | 5,336 | 1,336 | 1,501 | 3,512 | 2,318 | 1,081 | 2,244 | 1,787 | 657 |
| Yugoslavia | 943 | 1,334 | 226 | - | 118 | 2,682 | 902 | 661 | 1,352 | 766 |
| Norway | 130 | 1,405 | 165 | 110 | - | - | 459 | 67 | 1 | - |
| West Germany | 1,674 | 2,916 | 855 | 1,528 | 3,614 | 2,407 | 400 | 710 | 420 | 332 |
| Japan | 204 | 4/ | 55 | - | 1,047 | 828 | 361 | 58 | - | - |
| Honduras | 240 | 2 | 136 | 22 | 166 | 965 | 329 | 245 | 597 | 854 |
| Spain | 1,959 | 1,980 | - | - | - | - | - | 1,350 | 2,057 | 2,075 |
| All other | 3,771 | 3,014 | 1,323 | 1,800 | 3,289 | 3,493 | 703 | 2,198 | 411 | 895 |
| Total | 150,540 | 100,552 | 88,419 | 86,225 | 118,241 | 153,318 | 87,522 | 72,338 | 72,558 | 62,401 |

1/ Preliminary.
2/ Beginning June 30, 1960, Republic of the Congo.
3/ Less than 1/2 short ton.
4/ Less than $500.

Source: Compiled from official Statistics of the U. S. Department of Commerce. Printed as Table 64 in U. S. Tariff Commission, Lead and Zinc, Report to the Congress on Investigation 332-26 (Supplemental 2) Under Section 332 of the Tariff Act of 1930 made Pursuant to Senate Resolution 206, 87th Congress, TC Publication 58, Washington, May, 1962.

TABLE A-8.--Lead Metal: Average Monthly Market Prices at New York City and at London, January 1959-August 1962 1/

(In cents per pound)

| Year and month | New York price of Common lead | London Metal Exchange price 2/ | Difference, New York price minus London price 3/ | Year and month | New York price of Common lead | London Metal Exchange price 2/ | Difference, New York price minus London price 3/ |
|---|---|---|---|---|---|---|---|
| 1959: | | | | 1961: | | | |
| January | 12.667 | 8.981 | 3.686 | January | 11.000 | 7.975 | 3.025 |
| February | 11.560 | 8.746 | 2.814 | February | 11.000 | 8.167 | 2.833 |
| March | 11.412 | 8.689 | 2.723 | March | 11.000 | 8.242 | 2.758 |
| April | 11.189 | 8.631 | 2.558 | April | 11.000 | 8.384 | 2.616 |
| May | 11.897 | 8.850 | 3.047 | May | 11.000 | 8.330 | 2.670 |
| June | 12.000 | 8.708 | 3.292 | June | 11.000 | 8.087 | 2.913 |
| July | 12.000 | 8.781 | 3.219 | July | 11.000 | 8.107 | 2.893 |
| August | 12.286 | 9.180 | 3.106 | August | 11.000 | 8.086 | 2.914 |
| September | 13.000 | 8.840 | 4.160 | September | 11.000 | 7.999 | 3.001 |
| October | 13.000 | 8.827 | 4.173 | October | 11.000 | 7.828 | 3.172 |
| November | 13.000 | 9.018 | 3.982 | November | 10.203 | 7.548 | 2.655 |
| December | 12.523 | 9.087 | 3.436 | December | 10.250 | 7.559 | 2.691 |
| 1960: | | | | 1962: | | | |
| January | 12.000 | 9.348 | 2.652 | January | 10.034 | 7.388 | 2.646 |
| February | 12.000 | 9.233 | 2.767 | February | 9.583 | 7.335 | 2.248 |
| March | 12.000 | 9.533 | 2.467 | March | 9.500 | 7.576 | 1.924 |
| April | 12.000 | 9.690 | 2.310 | April | 9.500 | 7.559 | 1.941 |
| May | 12.000 | 9.676 | 2.324 | May | 9.500 | 7.477 | 2.023 |
| June | 12.000 | 9.172 | 2.828 | June | 9.500 | 7.215 | 2.285 |
| July | 12.000 | 8.905 | 3.095 | July | 9.500 | 6.726 | 2.774 |
| August | 12.000 | 8.869 | 3.131 | August | 9.500 | 6.381 | 3.119 |
| September | 12.000 | 8.743 | 3.257 | | | | |
| October | 12.000 | 8.406 | 3.594 | | | | |
| November | 12.000 | 8.522 | 3.478 | | | | |
| December | 11.381 | 8.122 | 3.259 | | | | |

