This is to certify that the

dissertation entitled

CAPITAL MARKET DISTORTIONS & DEVELOPMENT
OF SMALL SCALE ENTERPRISE IN KOREA
WITH REFERENCE TO TAIWAN

presented by

BOO CHUN SU

has been accepted towards fulfillment
of the requirements for

Ph.D degree in Economics

Arthur Kannapan
Major professor

Date April 5, 1988

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CAPITAL MARKET DISTORTIONS & DEVELOPMENT OF SMALL SCALE ENTERPRISE IN KOREA WITH REFERENCE TO TAIWAN

By

Boo-Chun Su

A DISSERTATION

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

Department of Economics

1988

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ABSTRACT

CAPITAL MARKET DISTORTIONS & DEVELOPMENT OF SMALL SCALE ENTERPRISES IN KOREA WITH REFERENCE TO TAIWAN

By

Boo-Chun Su

This thesis focussed on the contrasting record of Korea and Taiwan towards small scale enterprises (SSEs). Over the last two decades, both have experienced rapid economic growth, much more rapid than that of the other newly industrialized countries. Further, they share a poor resource endowment, but there are differences in their industrial structure. In Taiwan, SSEs contribute a major portion of the GDP. In Korea,on the other hand,large firms dominate important sections of the economy. These reflect differences in their respective economic policies.

This thesis examines the nature of the Korean capital market distortions and the effects of the related policy of favoring large scale enterprises (LSEs). The study continues to examine the effect of this capital market distortion on the efficiency and performance of small firms by looking at total factor productivity. We compare this record with the industrial policies and performance of Taiwan with regard to SSEs.

The Korean government favored LSEs because of their presumed benefits and the resultant competitive edge in world export markets. The lower interest rates and

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overvaluation of Korean currency(Won) resulted in reducing the capital cost of LSEs relative to SSEs. As the latter were unfairly treated in the allocation of capital, their status declined in terms of employment. On the other hand, the Taiwanese policy was more balanced between LSEs and SSEs. There was less distortion in the capital market and SSEs fared better.

Korea needs to encourage the growth of SSEs, because of their greater potential for employment creation and egalitarian income distribution. However, Taiwan may need to expand its capital-intensive industrial structure, due to growing competition in labor-intensive products from other LDCs.

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This dissertation is dedicated to my mother.

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ACKNOWLEDGMENT

I like to give most credits to my mother. Her encouragement and financial support made me finish my education without agony. Also my lovely sisters , brothers , nephews and niece gave a lot of moral support.

I am honored to know Professor Kannappan in person; he was my advisor and has a generous and warm personality. He gave me an exciting human experience beyond academic one.

I thank to Professor Liedholm whose intelligent insight guided me safely through the empirical study.

I appreciate to Professor Dinopoulos who was very helpful in shaping the model of my thesis.

The sound advices by Professor Koo were helpful in revising process of my thesis.

Finally I like to thank to everyone who helped me during the ordeal.

Hey, Mom. I did it!

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DEFINITIONS

ULS Sector: Urban Large Scale Sector

USS Sector: Urban Small Scale Sector

LSE : Large Scale Enterprise

SSE : Small Scale Enterprise

TFP : Total Factor Productivity

Korean Currency: Won

The prevailing official exchange rate was

One US $ = Won 827.40 in 1984.

Taiwan Currency: NT $

The prevailing official exchange rate was

One US $ = NT $ 39.47 in 1984.

CHAPTER 1

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CHAPTER 1

INTRODUCTION

A. BACKGROUND

Over the last two decades, Korea and Taiwan have achieved relatively higher rates of economic growth than other NICs(Newly Industrialized Countries). Interestingly, Korea and Taiwan have some similarity in terms of resource endowment and economic growth patterns. Both countries are small in terms of land area (South Korea: 99,000km^2, Taiwan:36,000km^2) but have a large population relative to their land area (South Korea:40 million, Taiwan:20 million people). Since the early 1960s, both nations have opted for export-promotion policies in order to exploit their cheap labor and compete in the world market. They started by exporting labor-intensive goods such as textiles and shoes and shifted to capital-intensive electronics and automobile industries later.

Though their trade policies are alike, there are differences in their industrial structure. In Taiwan, small scale enterprises (SSEs) contribute a major portion of the national GDP. Between 1966 and 1976, the number of manufacturing firms in Taiwan increased by 150%, but the average size of the individual enterprise, as measured by

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the number of employees, increased by only 29%. In Korea,on the other hand, large scale enterprises (LSEs) have come to dominate important sections of the economy. During the same period the number of manufacturing firms in Korea increased by a mere 10%, while the number of employees per enterprise increased by 176%.

Currently, both countries are facing challenges to change their industrial structure. Due to tougher competition in the world market in labor-intensive products from other LDCs, Taiwan needs to expand its capital-intensive large scale industrial structure; whereas, faced with growing concerns about income inequality, Korea needs to encourage the growth of SSEs. These have a potential for employment creation and better income distribution.

Our concern is with why and how the prevailing industrial structure in Korea was shaped by its economic policy. We need further to compare the current state of SSEs in Korea with SSEs in Taiwan with its better record of economic growth and income distribution. This may be helpful in evolving a better industrial policy for Korea as well as other LDCs.

B. Major Theme and Hypothesis of Thesis

Underlying the study of SSEs in Taiwan and Korea,

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there is the old issue that government intervention and related market failure may lead to inefficient resource allocation.

Neo-classical economists believe that under perfect competition the entrepreneurs will maximize profits and minimize costs , based on the correct prices of inputs and outputs. The market mechanism will thus lead to optimum resource allocation, or can be made to by shadow pricing.

In an imperfect market, for instance, due to externalities and increasing returns to scale, the wrong prices of inputs and outputs will cause a divergence between private and social benefits(or costs). If firms make their investment plans based on distorted prices, their decision will not lead to efficient resource allocation. Government intervention can be justified in such instances of market failure.

However, the government may itself create a distortion in the factor or output market in order to favor one sector against another sector. Such intervention will only contribute to inefficient resource allocation. As example, I look at the case of a market distortion created by a policy favoring LSEs. How this policy of the government affects the resource allocation can be analysed in a partial equilibrium framework; I assume that the Social Marginal Benefit(SMB) and Social Marginal Cost

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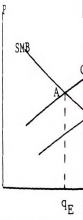

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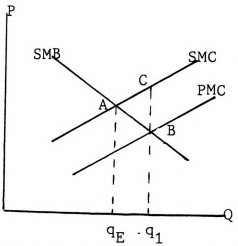

In the market system,a large firm producer fixes output at q_E because the equality of social marginal benefit and social marginal cost at the point A, would maximize profits. If government favors a large firm by providing a capital subsidy ,the large firm will face a lower private marginal cost(PMC) schedule. Then production will expand to q_1 , where social marginal cost exceeds social marginal benefit by the amount of the subsidy (BC).

The cost of a policy favoring LSE is the triangle, ABC, the sum of amounts by which social marginal cost exceeds social marginal benefit for each unit produced beyond the optimal quantity, q_E . Therefore, this market distortion created by a policy favoring LSE would lead to inoptimal resource allocation. The government then can be an independent source of market failure.

I give below the order of my investigation.

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2. I will further examine the effect of this market distortion on the efficiency and performance of SSEs. I will do so by looking at the total factor productivity (TFP) of Korean SSEs in small scale industries.

3. Finally, I will compare the industrial policies and performance of Taiwan and Korea with regard to SSEs.

A comprehensive analysis should also include the impact of Korean and Taiwanese economic organization and the purposive uses of capital subsidies. In Korea, there is clear evidence that the government actively stimulated enterprise participation and expansion in profitable world markets with potential dynamic gains for the economy. My model is more limited in scope and rests within a comparative static framework in analyzing the implications of capital subsidies to privately owned LSEs. However, I take note of these dynamic aspects in my discussions in the text and conclusion.

C. Objective of Thesis

1. Theoretical Macro Analysis of Korean SSEs

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LSEs. This has encouraged their rapid expansion and industrial dominance. This merits theoretical analysis.

I base this analysis on a three-sector model of the labor market ; urban large scale (ULS), urban small scale (USS), and rural (R) sectors. I will demonstrate how the prevailing policy increases employment and real wages in the ULS sector but decreases them in the other two sectors. This prediction will be tested against Korean empirical data for the period 1966-1984.

2. Empirical Micro Study of SSEs in Korea and Taiwan

During the last two decades, there has been a relative decline of SSEs in Korea. The policy package favoring LSEs included an overvalued Won, and lower interest rates (Table 6.2). The composition of Korean SSEs in the overall industrial structure (Table 6.1) confirms that SSEs have been losing ground. We will develop several measures of the relative efficiency of Korean SSEs for purpose of testing and comparison with Taiwanese SSEs.

D. The Theoretical and Empirical Approach

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complementary framework for empirical analysis of SSEs.

1. Theoretical Model

The theoretical analysis involves the development of a three-sector labor market model , in which labor is mobile across sectors, but capital is sector-specific. We assume full employment and a competitive labor market; the capital market is regulated. We assess the effects of alternative policies on each sector by comparative static analysis.

2. Empirical Study

Ho(1980) has done an empirical study of SSEs in Korea and Taiwan. The main data source for Korean SSEs is 'The Report on Mining and Manufacturing Survey ; 1966-1984'. For Taiwanese SSEs it is 'The Report of Industrial and Commercial Census of Taiwan-Fukien District of Republic of China ; 1976, 1981'. My empirical analysis thus extends and updates Ho's earlier study.

E. The Organization of the Dissertation

I will present below a synopsis of the different chapters.

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Chapter Two will present a literature review. This will deal with the concepts of the dual and informal sectors, and with the role of rural non-farming activities and SSEs.

Chapter Three will elaborate on the three- sector labor market model to be followed by a comparative static analysis of the effects of different policies.

Chapter Four will extend the analysis of the previous chapter by focusing on the effects of Korean policies favoring LSEs. This empirical study will focus on the growth of employment and real wages.

Chapter Five will review the state of Korean SSEs in terms of size, location and survivor technique.

Chapter Six will elaborate on industrial policy and relative efficiency issues in Korea, and explore their implications for policy as regards SSEs in Korea.

Chapter Seven will conclude with a comparison of the SSE experience in Korea and Taiwan in the context of their general industrial policies.

Chapter Eight will summarize general findings from the previous chapters. This will include policy recommendations for industrial policies toward SSEs.

CHAPTER 2

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CHAPTER 2

LITERATURE REVIEW FOR THREE SECTORS (ULS, USS, R SECTORS) MODEL

A. INTRODUCTION

In building a theoretical model for large,small scale, and rural sectors, a review of the literature dealing with a sectoral model of the economy is a requisite: the classical dual sector literatures by Lewis and Harris-Todaro et al. provide the best insights in this field. The literature on the informal sector establishes the importance of informal or small scale activities in the urban area. The literature on non-farming activities in the rural area, which are usually small scale, is the source of information on potential rural SSEs in LDCs. Finally, the literature about SSEs in LDCs is re-evaluated in the light of this study.

B. DUAL SECTOR

1. Introduction

Current literature on economic development resorts to multi-sector models in order to analyze the

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interactions between major economic sectors. In fact, these multi-sector models have evolved over time, from a simple dual sector model. Therefore it seems meaningful to review the dual sector model, which is the root of the multi-sector model. Among the dual sector models are considered those by Lewis and H-T , which consider the effects of rural-urban migration.

2-a. Classical Dual Sector Model

Lewis(1954) divided a developing economy into two sectors: the capitalist and non-capitalist sectors. Although he recognized the possibility of further subdivision, he treated each as a single sector. He assumed that there is an unlimited labor supply in the non-capitalist sector and so this rural labor supply is perfectly elastic. The rural sector wage is at a subsistence level, which means that it equates the average product, because the rural marginal productivity of labor is zero. But the urban capitalist sector pays ahigher constant wage (about 30% higher) than the rural sector's subsistence level.

Once migration from the rural to the urban sector begins, economic growth proceeds. With unlimited labor supply from the rural sector, the capitalist sector expands,and generates profits, which are reinvested into

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Lewis assumed that there is an unlimited labor supply in the rural sector; but according to the empirical study by Godfrey, this is not always true. Godfrey (1969) found that in West Africa agriculture suffered from a labor deficit,not from a surplus. The labor shortage in agriculture pushed up the price of agricultural products' price . This led to delayed industrialization, in terms of the Ricardian food bottle neck phenomenon. Godfrey showed that the Lewis model does not necessarily hold in all developing economies.

Lewis also recognized that if conditions are favorable for the capitalist surplus to grow more rapidly than population, there will be an exhaustion of labor supply in the non-capitalist sector at some point in the future when capital catches up with labor supply. And based on whether it is capital-intensive or labor-intensive, the choice of technology can make a difference in the pace at which labor is absorbed in the capitalist sector.

Lewis regarded the role of the non-capitalist sector as only a supplier of unlimited labor. This view tends to deemphasize the role of agriculture and the interaction between the capitalist sector and the non-capitalist sector. Lewis led the industry-oriented theories for

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LDC's development, because a rapid labor transfer from agriculture to industry can expand the industrial sector without impairing the growth of the agricultural sector .

Lewis assumed a full employment potential for the rural-urban migrants. But, in reality , urban unemployment is a prominent and common phenomenon in LDCs. Therefore his model failed to explain unemployment in the urban sectors.

2-b. Extension of Classical Model

Ranis-Fei(1961) started with Lewis' theoretical framework and extended it for clarifying the optimistic expansion of the capitalist sector by exploiting unlimited labor from the non-capitalist sector. Lewis shows that the labor supply curve in the industrial sector turns upwards after exhausting excess labor supply in the rural sector. This is called Lewis' turning point. At this turning point, the rural wage starts to be determined by the labor market mechanism of supply and demand.

But Ranis-Fei argued that the turning point in the industrial labor supply curve starts earlier than Lewis thought. If the MPL of rural sector becomes positive due to labor migration into the industrial sector, the declining total output of the rural sector can worsen the industrial terms of trade. The relatively cheap price of

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industrial goods can push up the real wage of the industrial sector. This is called the shortage point. Therefore R-F interpreted Lewis' turning point in the industrial labor supply curve as starting at the shortage point.

To conclude, R-F's concept of wage determination in the labor market seems to be valid under the assumptions of full employment and perfect competition, specially for the study of the Korean and Taiwanese case.

3-a. Todaro's Dual Sector Model

Todaro(1969) raised doubts about Lewis' assumption of unlimited labor supply in the non-capitalist sector and full employment in the capitalist sector,because Todaro observed that in many LDCs there was open unemployment in the urban sector, and also soaring wages in this sector. In order to solve these issues he suggested that people migrate based on the differentials of expected income of the urban sector and income of the rural sector, rather than on actual income differences.

Implicitly, he recognized the existence of the urban traditional sector which is a temporary informal sector for migrants, because he pointed out that, rural unskilled labor moves first to the urban traditional sector ,and then into the permanent modern sector.

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Based on this observation, he developed his own model of migration. He assumed that the expected income in the urban sector is the product of the probability of finding urban jobs and the actual urban wage. If the expected urban income is larger than the rural actual income, people will migrate from the rural to the urban sector.

In the short run the rigid wage of the urban labor market tends to raise the expected urban income and cause further migration. But massive unemployment may affect negatively the probability of finding urban jobs . In the long run, the adjusted probability may result in no difference between expected urban and rural incomes, when migration will stop.

Moreover, in the long term decision to migrate, farmers will compare the present value of expected urban income over time and the present value of rural income. Since the probability of getting a job tends to improve over time, there is an incentive to enter the urban labor market, or join the unemployed while waiting for job opportunities to open up. So, in order to prevent an overflow into the city, the rural sector must improve its labor absorption.

The weak point in this model is that it ignores the requirements of skill differentials between urban and rural sectors. Also, some LDCs, including Korea do not

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Departing from Todaro's dual sector model, Kannappan (1983) suggested a more realistic analytical framework incorporating supply factors and institutional practices in the labor market. His study stressed that the established social order such as family,caste,religion and other traditional networks should be considered as an important factor in shaping the structure and process of the labor market in LDCs.

3-b. Modification of Todaro's Model

Harris-Todaro(H-T) (1970) supported the basic Todaro two sector (rural- urban) model and extended it further. They assumed that as long as expected urban income exceeds the actual rural income, migration continues to occur. Also they assumed that the urban sector specialized in production of manufactured goods. The goods can be traded between the two sectors.