1/ Changes in the average daily prices in the United States since Jan. 1, 1959, were as follows (in cents per pound):

| Date of change | New price | Date of change | New price | Date of change | New price |
|---|---|---|---|---|---|
| 1959: | | 1959--Continued | | 1961: | |
| Jan. 22 | 12.000 | Apr. 21 | 11.500 | Nov. 1 | 10.500 |
| Feb. 11 | 11.500 | May 7 | 11.830 | Nov. 13 | 10.000 |
| Feb. 20 | 11.073 | May 8 | 12.000 | Nov. 28 | 10.250 |
| Feb. 24 | 11.000 | Aug. 24 | 13.000 | 1962: | |
| Mar. 5 | 11.059 | Dec. 14 | 12.500 | Jan. 5 | 10.000 |
| Mar. 6 | 11.500 | Dec. 21 | 12.000 | Feb. 1 | 9.750 |
| Apr. 1 | 11.000 | 1960: | | Feb. 9 | 9.500 |
| Apr. 20 | 11.155 | Dec. 13 | 11.000 | | |

2/ Average of daily mean of bid and ask quotations for prompt lead at the morning session of the London Metal Exchange. Quotations in pounds sterling per long ton were converted to U.S. cents per pound, at the rate of 1 pound sterling=$2.80.

3/ In September 1962 the cost of transportation and insurance from London to New York City plus the U.S. import duty of 1-1/16 cents per pound amounted to about 2.1 cents per pound.

Source: E & MJ Metal and Mineral Markets.

Note.--The daily quotations are based on sales on a flat-price basis of domestically refined lead sold to domestic consumers. The daily averages are weighted by the quantity of such sales. The price quotations reflect sales of all grades of lead sold converted to the basis of Common lead at New York. On Apr. 1, 1962, Chemical grade commanded a premium of 0.1 cent per pound over the Common and Corroding grades.

Printed as Table 10 in U. S. Tariff Commission, Lead and Zinc, Report to the President (1962) Under Executive Order 10401, TC Publication 71, Washington, October, 1962.

TABLE A-9.--Prime Western Zinc: Average Monthly Market Prices in the United States and at London, January 1959-August 1962 1/

(In cents per pound)

| Year and month | F.c.b. East St.Louis 2/ | Delivered New York City | London Metal Exchange price 3/ | Difference, New York price minus London price 4/ |
|---|---|---|---|---|
| 1959: | | | | |
| January | 11.500 | 12.000 | 9.360 | 2.640 |
| February | 11.417 | 11.917 | 9.210 | 2.707 |
| March | 11.000 | 11.500 | 9.390 | 2.110 |
| April | 11.000 | 11.500 | 9.086 | 2.414 |
| May | 11.000 | 11.500 | 9.669 | 1.831 |
| June | 11.000 | 11.500 | 9.801 | 1.699 |
| July | 11.000 | 11.500 | 10.066 | 1.434 |
| August | 11.000 | 11.500 | 10.662 | .838 |
| September | 11.334 | 11.834 | 10.759 | 1.075 |
| October | 12.129 | 12.629 | 11.421 | 1.208 |
| November | 12.500 | 13.000 | 11.867 | 1.133 |
| December | 12.500 | 13.000 | 11.899 | 1.101 |
| 1960: | | | | |
| January | 12.877 | 13.377 | 11.822 | 1.555 |
| February | 13.000 | 13.500 | 11.107 | 2.393 |
| March | 13.000 | 13.500 | 11.270 | 2.230 |
| April | 13.000 | 13.500 | 11.554 | 1.946 |
| May | 13.000 | 13.500 | 11.512 | 1.988 |
| June | 13.000 | 13.500 | 11.324 | 2.176 |
| July | 13.000 | 13.500 | 11.279 | 2.221 |
| August | 13.000 | 13.500 | 10.929 | 2.571 |
| September | 13.000 | 13.500 | 10.892 | 2.608 |
| October | 13.000 | 13.500 | 10.989 | 2.511 |
| November | 13.000 | 13.500 | 10.954 | 2.546 |
| December | 12.476 | 12.976 | 10.345 | 2.631 |
| 1961: | | | | |
| January | 11.529 | 12.029 | 9.904 | 2.125 |
| February | 11.500 | 12.000 | 10.345 | 1.655 |
| March | 11.500 | 12.000 | 10.572 | 1.428 |
| April | 11.500 | 12.000 | 10.489 | 1.511 |
| May | 11.500 | 12.000 | 10.299 | 1.701 |
| June | 11.500 | 12.000 | 9.880 | 2.120 |
| July | 11.500 | 12.000 | 9.737 | 2.263 |
| August | 11.500 | 12.000 | 9.559 | 2.441 |
| September | 11.500 | 12.000 | 9.243 | 2.757 |
| October | 11.500 | 12.000 | 8.986 | 3.014 |
| November | 11.500 | 12.000 | 8.696 | 3.304 |
| December | 11.975 | 12.475 | 8.920 | 3.555 |
| 1962: | | | | |
| January | 12.000 | 12.500 | 8.777 | 3.723 |
| February | 12.000 | 12.500 | 8.598 | 3.902 |
| March | 12.000 | 12.500 | 8.669 | 3.831 |
| April | 11.500 | 12.000 | 8.678 | 3.322 |
| May | 11.500 | 12.000 | 8.555 | 3.445 |
| June | 11.500 | 12.000 | 8.374 | 3.626 |
| July | 11.500 | 12.000 | 8.263 | 3.737 |
| August | 11.500 | 12.000 | 8.073 | 3.927 |

1/ Changes in the daily average prices in the United States since Jan. 1, 1959, were as follows (in cents per pound):

| Date of change | New price | Date of change | New price | Date of change | New price |
|---|---|---|---|---|---|
| 1959: | | 1959--Continued | | 1961: | |
| Feb. 25 | 11.000 | Oct. 30 | 12.563 | Jan. 10 | 11.500 |
| Sept. 21 | 11.005 | Nov. 2 | 12.500 | Dec. 1 | 11.506 |
| Sept. 22 | 12.000 | 1960: | | Dec. 4 | 12.000 |
| Oct. 22 | 12.002 | Jan. 8 | 12.532 | 1962: | |
| Oct. 23 | 12.039 | Jan. 11 | 13.000 | Apr. 2 | 11.500 |
| Oct. 26 | 12.500 | Dec. 13 | 12.500 | | |
| Oct. 29 | 12.612 | Dec. 19 | 12.000 | | |

2/ Prime Western zinc is also sold on a delivered basis (in addition to f.o.b. East St. Louis basis); the delivered price ranges from 1/4 to 1/2 cent per pound above the East St. Louis price. The delivered price is 1/2 cent above the East St. Louis price where freight from East St. Louis exceeds 1/2 cent per pound (freight from East St. Louis to New York City exceeds 1/2 cent per pound).

3/ Average of daily mean of bid and ask quotations for Good Ordinary brands (equivalent to U.S. Prime Western grade) per pound for prompt delivery at morning session of London Metal Exchange. Quotations in pounds sterling per long ton were converted to U.S. cents per pound, at the rate of 1 pound sterling=$2.80.

4/ In September 1962 the cost of transportation and insurance from London to New York City, plus the U.S. import duty (7/10 cent per pound), amounted to about 1.8 cents per pound.

Source: E & MJ Metal and Mineral Markets.

Note.--The daily quotations are prices at which slab zinc was sold on a flat-price basis by primary producers in the United States, weighted by quantities sold. The price quotations reflect sales of all grades of zinc sold, converted to the basis of Prime Western zinc f.o.b. East St. Louis. At the end of 1961, other grades of zinc commanded the following premiums over the Prime Western grade (in cents per pound): Selected, 0.10 cent; Brass Special, 0.20 cent; Intermediate, 0.20 cent; High grade (sold on contract delivered to consumers' plants), 0.85 cent; Special High grade (sold on contract delivered to consumers' plants), 1.0 cent. During various periods, however, premiums have been nominal.

Printed as Table 11 in U. S. Tariff Commission, Lead and Zinc, Report to the President (1962) Under Executive Order 10401, TC Publication 71, Washington, October, 1962.

TABLE A-10.--Lead and Zinc Produced from Domestic Ore and Purchase Quotas

| | Based on | | Approximate Quota |
|---|---|---|---|
| | 1952 Production | Capacity | |
| **3,000 Tons per Month--Lead** | | | |
| A. S. & R. | 1,515 | 1,485 | 1,500 |
| Anaconda (International Smelting & Refining Co.) | 330 | 255[a] | 300 |
| Bunker Hill and Sullivan | 405 | 495 | 400 |
| Eagle-Picher | 0 | 75 | 50 |
| St. Joe | 510 | 495 | 500 |
| U. S. Smelting, Refining & Mining | 240 | 195 | 250 |
| Total | 3,000 | 3,000 | 3,000 |
| **5,000 Short Tons per Month--Zinc** | | | |
| A. S. & R. | 550 | 575 | 550 |
| American Metal Co. (Blackwell Zinc Co.) | 75 | 100 | 100 |
| American Zinc of Illinois | 375 | 425 | 400 |
| Anaconda | 1,600 | 1,550 | 1,500 |
| Athletic | 175 | 200 | 200 |
| Eagle-Pitcher | 325 | 350 | 350 |
| Matthiessen & Hegeler (Including Meadowbrook) | 225 | 325 | 300 |
| National Zinc | 250 | 225 | 250 |
| N. J. Zinc | 675 | 550 | 600 |
| St. Joe | 325 | 275 | 300 |
| Sullivan | 400 | 425 | 400 |
| Total | 4,975 | 5,000 | 4,950 |

[a]A. S. & R. refines for Anaconda--this figure is based on 1952 production.