Further, H-T suggested policy prescriptions of a limited wage subsidy and restriction on migration in order to improve the welfare of sectors. Wage subsidy in the urban sector can reduce unemployment under the minimum wage by equalizing the shadow wage and the marginal product of labor,because this subsidy can reduce the costs of the producers, therefore increasing the demand for

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labor. It gives further incentives to migrate as long as urban income exceeds rural income.

Therefore, a restriction on rural-urban migration can prevent the minimum wage from having its effects on unemployment in terms of increasing the supply of labor. Otherwise, the accelerated urban employment creation may actually increase the level of unemployment(Todaro's Paradox). The combination of these two policies (wage subsidy and migration restriction) favors only the urban sector in terms of income distribution, because the urban sector faces a high minimum wage, and the rural sector has low rural wages.

Bhagwati-Srinivasan(B-S) (1974) studied the policies recommended by H-T and graded them in the following way. The best possible optimal policy may be a uniform wage subsidy ;or, a wage subsidy in manufacturing plus a production subsidy in agriculture. But they did not suggest a direct migration restriction like H-T , because they preferred optimal allocation of labor in the rural and urban sectors through the price mechanism, rather than a mixed package , in which one policy (such as wage subsidy) works through the price mechanism and the other (such as migration restriction) is a physical quota mechanism.

B-S's policy prescription is based on the idea of elimination of the labor market distortion by a minimum

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Todaro(1976) ,based on his original model, tried to find an empirically testable formula to explain conditions under which autonomous increase in urban job creation ,designed to get rid of urban unemployment, can cause the level and rate of unemployment to rise (Todaro's Paradox).

His condition which is $n_p > g*E_u/M$ indicated that the absolute level of urban unemployment will increase as a result of an autonomous expansion of urban labor demand if the elasticity of migration with respect to job probabilities(n_p) exceeds the ratio of the normal amount of job creation($g*E_u$) to the normal level of migration(M). His empirical study in Tanzania confirmed this condition.

Considering that the labor markets in Korea and Taiwan are free of such distortions,the Harris-Todaro model seems to be less valid there.

4. Conclusion

The basic dual rural-urban migration models reviewed were those of Lewis and Harris-Todaro. These showed weaknesses in explaining the role of small scale sectors as informal activities in urban area or non-farming activities in rural area; but they have contributed powerfully to the explanation of the interactions between the urban and rural sectors.

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C. INFORMAL SECTOR

1. Introduction

It has been observed that as economic development in LDCs proceeded, urbanization due to sectoral migration continued. Once the degree of urban migration exceeded the capacity to absorb labor, the problems of unemployment and poverty in urban areas noticeably emerged. One solution for unemployment and poverty in urban areas came to be identified as employment in the informal sector.

As the potential of this sector was articulated, development literature of the dual model became criticized for disregarding its importance. The informal sector in LDCs has actually contributed to employment and economic growth. Being small scale, the informal sector concept can now be incorporated into the small scale sector.

2. Definition

Generally, the formal sector has been understood to mean the protected urban sector which offers wage employment, while the informal sector has been understood to mean the sector that is not protected and that offers self-employment - this includes petty traders and street

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hawkers. In fact in the dualistic literature, the informal sector was ambiguously defined.

Hart(1973) introduced the informal sector in his study of Ghana. He distinguished between wage earning and self employment activities. The informal sector provided job opportunities for new migrants who came to towns without any special training, and those who could not find a job in the formal sector. Hart was the first to recognize that the informal sector can generate an income.

The ILO(1972) report on Kenya identified the informal sector as a target sector in analyzing the specific characteristics of the economy. According to this report, the informal sector can provide easy access to opportunities, using indigeneous resources allowing for family ownership of enterprises, small scale operation, labor-intensive and adapted technology skills acquired outside the formal school system, and unregulated and competitive markets. The report concluded that the informal sector can create jobs more quickly than the formal sector. Therefore, ILO recommended lessening discrimination in policy towards the informal sector.

Mazumdar(1976) looked at the informal sector in terms of the urban labor market rather than in terms of urban enterprises. He saw the informal sector as an unprotected one. Because the industrialized formal sector cannot absorb all the urban labor force, the informal

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Mazumdar observed that the lack of long contractual relationships in the informal sector stimulates a high turnover of labor, which, in turn, favors an easy entry into this sector. Some job seekers who are unable to find regular employment in the formal sector participate easily in the informal sector. This easy entry may cause unnecessary overmigration, which then leads to overurbanization. Breman(1976) unlike Mazumdar, however, found that entry into the informal sector is not easy.

Weeks(1975) like Mazumdar defined the informal sector in terms of the organizational characteristics of exchange activity ,and position of economic activity vis-a-vis the State. The insecure operation of the informal sector tends to limit its access to resources of all types, whereas the formal sector is recognized, nurtured and regulated by the State.

The informal sector is distinguished by small scale operations,labor-intensive techniques,low income levels and indigeneous ownership, with production using largely local inputs and catering for a low income market.

He pointed out that population growth makes both sectors dynamic regardless of the inherent characteristics of the two sectors. Weeks looked at the informal sector positively, in that as an evolving and dynamic low wage sector in LDCs, it can provide a large quantity of

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consumer goods for lowest income groups, indigeneous capital goods, and can utilize labor more efficiently by using labor-intensive techniques. But he argued that in the long run the high wage formal sector makes income distribution more unequal , reduces the demand for informal goods and results in widening wage differentials between the formal and informal sectors.

Sethuraman(1981) reviewed many different definitions of the informal sector, specifically, those based on mode of production, on mode of organization and on scale of activities; he suggested that an urban dichotomy in LDCs can be described in terms of technological dualism ,or organized vs. unorganized sectors, and large vs. small scale activities. The informal sector is characterized by simple technology, unorganized and small scale activities. The informal sector is relatively labor-intensive and use simple technology in production because of capital constraints and limited access to technical knowhow.

3. Interaction between the Informal and Formal Sectors

Hart(1973) believed that the informal sector depends on demand created by the current levels of activities in the formal sector.

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formal sector tend to stimulate production in the informal sector because costs increase in the former. Then the formal sector begins to subcontract with the informal sector, making it possible for more production in the latter. Also, high wage incomes in the formal sector increases consumption of goods produced in the informal sector.

Therefore, in the short run, it can increase employment in informal sector by shifting production from capital-intensive to labor-intensive processes. But in the long run he projected paradoxically negative relationships.

Also, Weeks thought that the relation between the informal sector and the Ag-sector is complementary, because the informal sector can provide simple Ag-tools, consumer durables, processing and transportation of output, except fertilizers and seeds; and he believed that boosting Ag-development in LDCs where the Ag-sector is predominantly a small holder business, can stimulate small scale and rural non-farming activities.

Moser(1978) recognized the dependent relationship between the formal and informal sectors. In his view, a policy of assisting the informal sector will likely end up by promoting the formal sector. Therefore, a policy of boosting the informal sector is not effective in reducing poverty and unemployment unless there is a fundamental

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Gerry(1978) also pointed out the dependent relationship between the formal and informal sectors, but emphasized that the relationship is heavily weighted in favor of capitalist hegemony. He agreed with Amin that indigenous petty production and distribution is largely dependent upon materials made available by or through large urban Dakar-based capitalist enterprises.

Tokman(1978) tried to explain the interaction between the informal sector and the rest of the sectors by choosing a more neutral position . The informal sector should be seen neither as a completely integrated nor as an autonomous sector, but rather as one with significant links with the rest of the economy, while simultaneously, it also has a considerable degree of independence.

Bromley(1978) also confirmed the interaction between the informal sector and the other sectors. In his view, although a street trader is an independent small entrepreneur, he is ,however, tied into a very complex socio-economic network, relating not only to his suppliers, competitors, customers, but also money lenders, the suppliers of equipment, the authorities,and a wide range of public and private institutions.

Sethuraman(1981) pointed out that the informal sector may depend on the formal sector for capital. This subordinate relationship tends to make the informal

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sector surrender all or part of its output at prices predetermined by the formal sector lender, or operate as a dependent unit serving the interests of the formal sector.