Note: Prepared May 20, 1954.

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate 87th Cong., 2nd Sess., June 21, 1962, pp. 1238-1239.

TABLE A-11.--Authorizations, Offerings, Purchases, and Cost of Domestic Lead Purchased for National Stockpile for Period June 1954 through May 1958 (short tons).

| Date of ODM Directive | Quantity Authorized for Purchase | Quantity Offered | Purchases | |
|---|---|---|---|---|
| | | | Quantity | Dollar Value |
| June 7, 1954 | 3,500 | 19,500 | 3,500) | $1,973,987 |
| June 16,1954 | 3,500 | 8,000 | 3,500) | |
| July 8, 1954 | 10,000 | 10,000 | 10,000 | 2,817,976 |
| July 30,1954 | 10,000 | 10,300 | 10,000 | 2,819,958 |
| Aug. 27,1954 | 12,500 | 12,500 | 12,500 | 3,577,462 |
| Sept.30,1954 | 12,500 | 14,500 | 12,500 | 3,762,881 |
| Oct. 28,1954 | 12,500 | 15,000 | 12,500 | 3,774,875 |
| Dec. 9,1954 | 12,500 | 17,500 | 12,500 | 3,774,915 |
| Jan. 14,1954 | 12,500 | 17,500 | 12,500 | 3,774,937 |
| Feb. 8,1954 | 12,500 | 15,500 | 12,498 | 3,774,280 |
| Mar. 7,1955 | 12,500 | 12,000 | 12,000 | 3,623,870 |
| April 8,1955 | 12,500 | 3,500 | 3,499 | 1,056,901 |
| May 9,1955 | 10,000 | 9,000 | 9,000 | 2,713,941 |
| June 9,1955 | 10,000 | 10,000 | 9,999 | 3,013,462 |
| July 1,1955 | 10,000 | 0 | 0 | - - - |
| Aug. 19,1955 | 10,000 | 0 | 0 | - - - |
| Sept.12,1955 | 10,000 | 2,500 | 2,500 | 754,484 |
| Oct. 6,1955 | 10,000 | 2,300 | 2,299 | 717,578 |
| Nov. 14,1955 | 10,000 | 0 | 0 | - - - |
| Dec. 10,1955 | 10,000 | 0 | 0 | - - - |
| Jan. 24,1956 | 10,000 | 1,000 | 1,000 | 321,989 |
| Feb. 21,1956 | 10,000 | 3,500 | 3,500 | 1,126,975 |
| Mar. 21,1956 | 10,000 | 6,500 | 6.499 | 2,092,802 |
| Apr. 18,1956 | 10,000 | 10,000 | 9,999 | 3,219,744 |
| May 18,1956 | 10,000 | 11,800 | 9,999 | 3,219,743 |
| June 8,1956 | 10,000 | 14,500 | 9,998 | 3,216,811 |
| July 6,1956 | 10,000 | 13,800 | 7,598 | 2,433,998 |
| Aug. 17,1956 | 10,000 | 5,400 | 5,399 | 1,733,757 |
| Sept.25,1956 | 10,000 | 1,000 | 1,000 | 321,994 |
| Oct. 19,1956 | 10,000 | 6,000 | 6,000 | 1,923,964 |
| Nov. 26,1956 | 7,500 | 5,400 | 5,400 | 1,731,762 |
| Dec. 19,1956 | 4,000 | 10,300 | 4,000 | 1,286,890 |
| Jan. 17,1957 | 4,000 | 10,400 | 3,999 | 1,284,768 |
| Feb. 15,1954 | 3,000 | 9,400 | 2,999 | 963,550 |
| Mar. 19,1957 | 3,000 | 8,900 | 2,999 | 956,986 |
| Apr. 23,1957 | 2,000 | 9,950 | 2,000 | 642,657 |
| May 20,1957 | 5,000 | 16,500 | 5,000 | 1,494,931 |
| June 25,1957 | 5,000 | 17,200 | 4,999 | 1,391,697 |
| July 24,1957 | 5,000 | 15,200 | 4,998 | 1,342,340 |
| Aug. 21,1957 | 5,000 | 8,700 | 4,999 | 1,388,636 |
| Sept.17,1957 | 5,000 | 8,200 | 4,999 | 1,393,645 |