4. Dynamic Future of the Informal Sector

Weeks(1975) projected the future of the informal sector in terms of positive employment opportunities, because the future growth of the informal sector relative to the formal sector means a shift towards utilization of more labor. Theoretically, this trend should add to the incremental employment/output ratio in the non-Ag sector of the economy as well as ensure a more efficient utilization of capital. He pointed out that the crucial variables are changes in the aggregate income, the relative price levels, technology and consumer habits.

Mazumdar(1976) argued that the future of the informal sector is dependent on the growth of income in the formal sector with some lag, and that the growth rate of earnings in the informal sector lags behind that of the average income in the rural traditional sector. But in his empirical study of Peru, this was not the case, because growth of earnings in the informal sector was higher than that in the rural sector. He explained, by conjecture, that the migration function in his probabilistic job search model may have exaggerated the migration rate, and

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Gerry(1978) in his study of Senegal found that with a massive continuous migration, the burden of finding a job in urban areas tends to fall on the shoulders of the petty producers, and that the majority of the population cannot escape poverty. This result reinforces the inability of an embryonic Senegalese capitalist class to fully emerge. He recognized the emergence of the process of differentiation, as two extreme transition movements, such as proletarianization and the progressive establishment of a capitalistic environment of production. These extreme transitions require an enormous increase in the capacity of capitalist industry to absorb labor, and the evolution of a vital indigenous capitalist class, in order to transform the mass of petty producers into wage workers.

Sethuraman(1981) analysed two contrasting views about the future of the informal sector: optimistic and pessimistic. The optimistic view seems to be that the informal sector can accumulate capital & grow fast enough to absorb labor flow if government policy is favorable, market imperfections are eliminated ,and the market for the informal sector's goods is expanded through linkage between the informal sector and the rest of the economy. The pessimistic view holds that the informal sector cannot

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accumulate capital and generate an evolutionary growth since it is subordinate to the formal sector.

5. Policy for the Informal Sector

Gerry(1978) cited Dannis' comments (1974) on policy for the informal sector. " The optimal strategy for the formal sector is not one of elimination but rather of keeping the informal sector at an optimal size, not too big to be competitive, not so small as to have no influence on wages." Otherwise because of the policies favoring the formal sector, a large number of petty producers would be driven towards the miserable fringe of raw materials production, unskilled labor, and impoverished clients, generally.

Bromley(1978) recommended easy credit, technical training and technical assistance for selected activities in the informal sector so that a minority of households achieve upward socio-economic mobility. This needs support in the form of fundamental changes in the vertical linkage, governmental regulation, and institutional finance.

Nihan, Demol and Jondoh (1979) found that the majority of entrepreneurs in the informal sector prefer non-intervention by the State to any assistance. They suggested that action programs should avoid any systematic

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recourse to the solution of injecting fresh capital and granting widespread access to credit facilities, which are supposed to promote rapid business expansion.

6. Conclusion

With over-urbanization in LDCs, the informal sector tends to contribute to employment generation. To avoid further migration, LDCs need to boost employment opportunities in rural areas through non-farming activities; this should form part of state policy.

With slight differences in definition and policy recommendation, the literature seems to agree that the informal sector contributes to job creation and economic growth in the urban areas of LDCs. The concept of informal sector can now be incorporated into the study of the small scale sector.

D. RURAL NON-FARMING ACTIVITIES in LDCs

1. Introduction

The literature on economic development has explored and debated the importance of the rural non-farming activities in LDCs over the past 20 years , using various theoretical models and empirical studies. Currently, the

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increase in these activities seems to be generating employment opportunities and controlling migration into urban areas. They tend to be labor intensive and small scale.

2.The Pessimistic View of Non-farming Activity

In the classical debate between Hymer-Resnick and Liedholm-Chuta, H-R(1969) introduced a Z goods concept in their analysis. They assumed Z goods can only be produced and consumed within the rural sector, excluding a possibility of Z goods trade with urban sector outlets. They stipulated that Z goods are inferior in quality; and as economic growth proceeds, Ag-households would tend to demand less Z goods.

They took a pessimistic view of the future of rural non-farming activities, because the increasing income of the Ag-sector would bring about a decline in Z goods production. Thus, they considered these activities as temporary phenomena, prior to full fledged economic development.

3. Skepticism about H-R Study

Byerlee and Eicher(B-E) (1972) raised a doubt about H-R's prediction regarding rural non-farming activities in

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LDCs. They observed that these were becoming increasingly important, because they appeared to contribute to an increase in rural employment and to the control of migration into the urban areas. Within the framework of their analysis, the rural sector became disaggregated into a small agricultural sector and small scale rural non-farm sector.

Liedholm(1973) supported B-E's views and extended their study further. Like B-E, Liedholm also emphasized the importance of non-farming activities through backward and forward linkages in the agricultural sector itself. The increase of Ag-production will create a demand for various manufactured farm inputs(backward linkage), and at the same time a higher agricultural production would need a further processing of these Ag-outputs(forward linkage).

In fact, these activities, producing farm inputs and processing foods, do occur in the rural areas of many LDCs. Liedholm suggested that research into non-farming activities must recognize that the Z goods concept be expanded to include intermediate goods beyond the consumer ones. Therefore he took an optimistic view of the future of the rural non-farming sector.

Gibb(1974), in his Phillippine study, tried to confirm that the rural non-farming sector was important in LDCs. He applied the growth theory and the locational theory to the rural non-farming sector in LDCs. The growth

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theory suggested that an increase in agricultural productivity and export from this sector can stimulate dependent regional industries such as the non-farming industries. The locational theory stressed the importance of transportation costs in determining the location of production and suggested that a non-agricultural industry should be located near a developing agricultural sector.

4. The Optimistic View of Non-farming Activity

Liedholm and Chuta(L-C) (1976) directly challenged the H-R's view through their empirical study of Sierra Leone, which showed that small scale industries accounted for a large segment of total employment, in the rural area of Sierra Leone.

Also the Z goods concept of the non-farming sector turned out to be irrelevant in Sierra Leone, because the rural income elasticity of demand for most small scale products was strongly positive; therefore, as rural income increases, the demand for the non-farm output also increases.

Their study also revealed that Ag-sector showed a strong demand for non-farming sector products through a backward linkage(e.g. the small farm tool industry), and a forward linkage(such as the food processing industry). Furthermore, the foreign export sector showed a strong

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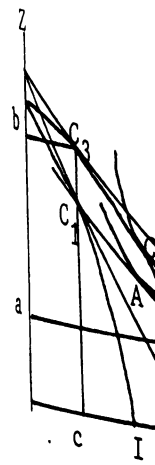

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Therefore their empirical study clearly rejected H-R's pessimistic view, predicting that the non-farming sector would not decline as rural income increases.

5. A Possible Modification of H-R's Model

Liedholm(1973) demonstrated that the demand for non-farming output by the urban sector also tend to be strong. If we allow for Z goods being traded for urban manufactured goods, even in the original H-R model, their pessimistic outlook on the future of the non-farming sector can be modified.

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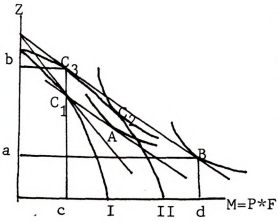

In the original H-R model, after technological change in agriculture, the new equilibrium of production and consumption will occur at C_2. The movement from C_1 to A is due to the substitution effect and the movement from A to B is due to the income effect. The final movement from B to C_2 is due to the curvature effect.

Now we may assume, Z goods can be traded for urban manufactured goods with the other assumptions unchanged.

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Under this changed assumption, after technological change in agriculture the new equilibrium of production will occur at C_3 and the new equilibrium of consumption will occur at B. So Ag-sector can produce ob of Z goods and oc of F goods but consume $\overline{oa}$ of Z goods and $\overline{od}$ of M goods, because $\overline{ba}$ of Z goods can be traded with $\overline{cd}$ of M goods, and consumption at point B offers higher utility than consumption at point C_2. Under the relaxed assumption the curvature effect is not necessary.

Finally although Z goods are relatively inferior, after a technological change in agriculture, their production may increase or at least not decline, which is a contradiction of H-R's original prediction.

6. Conclusion

The controversial aspects of rural non-farming activities in LDCs ,in the classical economic development literature needs analysis.

First H-R's model suggested a pessimistic view about the future of the non-farming activities. But L-C's empirical study proved that is not the case, at least in Sierra Leone for several reasons. Based on L-C's studies on the positive future of this sector in LDCs, there is some rationale for a policy of encouraging this activity for rural development in LDCs.

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E. SMALL SCALE ENTERPRISE

1. Introduction

As SSEs have become important in terms of employment and economic growth in LDCs, our study disaggregating industry in urban areas into large and small scale sectors seems to be valid. Therefore a review of the literature on SSE can give us background information before disaggregating the urban sector into large and small scale sectors in the three sectors model.

2. Definition

The SSE is not a very well-defined unit. There are various definitions of SSEs. Some are quantitative, involving assets (maximum ranging from $25,000 to $2 million), number of employees (maximum ranging from 15 to 500), and sales turnover. Others are qualitative. The definition by the World Bank ,in 1976,includes firms with up to a maximum of $250,000 of fixed assets excluding land (Liedholm 1986). Based on these definitions, a firm can be classified into a LSE or a SSE.

Therefore, any definition of an SSE seems arbitrary. Liedholm(1986) defined a SSE as one with less than fifty

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workers. Ho(1980),on the other hand, defined it as one with less than 100 workers in Korea and Taiwan. The cut-off point in SSEs still remains ambiguous. For consistency, Ho's cut-off design(100 workers) in Korean SSEs seems a good starting point.

3.Characteristic of SSEs

a. Location

According to various studies(Liedholm 1986,Page 1979), the majority of SSEs in LDCs are located in rural areas. Sometimes the small scale activities in a rural household or a farm compound are invisible, and rather difficult to ascertain in a census. Consequently the official census often overlooks the smallest rural firms and underestimate the existence of SSEs in a rural area.

Ho (1980) found that rural infrastructure development contributed to decentralization of SSEs in the rural areas of Taiwan. Some LDCs have their SSEs located in urban areas, as in Korea. Therefore one cannot generalize about their location.

b. Demand for Outputs of SSEs.

Surprisingly, the studies show the primary market for products of SSEs in LDCs tend to come from local domestic consumers. Even in LDCs with strong export-

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oriented policies, the major demand for SSE's goods was not from the export market.

The major small scale industries represent simple consumer goods, such as clothing, furniture, shoes, in order to meet the needs of a low income rural and urban population.

The linkages between SSEs and the agricultural sector, or between SSEs and LSEs have become important factors in the developmental process in LDCs. The forward linkage(such as food processing) and backward linkage (such as agricultural tools) between SSEs and the agricultural sector emerged as important for SSEs in rural areas, though their role is still disputed.

The relationship between SSEs and LSEs, the competitive one vs. the complementary one was intensively debated. In some LDCs, the former role prevailed, and SSEs could compete effectively against LSEs. For example, in West Africa small scale rice mills expanded rapidly in response to an increase in rice output. They proved that they could compete directly and effectively against large scale rice processing facilities and existing modern processes (Page 1979).

Again, the backward linkage from LSE to SSE seemed to be important in LDCs; this backward linkage where LSEs demand some intermediate goods or capital goods produced by SSEs is known as sub-contracting.

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This subcontracting was very prevalent in Japan, where 54 % of all small scale units were subcontractors to large firms in 1966 (Liedholm 1986). Empirical studies established that SSEs in LDCs could compete effectively against large ones, as well as complement them. The government does not seem to have a major demand for SSEs' goods(Liedholm 1986).

4. Labor in SSEs

Various studies of the labor market in LDCs show that there exists a wage gap between LSEs and SSEs(Page 1979), because the labor market is imperfect, and usually wages of the formal sector are rigid downward ,at an institutionally or legally established minimum wage. This is true in Africa (Page 1979).

But in some cases, although there is little distortion in the labor market, a wage gap between LSE and SSE still exists. Ho(1980) found that in Korea and Taiwan, with little distortion in the labor market, the quality difference between the two sectors' workers may explain the wage gap. Whatever may be the reasons , the wage differential still continues in LDCs.

5. Capital in SSEs

Various studies show that in many LDCs the SSEs exist within a segmented capital market and they are

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excluded from access to institutionalized credit(Ho 1980, Page 1979, Liedholm 1986). Hence, the SSEs tend to rely on borrowing from the informal credit market ,where the lending rates are much higher; or use their own savings, and loans from friends or relatives.

Usually public agencies in LDCs tend to avoid lending to SSEs because of the higher default risk and higher administrative costs. On the other hand LSEs tend to be able to get institutional finance from the formal credit market at a much lower interest rate. In most LDCs there exist fragmented capital markets.

6. Efficiency of SSEs

Generally representative methods for measuring the economic efficiency of firms are the partial and comprehensive measurements.

a. Partial Efficiency Measurement

The partial efficiency relates output or value added to the use of one input only. Output-capital or output-labor ratios are used for partial measurements. Capital/labor ratio is used as an alternative. This capital/labor ratio can provide some idea as to whether there may be a trade-off between output and employment. Considering the abundant labor and scarce capital in LDCs, a productivity measurement is often used (Liedholm 1986).

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Empirical study shows SSEs in most LDCs are labor intensive. There are, however, cases of SSEs in LDCs with high capital intensity. In order to overcome the limitations of partial measurements, the comprehensive measure of economic efficiency should include all scarce resources.

b. Comprehensive Measurement

The comprehensive measure can be classified into two general categories, total factor productivity measurement and economic return measurement. The total factor productivity measurement relates the value added to a weighted average of all scarce inputs, where the weights reflect the shadow prices of inputs. For this measurement social benefit-cost ratios mean the ratios of value added to cost of capital and labor at the shadow price.

The production frontier method relates the value added and all scarce inputs by means of a frontier function analysis. This method decomposes total efficiency into technical efficiency and allocative efficiency. Technical efficiency indicates the firm's ability to maximize the output from a given set of inputs. On the other hand allocative efficiency indicates the firm's ability to select the optimal input given the existing factor price. This breakdown of total efficiency was suggested by Farrel(1957).

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This method has been criticized as being sensitive to outliers. Ho suggested discarding a small percentage of extreme observations until the frontier stabilized. Forsund, Covell and Schmidt(1980), also, have provided a numerous approaches to estimating the frontier production function, such as deterministic frontier production function and stochastic frontier production function.

Liedholm(1986) suggested that in LDCs small scale enterprises continue to be more efficient than large scale enterprises in a sizable number of industries. But the degree of efficiency of SSEs can be different in different LDCs. Therefore, we must be careful in judging the efficiency of SSEs in LDCs.

7. Conclusion

The definition of SSE is ambiguous in terms of size such as a cut-off point of 50 or 100 workers etc. The relationships between SSEs and LSEs or between SSEs and the agricultural sector have become important issues in LDCs. The wage gap between LSEs and SSEs continues to exist because of labor market imperfections and differences in the quality of workers in the two sectors. The SSEs face a fragmented capital market.

As a partial efficiency measure, the capital/labor ratio is often used. In many cases SSEs in LDCs turn out to be labor intensive. Also, the benefit-cost or

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production frontier methods are used as comprehensive efficiency measurements for SSEs in LDCs. In many cases, SSEs in LDCs turn out to be more efficient. There is room for clarification about the role of the SSE, though its importance has been definitely established.

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CHAPTER 3

MODEL DEVELOPMENT WITH THREE SECTOR LABOR MARKET & THREE DIMENSION PRODUCTION POSSIBILITY FRONTIER

A. INTRODUCTION

In the past the issue of large vs. small scale oriented policy in LDCs has caused controversy, in terms of its effects on economic growth and income distribution. Some have said 'Small is beautiful',while others have argued 'Large is efficient'. Therefore it seems to be necessary to develop a simplified version of models with a labor market and production possibility frontier(PPF), which can clarify some of the issues about the impact of industrial structure. The following models consist of three sectors(Urban large scale, Urban small scale, and Rural sectors) and two inputs(Capital,Labor). First I begin with the factor market model(Labor market).

B. Model with Labor Market

1. Assumptions

The model consists of three sectors(Urban large scale sector, Urban small scale sector, Rural sector) and

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two factors(Labor, Capital). The large scale and small scale sectors produce different manufactured products and the rural sector produces an agricultural product(Ag-product). Labor is homogeneous and mobile between the three sectors, while capital is fixed and specific. Finally full employment and a perfect competition are assumed in the labor market model. This framework of three sector labor market model evolved from the two country specific-factor model by Ethier (1983).