TABLE A-11.--Continued

| Date of ODM Directive | Quantity Authorized for Purchase | Quantity Offered | Purchases | |
|---|---|---|---|---|
| | | | Quantity | Dollar Value |
| Oct. 18,1957 | 5,000 | 8,200 | 4,999 | $1,343,750 |
| Nov. 22,1957 | 5,000 | 9,200 | 4,999 | 1,347,834 |
| Dec. 16,1957 | 5,000 | 9,200 | 4,999 | 1,296,644 |
| Jan. 24,1958 | 5,000 | 10,200 | 4,999 | 1,296,680 |
| Feb. 25,1958 | 5,000 | 10,200 | 4,999 | 1,296,557 |
| Mar. 20,1958 | 5,000 | 11,200 | 4,998 | 1,294,131 |
| Apr. 24,1958 | 5,000 | 11,200 | 5,000 | 1,195,452 |
| May 26,1958 | 10,000 | 26,400 | 9,993 | 2,308,005 |
| Total | 400,500 | 469,050 | 293,665 | $86,800,697 |

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 87th Cong., 2nd Sess., June 21, 1962, pp. 1246-1247.

TABLE A-12.--Authorizations, Offerings, Purchases, and Cost of Domestic Zinc Purchases for National Stockpile for Period June 1954 through March 1958 (short tons).

| Date of ODM Directive | Quantity Authorized for Purchase | Quantity Offered | Purchases | |
|---|---|---|---|---|
| | | | Quantity | Dollar Value |
| June 7,1954 | 5,000) | 38,250 | 5,000) | $2,406,717 |
| June 16,1954 | 5,000) | | 5,000) | |
| July 8,1954 | 20,000 | 20,000 | 20,000 | 4,795,838 |
| July 30,1954 | 20,000 | 22,900 | 19,999 | 4,833,582 |
| Aug. 27,1954 | 25,000 | 16,900 | 16,898 | 3,966,192 |
| Sept.30,1954 | 25,000 | 15,500 | 15,499 | 3,722,289 |
| Oct. 28,1954 | 25,000 | 20,000 | 19,999 | 5,003,841 |
| Dec. 9,1954 | 20,000 | 20,000 | 20,000 | 5,026,149 |
| Jan. 14,1955 | 20,000 | 14,150 | 14,150 | 3,493,474 |
| Feb. 8,1955 | 20,000 | 12,650 | 12,650 | 3,103,956 |
| Mar. 7,1955 | 20,000 | 10,650 | 10,650 | 2,629,113 |
| Apr. 8,1955 | 20,000 | 14,500 | 14,500 | 3,687,727 |
| May 9,1955 | 15,000 | 5,950 | 5,950 | 1,544,415 |
| June 9,1955 | 15,000 | 1,150 | 1,150 | 300,595 |
| July 1,1955 | 15,000 | 1,750 | 1,750 | 485,275 |
| Aug. 10,1955 | 15,000 | 1,750 | 1,750 | 461,585 |
| Sept.12,1955 | 15,000 | 3,250 | 3,250 | 869,565 |
| Oct. 6,1955 | 15,000 | 2,000 | 2,000 | 543,386 |
| Nov. 14,1955 | 15,000 | 2,650 | 2,650 | 719,081 |
| Dec. 10,1955 | 15,000 | 350 | 350 | 98,855 |
| Jan. 24,1956 | 15,000 | 5,500 | 5,500 | 1,550,149 |
| Feb. 21,1956 | 15,000 | 6,850 | 6,350 | 1,793,769 |
| Mar. 21,1956 | 15,000 | 4,500 | 4,500 | 1,278,350 |
| Apr. 18,1956 | 15,000 | 9,000 | 8,999 | 2,581,943 |
| May 18,1956 | 15,000 | 18,950 | 15,000 | 4,373,247 |
| June 8,1956 | 15,000 | 20,800 | 15,000 | 4,270,446 |
| July 6,1956 | 15,000 | 27,400 | 14,999 | 4,222,001 |
| Aug. 17,1956 | 15,000 | 14,500 | 14,497 | 4,146,711 |
| Sept.25,1956 | 15,000 | 11,250 | 10,849 | 3,175,385 |
| Oct. 19,1956 | 15,000 | 13,700 | 13,700 | 4,007,101 |
| Nov. 26,1956 | 12,500 | 10,770 | 10,769 | 3,077,141 |
| Dec. 19,1956 | 10,000 | 14,400 | 8,257 | 2,411,778 |
| Jan. 17,1957 | 9,000 | 19,900 | 8,997 | 2,598,353 |
| Feb. 15,1957 | 8,000 | 20,700 | 7,998 | 2,310,001 |
| Mar. 19,1957 | 8,000 | 19,500 | 7,996 | 2,317,221 |
| Apr. 23,1957 | 7,000 | 23,500 | 6,999 | 2,026,757 |
| May 20,1957 | 10,000 | 35,450 | 9,996 | 2,476,936 |
| June 25,1957 | 10,000 | 34,000 | 9,998 | 2,307,584 |
| July 24,1957 | 10,000 | 30,000 | 9,995 | 2,202,889 |
| Aug. 21,1957 | 10,000 | 21,700 | 9,995 | 2,220,608 |
| Sept.17,1957 | 10,000 | 20,700 | 9,996 | 2,236,026 |