2. Mathematical Framework

Mathematically the model can be expressed as follows;

Urban large scale sector (ULS sector)

production : $X_1 = f(N_1, \overline{K}_1)$

$f_N > 0, f_K > 0, f_{NN} < 0, f_{KK} < 0, f_{NK} > 0,$

wage : $P_1 \cdot f_N = W_1$ rent : $P_1 \cdot f_K = R_1$, where N_1 and K_1 are the labor and capital in ULS sector.

Urban small scale sector (USS sector)

production : $X_2 = g(N_2, \overline{K}_2)$

$g_N > 0, g_K > 0, g_{NN} < 0, g_{KK} < 0, g_{NK} > 0,$

wage : $P_2 \cdot g_N = W_2$ rent : $P_2 \cdot g_K = R_2$, where P_2 is the output price in USS sector.

Rural sector has no underemployment and hires different capital such as land, technology etc.

production : $X_3 = h(N_3, \overline{K}_3)$

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$h_N > 0, h_K > 0, h_{NN} < 0, h_{KK} < 0, h_{NK} > 0,$

wage : $P_3 * h_N = W_3$ rent : $P_3 * h_K = R_3$

Labor market equilibrium condition :

$W_1 = W_2 = W_3$, or $P_1 * f_N = P_2 * g_N = P_3 * h_N$, or

$f_N = P_2/P_1 * g_N = P_3/P_1 * h_N$,

Total labor : $\bar{N} = N_1 + N_2 + N_3$

Total capital : $\bar{K} = \bar{K}_1 + \bar{K}_2 + \bar{K}_3$

3. Geometric Framework

Figure 3.1 shows the equilibrium point of three sector labor market graphically. At equilibrium , the output, employment, wage and rent of each sector can be expressed as follows:

ULS sector: employment; $\overline{OC}$ output; $\square$ OCFK

wage share ; $\square$ OHFC rent share; $\triangle$ HFK

USS sector: employment; $\overline{AB}$ output; $\square$ ABEI

wage share ; $\square$ ABEG rent share; $\triangle$ EGI

Rural sector: employment; $\overline{OB}$ output; $\square$ OBEJ

wage share; $\square$ OBEH rent share; $\triangle$ EHJ

(Note: In Figure 3.1, the horizontal line $\overline{AD}$ shows the employment movement among three sectors. The vertical line $\overline{OK}$ shows the real wage in terms of output price in the ULS sector, which is W/P_1. The curve $\overset{\smile}{KF}$ shows the wage line of the ULS sector, which means f_N. The curve $\overset{\smile}{IE}$ shows the wage line of the USS sector, which means $P_2/P_1 * g_N$. The curve $\overset{\smile}{EJ}$ shows the wage line of the rural sector,

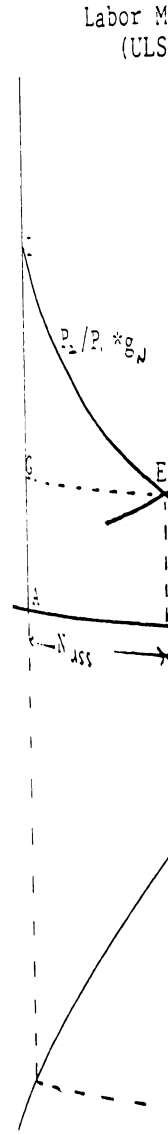
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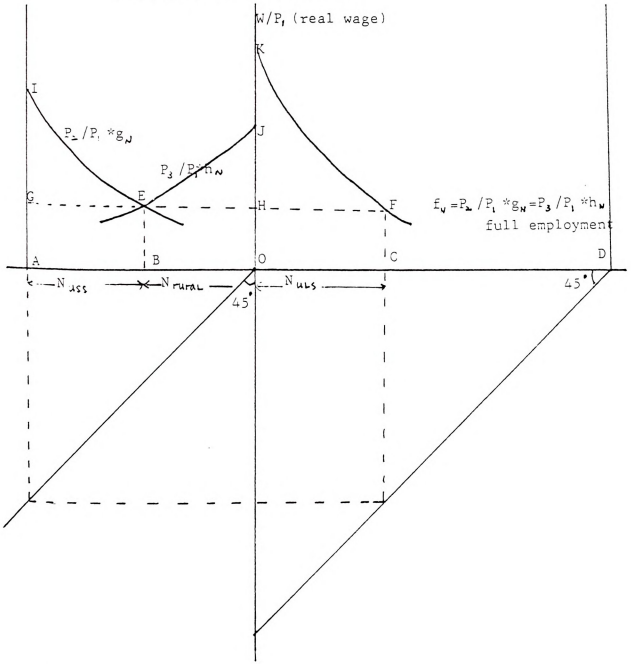
Figure 3.1

Labor Market Equilibrium in Three Sectors
(ULS, USS, and Rural sector)



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which means $P_3/P_1^* h_N$. If the production function is defined in a Cobb-Douglas form, a demand curve of labor can be derived. The equilibrium points of labor market are E and F. Total labor is given as $\overline{OA} + \overline{OC} = \overline{OC} + \overline{CD} = \overline{OD}$ because $\overline{OA}$ is equal to $\overline{CD}$.)

4. Limitations of the Model

a. full employment assumption: In the model we assumed full employment. But high unemployment is a common phenomenon in many LDCs. Therefore the model can be applied only to the fast growing economies.

b. an equilibrium in real wage : In the model we assumed perfect competition. Any disturbance in the labor market wll spontaneously clear the market. But it is true in many LDCs that a wage gap exists among the sectors ,because of the productivity differentials. Therefore this assumption is a little more difficult to sustain. In such a simplified model,however, it remains valid.

A three dimension PPFs model gives us an opportunity to clarify the effects of the large scale oriented policies on the output production of each sector.

C. Model with Three Dimensional PPFs

1. Assumptions

The model consists of three sectors (Urban large

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scale sector,Urban small scale sector, and Rural sector) and two factors (Labor, capital). The ULS and USS sectors produce different manufactured products and the rural sector produces a homogeneous Ag-product. Labor is homogeneous and mobile among sectors but capital is fixed and specific to each sector. Full employment and perfect competition are assumed in the model. This framework of the three dimensional PPFs model originated from the PPFs model of three commodities & two factors by Sheikh (1974).

2. Mathematical Framework

Mathematically the model can be expressed as follows:

ULS sector production : $X_1 = f(N_1, K_1)$

USS sector production : $X_2 = g(N_2, K_2)$

Rural sector production : $X_3 = h(N_3, K_3)$

Total labor : $\bar{N} = N_1 + N_2 + N_3$

Total capital: $\bar{K} = \bar{K}_1 + \bar{K}_2 + \bar{K}_3$

With the above assumptions we can draw PPFs in three different ways between two sectors (Large vs. small, large vs.rural, small vs. rural). Now we can call it a three dimensional PPFs model.

3. Geometric Framework

Figure 3.2 shows the equilibrium point of the three

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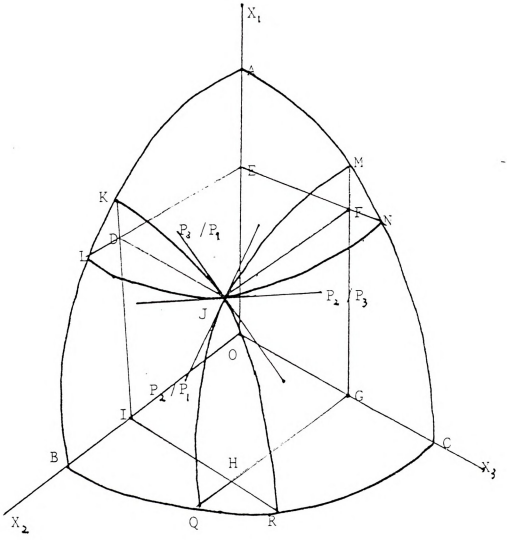
Figure 3.2

Three Dimension Production Possibility Frontier(PPF) at Equilibrium



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dimensional PPFs graphically. At equilibrium point(J), the output of each sector can be expressed as follows:

ULS sector; output: $\overline{OE}$ USS sector ; output: $\overline{OI}$

Rural sector ; output: $\overline{OG}$

(Note; In Figure 3.2, PPF for X_1 and X_2 (ULS vs. USS) becomes $\widehat{AB}$. PPF for X_1 and X_3 (ULS vs. rural) becomes $\widehat{AC}$. PPF for X_2 and X_3 (USS vs. rural) becomes $\widehat{BC}$.