TABLE A-12.--Continued

| Date of ODM Directive | Quantity Authorized for Purchase | Quantity Offered | Purchases | |
|---|---|---|---|---|
| | | | Quantity | Dollar Value |
| Oct. 18,1957 | 10,000 | 21,300 | 9,995 | $2,218,471 |
| Nov. 22,1957 | 10,000 | 18,500 | 9,996 | 2,177,337 |
| Dec. 16,1957 | 10,000 | 23,750 | 9,998 | 2,200,428 |
| Jan. 24,1958 | 10,000 | 25,200 | 9,998 | 2,201,981 |
| Feb. 25,1958 | 8,152 | 28,000 | 8,149 | 1,789,880 |
| Mar. 20,1958 | 6,000 | 27,000 | 5,997 | 1,325,570 |
| Total | 653,652 | 751,170 | 457,918 | $117,239,698 |

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 87th Cong., 2nd Sess., June 21, 1962, pp. 1246-1247.

TABLE A-13.--Monthly Prices of Lead, January 1954-June 1958

| | Month | Average Price* | | Month | Average Price |
|---|---|---|---|---|---|
| 1954 | January | 13.3 | 1956 | April | 16.0 |
| | February | 12,8 | | May | 16.0 |
| | March | 12.9 | | June | 16.0 |
| | April | 13.9 | | July | 16.0 |
| | May | 14.0 | | August | 16.0 |
| | June | 14.1 | | September | 16.0 |
| | July | 14.0 | | October | 16.0 |
| | August | 14.1 | | November | 16.0 |
| | September | 14.6 | | December | 16.0 |
| | October | 15.0 | 1957 | January | 16.0 |
| | November | 15.0 | | February | 16.0 |
| | December | 15.0 | | March | 16.0 |
| 1955 | January | 15.0 | | April | 16.0 |
| | February | 15.0 | | May | 15.4 |
| | March | 15.0 | | June | 14.3 |
| | April | 15.0 | | July | 14.0 |
| | May | 15.0 | | August | 14.0 |
| | June | 15.0 | | September | 14.0 |
| | July | 15.0 | | October | 13.7 |
| | August | 15.0 | | November | 13.5 |
| | September | 15.1 | | December | 13.0 |
| | October | 15.5 | 1958 | January | 13.0 |
| | November | 15.5 | | February | 13.0 |
| | December | 15.6 | | March | 13.0 |
| 1956 | January | 16.2 | | April | 12.0 |
| | February | 16.0 | | May | 11.7 |
| | March | 16.0 | | June | 11.2 |

*Price in cents, per pound common, New York.

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 87th Cong., 2nd Sess., June 21, 1962, p. 1250.

TABLE A-14.--Monthly Prices of Zinc, March 1954-June 1958

| | Month | Average Price* | | Month | Average Price |
|---|---|---|---|---|---|
| 1954 | January | 9.8 | 1956 | March | 13.5 |
| | February | 9.4 | | April | 13.5 |
| | March | 9.6 | | May | 13.5 |
| | April | 10.3 | | June | 13.5 |
| | May | 10.3 | | July | 13.5 |
| | June | 11.0 | | August | 13.5 |
| | July | 11.0 | | September | 13.5 |
| | August | 11.0 | | October | 13.5 |
| | September | 11.4 | | November | 13.5 |
| | October | 11.5 | | December | 13.5 |
| | November | 11.5 | 1957 | January | 13.5 |
| | December | 11.5 | | February | 13.5 |
| 1955 | January | 11.5 | | March | 13.5 |
| | February | 11.5 | | April | 13.5 |
| | March | 11.5 | | May | 11.9 |
| | April | 11.9 | | June | 10.8 |
| | May | 12.0 | | July | 10.0 |
| | June | 12.3 | | August | 10.0 |
| | July | 12.5 | | September | 10.0 |
| | August | 12.5 | | October | 10.0 |
| | September | 12.9 | | November | 10.0 |
| | October | 13.0 | | December | 10.0 |
| | November | 13.0 | 1958 | January | 10.0 |
| | December | 13.0 | | February | 10.0 |
| 1956 | January | 13.4 | | March | 10.0 |
| | February | 13.5 | | | |

*Price in cents, per pound for Prime Western in East St. Louis.

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 87th Cong., 2nd Sess., June 21, 1962, p. 1250.

TABLE A-15.--Total Lead Purchases for National Stockpile from Participating American Companies

| Company | Quantity Short Tons | Value |
|---|---|---|
| St. Joseph Lead Co. | 126,851.71 | $37,149,868.99 |
| American Smelting & Refining Co. | 126,807.28 | 37,588,278.41 |
| U. S. Smelting,Refining & Mining Co. | 27,577.15 | 8,285,031.14 |
| Anaconda Sales Co. | 12,428.60 | 3,777,518.09 |
| **Actual Purchases of Lead for National Stockpile** | | |
| St. Joseph Lead Co. | | |
| 1954 (last 7 months) | 40,999.15 | $11,974,289.63 |
| 1955 | 21,996.84 | 6,643,047.73 |
| 1956 | 23,854.68 | 7,671,534.21 |
| 1957 | 25,297.78 | 7,219,066.84 |
| 1958 (first 5 months) | 14,703.26 | 3,641,930.58 |
| Total | 126,851.71 | $37,149,868.99 |
| **National Stockpile Purchases of Lead from Newly Mined Ores** | | |
| American Smelting & Refining Co. | | |
| 1954 (last 7 months) | 32,299.35 | $ 9,410,380.52 |
| 1955 | 31,098.73 | 9,411,949.26 |
| 1956 | 32,458.97 | 10,439,915.92 |
| 1957 | 19,581.22 | 5,530,523.87 |
| 1958 (first 5 months) | 11,369.01 | 2,795,508.84 |
| Total | 126,807.28 | $37,588,278.41 |
| U. S. Smelting, Refining, & Mining Co. | | |
| 1954 (last 7 months) | 3,699.86 | $ 1,117,380.40 |
| 1955 | 11,199.17 | 3,374,955.86 |
| 1956 | 6,749.68 | 2,173,416.04 |
| 1957 | 3,234.73 | 947,404.76 |
| 1958 (first 5 months) | 2,693.61 | 671,874.08 |
| Total | 27,577.15 | $ 8,285,031.14 |

TABLE A-15.--Continued

| Company | Quantity Short Tons | Value |
|---|---|---|
| Anaconda Sales Co. | | |
| 1956 | 7,329.86 | $ 2,345,563.68 |
| 1957 | 3,874.78 | 1,150,443.58 |
| 1958 (first 5 months) | 1,223.96 | 281,510.83 |
| Total | 12,428.60 | $ 3,777,518.09 |

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 87th Cong., 2nd Sess., June 21, 1962, pp. 1254-1256.

TABLE A-16.--Total Zinc Purchases for National Stockpile from Participating American Companies

| Company | Quantity Short Tons | Value |
|---|---|---|
| American Zinc Sales Co. | 78,299.59 | $20,543,805.89 |
| Anaconda Sales Co. | 77,123,91 | 20,470,681.78 |
| American Smelting & Refining Co. | 81,649.11 | 21,438,763.95 |
| St. Joseph Lead Co. | 68,457.25 | 16,789,891.86 |
| International Metals & Minerals Co. | 37,683.66 | 9,421,788.72 |
| Matthiessen & Hegeler Zinc Co. | 34,143.17 | 8,723,261.03 |
| U. S. Smelting, Refining & Mining Co. | 22,904.42 | 5,864,532.49 |
| New Jersey Zinc Co. | 23,765.41 | 5,696,357.37 |
| Eagle Picher Co. | 15,439.69 | 3,636,878.40 |
| American Metal Climax Inc. | 14,231.34 | 3,584,620.77 |
| Combined Metals Reduction Co.Inc. | 3,420.00 | 908,736.00 |
| Philipps Bros., Inc. | 600.00 | 151,380.00 |

Actual Purchases of Zinc for National Stockpile

| | | |
|---|---|---|
| St. Joseph Lead Co. | | |
| 1954 (last 7 months) | 34,457.25 | $ 6,055,514.43 |
| 1955 | 10,999.96 | 2,710,284.85 |
| 1956 | 3,500.87 | 1,044,075.73 |
| 1957 | 24,378.21 | 5,955,541.74 |
| 1958 (first 3 months) | 4,643.24 | 1,033,474.54 |
| Total | 68,457.25 | $16,798,891.29 |
| Combined Metals Reduction Co.Inc. | | |
| 1954 | 1,300.00 | $ 321,460.00 |
| 1955 | 400.00 | 103,920.00 |
| 1956 | 1,170.00 | 347,841.00 |
| 1957 | 550.00 | 135,515.00 |
| Total | 3,420.00 | $ 908,736.00 |

Source: Inquiry into the Strategic and Critical Material Stockpiles of the United States, Hearings before the National Stockpile and Naval Petroleum Reserves Subcommittee of the Committee on Armed Services, U. S. Senate, 87th Cong., 2nd Sess., June 21, 1962, pp. 1254-1256.