The slope of the line tangent to PPF($\widehat{QM}$) at J is the price of X_1 relative to X_2 . This is the relative output price of ULS vs. USS sector. The slope of the line tangent to PPF($\widehat{KR}$) at J is the price of X_1 relative to X_3 . This is the relative output price of ULS vs. Rural sector. The slope of the line tangent to PPF($\widehat{LN}$) at J is the price of X_2 relative to X_3. This is the relative output price of USS vs. Rural sector.)

Within this framework, I analyse the effects of large scale vs. small scale oriented policy in terms of tariff and capital inflow.

D. Policy Implications

First we analyse the effects of the large scale sector oriented policies in terms of tariff and capital flow on the ULS sector.

1. Tariff Policy in the ULS Sector

Tariff policy can be analysed in two ways: in the

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a. Labor Market Mechanism

If the government imposes a tariff on the ULS product in order to protect the ULS industry, the price of the ULS product will rise and the relative prices such as P_2/P_1, and P_3/P_1 will decline. Therefore the real wage in the USS and the rural sector becomes lower. Because of this disturbance of the wage differential, labor will start to migrate from the USS and the rural sector to the ULS sector in order to get back to an equilibrium point. The adjustment process is shown in Figure 3.3.

1) Adjustment Process in Figure 3.3

Before a disturbance by tariff policy , equilibrium points are I and R where $P_2 /P_1 * g_N = P_3 /P_1 * h_N = f_N$. Now with tariff policy , P_1 rises to P_1' and the wage curves of USS and rural sector shift down to $\breve{JF}$ and $\breve{NF}$ curves, where equilibrium wage in the USS and rural sector becomes lower to $\overline{CF}$ $(=\overline{OY})$ level. Because of wage differential between $\overline{CF}$ and $\overline{CI}$, $\overline{AB}(=\overline{WU})$ labor migrates from the USS and rural sectors to the ULS sector. Considering the shrunken labor force in the USS and the rural sector, the wage curve of the USS sector shifts to the right$(\breve{LG})$. The new final equilibria are represented by points H and S.

2) Description of the Geometric Form at Equilibrium

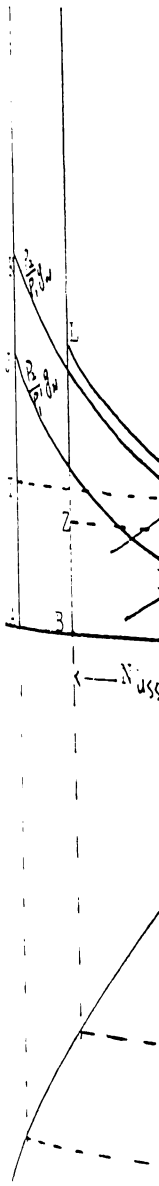
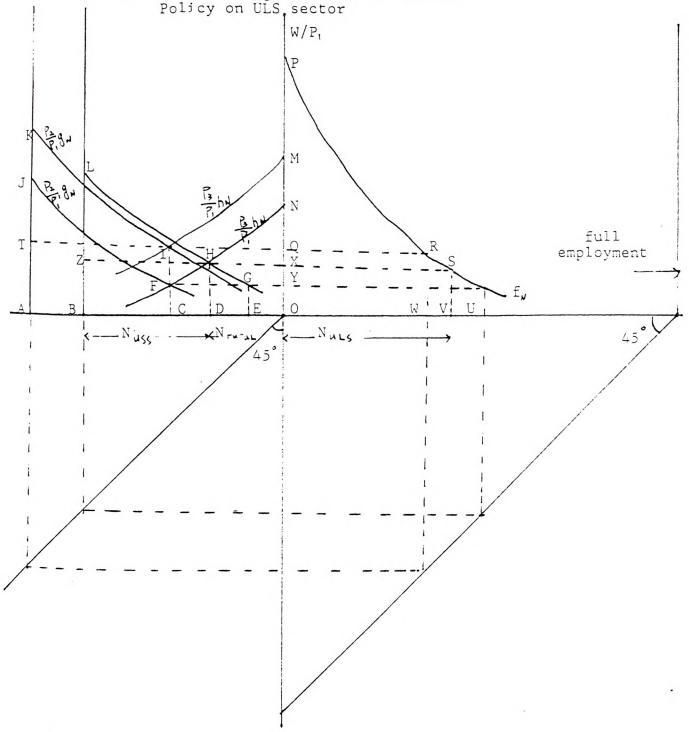


Figure 3.3

Labor Market Adjustment after Tariff Policy on ULS sector



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At new equilibrium points after adjustment process in Figure 3.3,

ULS sector

employment: $\overline{OV}$ which is higher than previous $\overline{OW}$.

output: $\triangle$OPSV which is larger than previous $\square$OPRW.

wage share: $\square$OXSV (previous $\square$OQRW)

rent share: $\triangle$PXS which is larger than previous $\triangle$PQR.

USS sector

employment: $\overline{BD}$ which is lower than previous $\overline{AC}$ or $\overline{BE}$.

output : $\square$BLHD which is smaller than previous $\square$AKIC.

wage share: $\square$BZHD which is smaller than previous $\square$ATIC.

rent share: $\triangle$LZH (previous $\triangle$KTI)

Rural sector

employment: $\overline{OD}$ which is lower than previous $\overline{OC}$.

output: $\square$ONHD which is smaller than $\square$OMIC.

wage share: $\square$OXHD which is smaller than previous $\square$OQIC.

rent share: $\triangle$XNH (previous $\triangle$QMI)

Now we turn to analysis in the three dimensional PPFs model.

b. Analysis in the Three Dimensional PPFs Framework

With a tariff on the ULS sector, the output price of the ULS sector will rise and the relative prices such as

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P_2/P_1 and P_3/P_1 will decline. The higher output price of the ULS sector will lead to an increase in the production of the ULS sector, while the lower relative price of the USS and rural sector output will lead to a decrease in the production of the USS and rural sectors.

1) Adjustment Process in Figure 3.4

Before the distortion by tariff policy, the equilibrium point is A, given P_1, P_2, P_3. Now with tariff on ULS sector product, P_1 rises to P_1', and P_2/P_1 & P_3/P_1 decline to P_2/P_1' & P_3/P_1' respectively. But P_2/P_3 does not change. Considering the change of relative prices on the three dimension PPFs, the new equilibrium production point is B.

2) Description for Geometric Form at Equilibrium

At the new equilibrium point after the adjustment process in Figure 3.4, the output of the ULS sector rises from $\overline{OC}$ to $\overline{OD}$, the output of the USS sector declines from $\overline{CG}$ to $\overline{ED}$, and the output production of the rural sector declines from $\overline{CH}$ to $\overline{DF}$.

c. Analysis of the Sectoral Output Change with the Rybczynski Line

We have found that a tariff on the ULS sector will affect the outputs of all three sectors in the three

Table 3.4

Effects of Tariff on ULS sector Product
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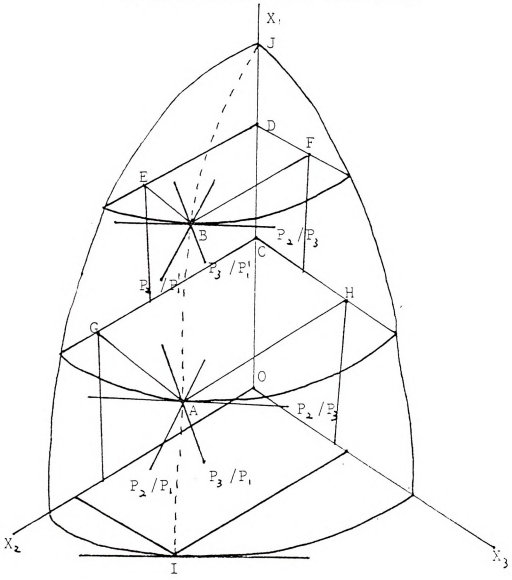

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dimensional PPF model. The output changes of each sector can be further analyzed with the aid of the Rybczynski line.