TABLE A-16.--Continued

| Company | Quantity Short Tons | Value |
|---|---|---|
| | National Stockpile Purchases of Zinc from Newly Mined Ores | |
| American Smelting & Refining Co. | | |
| 1954 (last 7 months) | 20,900.01 | $ 5,225,009.97 |
| 1955 | 14,249.63 | 3,685,593.86 |
| 1956 | 26,549.47 | 7,741,527.88 |
| 1957 | 16,765.00 | 4,062,758.49 |
| 1958 (first 3 months) | 3,185.00 | 723,873.75 |
| Total | 81,649.11 | $21,438,763.95 |
| American Zinc Sales Co. | | |
| 1954 (last 7 months) | 18,065.00 | $ 4,438,669.44 |
| 1955 | 12,499.97 | 3,122,461.28 |
| 1956 | 33,389.81 | 9,551,232.92 |
| 1957 | 11,159.92 | 2,707,514.94 |
| 1958 (first 3 months) | 3,184.89 | 723,927.31 |
| Total | 78,299.59 | $20,543,805.89 |
| Anaconda Sales Co. | | |
| 1954 (last 7 months) | 18,900.00 | $ 4,723,370.08 |
| 1955 | 4,000.00 | 1,029,200.02 |
| 1956 | 25,698.91 | 7,640,299.09 |
| 1957 | 24,455.00 | 6,152,701.59 |
| 1958 (first 3 months) | 4,070.00 | 925,111.00 |
| Total | 77,123.91 | $20,470,681.79 |
| International Minerals & Metals Co. | | |
| 1954 (last 7 months) | 10,674.90 | $ 2,488,309.90 |
| 1955 | 11,050.00 | 2,844,417.00 |
| 1956 | 7,169.98 | 2,040,068.57 |
| 1957 | 7,344.94 | 1,759,788.69 |
| 1958 (first 3 months) | 1,443.84 | 289,204.56 |
| Total | 37,683.66 | $ 9,421,788.72 |

TABLE A-16.--Continued

| Company | Quantity Short Tons | Value |
|---|---|---|
| Matthiessen & Hegler Zinc Co. | | |
| 1954 (last 7 months) | 5,549.89 | $ 1,281,704.51 |
| 1955 | 2,500.00 | 601,350.00 |
| 1956 | 17,796.65 | 4,974,396.80 |
| 1957 | 6,988.29 | 1,590,662.80 |
| 1958 (first 3 months | 1,308.34 | 275,146.92 |
| Total | 34,143.37 | $ 8,723,261.03 |
| U. S. Smelting, Refining & Mining Co. | | |
| 1954 (last 7 months) | 8,924.42 | $ 2,177,678.42 |
| 1955 | 4,950.00 | 1,293,635.05 |
| 1956 | 2,600.00 | 722,980.00 |
| 1957 | 4,685.00 | 1,223,600.52 |
| 1958 (first 3 months) | 1,745.00 | 396,638.50 |
| Total | 22,904.42 | $ 5,864,532.49 |
| New Jersey Zinc Co. | | |
| 1954 (last 7 months) | 4,196.22 | $ 972,372.91 |
| 1956 | 4,195.12 | 1,175,561.65 |
| 1957 | 11,802.13 | 2,797,241.59 |
| 1958 (first 3 months) | 3,571.94 | 751,181.22 |
| Total | 23,765.41 | $ 5,696,357.37 |
| American Metal Climax Inc. | | |
| 1954 (last 7 months) | 1,600.00 | $ 384,480.00 |
| 1955 | 9,400.00 | 2,370,820.00 |
| 1956 | 2,200.00 | 616,660.00 |
| 1957 | 600.00 | 126,180.00 |
| 1958 (first 3 months) | 431.34 | 86,480.77 |
| Total | 14,231.34 | $ 3,584,620.77 |
| The Eagle Picher Co. | | |
| 1954 (last 7 months | 6,749.97 | $ 1,584,657.61 |
| 1955 | 750.00 | 175,345.00 |
| 1956 | 4,194.78 | 983,377.72 |
| 1957 | 3,229.94 | 781,106.06 |
| 1958 (first 3 months | 560.00 | 112,392.01 |
| Total | 15,439.69 | $ 3,636,878.40 |
| Philipp Bros., Inc. 1954 | 600.00 | $ 151,380.00 |