1) Description of the Geometric Form in Figure 3.5-1

Figure 3.5-1 shows the production possibility frontier curve between the ULS and USS sectors. Before the tariff is imposed on the ULS sector, the equilibrium output point of PPF($\widehat{RS}$) is at N with given relative price(P_2/P_1). After the tariff is imposed, the relative price of P_3/P_1 will decline to P_3/P_1', which will lead to a release of labor from the rural sector. Now the PPF curve expands to the new PPF curve ($\widehat{QT}$). With a declining relative price(P_2/P_1'), the new output equilibrium point is P. The line going through P and N is called the Rybczynski line(R line). The output of the ULS sector increases from $\overline{OX}$ to $\overline{OW}$. But the output of the USS sector declines from $\overline{OB}$ to $\overline{OA}$.

2) Description of the Geometric Form in Figure 3.5-2

Figure 3.5-2 shows the production possibility frontier curve between the ULS and rural sectors. Before a tariff is imposed on the ULS sector, the equilibrium output point of PPF($\widehat{RU}$) is at L with given relative price(P_3/P_1). After the tariff is imposed, the relative price of P_2/P_1 declines to P_2/P_1', which leads to a

Figure 3.5

Effects on Sectoral Output by Tariff on ULS Sector

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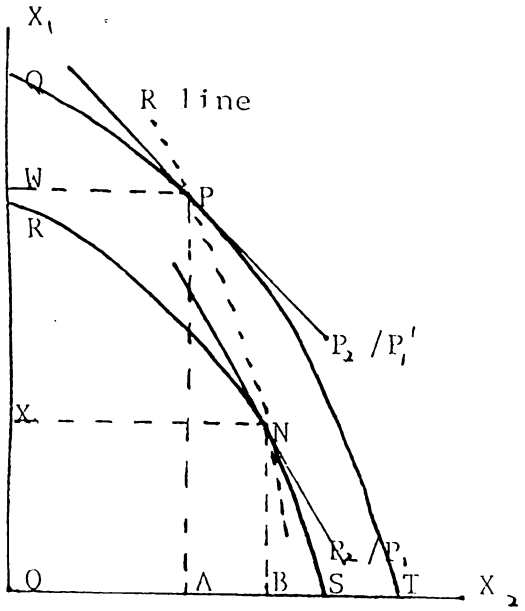
Figure 3.5

Effects on Sectoral Output by Tariff on ULS Sector



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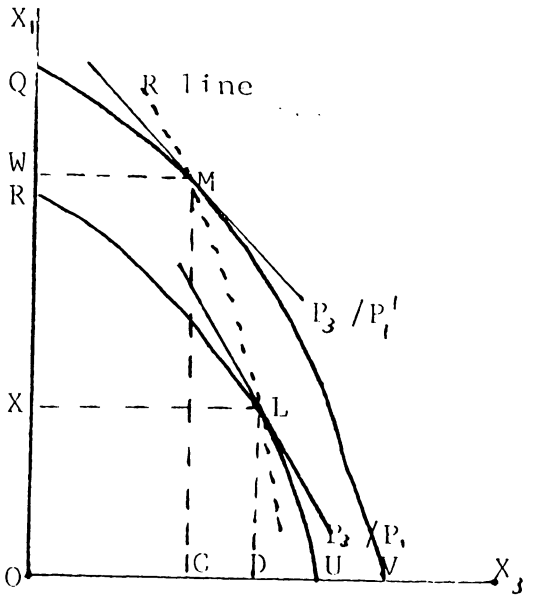
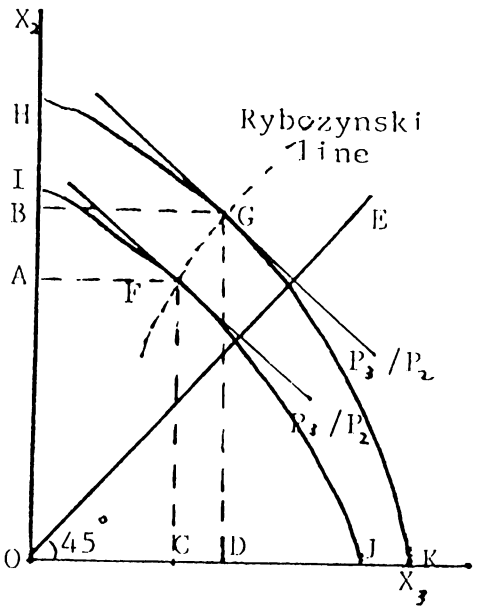


Figure 3.5-2



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release of labor from the USS sector. Now the PPF curve expands to the new PPF curve(QV). With declining relative price(P_3/P_1'), the new output equilibrium point is M. The line going through L and M is called the Rybczynski line(R line). Output of ULS sector increases from $\overline{OX}$ to $\overline{OW}$. But output of the rural sector declines from $\overline{OD}$ to $\overline{OC}$.

3) Description of the Geometric Form in Figure 3.5-3

Figure 3.5-3 shows the production possibility frontier curve between the USS and rural sectors. Before a tariff is imposed on the ULS sector, the equilibrium output point of PPF($\widehat{HK}$) is at G with a given relative price(P_3/P_2). After the tariff is imposed, relative price of P_2/P_1 & P_3/P_1 declines to P_2/P_1' & P_3/P_1' respectively, which leads to a release of labor from the USS and rural sectors. Now the PPF curve shrinks from $\widehat{HK}$ to $\widehat{IJ}$. With relative price (P_3/P_2) unchanged, the new output equilibrium point is F. The line going through G and F is called the Rybczynski line(R line).

If the R line is above the 45° line($\overline{OE}$), the output of the small scale sector declines more than in proportion to the decline in the output of the rural sector. In Figure 5.3, the output of the USS sector declines from $\overline{OB}$ to $\overline{OA}$. The output of the rural sector declines from $\overline{OD}$ to $\overline{OC}$.

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output of the rural sector declines more than in proportion to the decline in the output of the USS sector. The outcome depends on the character of the USS sector and the rural sector of each LDC.

d.The Result of Tariff Policy on ULS sector

With the assumption of full employment , perfect competition, and heterogeneous products, the increase in the output price of the ULS sector due to a tariff will lead to an expansion of employment and output in the ULS sector, while the output and employment in the USS sector and the rural sector will decline. The real wage will decline due to the decline of relative price.

So far we have analyzed the impact of tariff policy on the ULS sector in the labor market model and the three dimensional PPFs model. Next we analyze another large scale oriented policy, which is that of a capital subsidy in the ULS sector, in terms of the labor market model and the three dimensional PPFs model.

2. Capital Subsidy Policy in ULS Sector

A capital subsidy policy can be analysed in two ways -in the labor market model and in the three dimensional PPF model.

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a. Labor Market Mechanism

If the government practices a capital allocation policy favoring the ULS sector through low interest rates on loans etc., the marginal productivity of labor in the ULS sector will rise, because labor in the ULS sector has more capital to work with. This higher MPL in the ULS sector push the real wage in the ULS sector upward. Because of this disturbance of the wage differential, labor will start to migrate from the USS and rural sectors to the ULS sector in order to restore equilibrium. The adjustment process is as follows:

1) Adjustment Process (Figure 3.6)

Before a disturbance is created by the capital injection, equilibrium points are I and V where $P_2/P_1 * g_N = P_3/P_1 * h_N = f_N$. Now with an easy capital policy the higher MPL in the ULS sector shifts the wage curve of the ULS sector up to the right(f'_N). A higher real wage in the ULS sector can attract $\overline{AB}$ ($=\overline{QS}$) amount of labor from the USS and the rural sector into the ULS sector. Considering the shrunken labor force in the USS and the rural sectors, the wage curve of the USS sector shifts to the right($\widetilde{GW}$). Finally the new equilibrium points are J and U.

2) Description of the Geometric Form at Equilibrium

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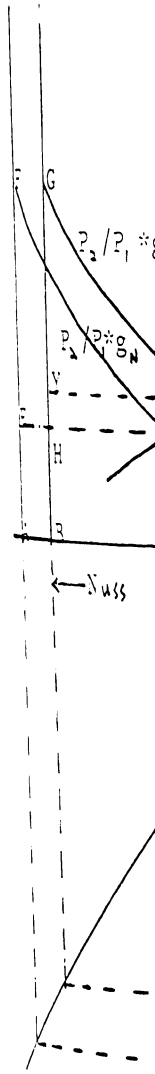
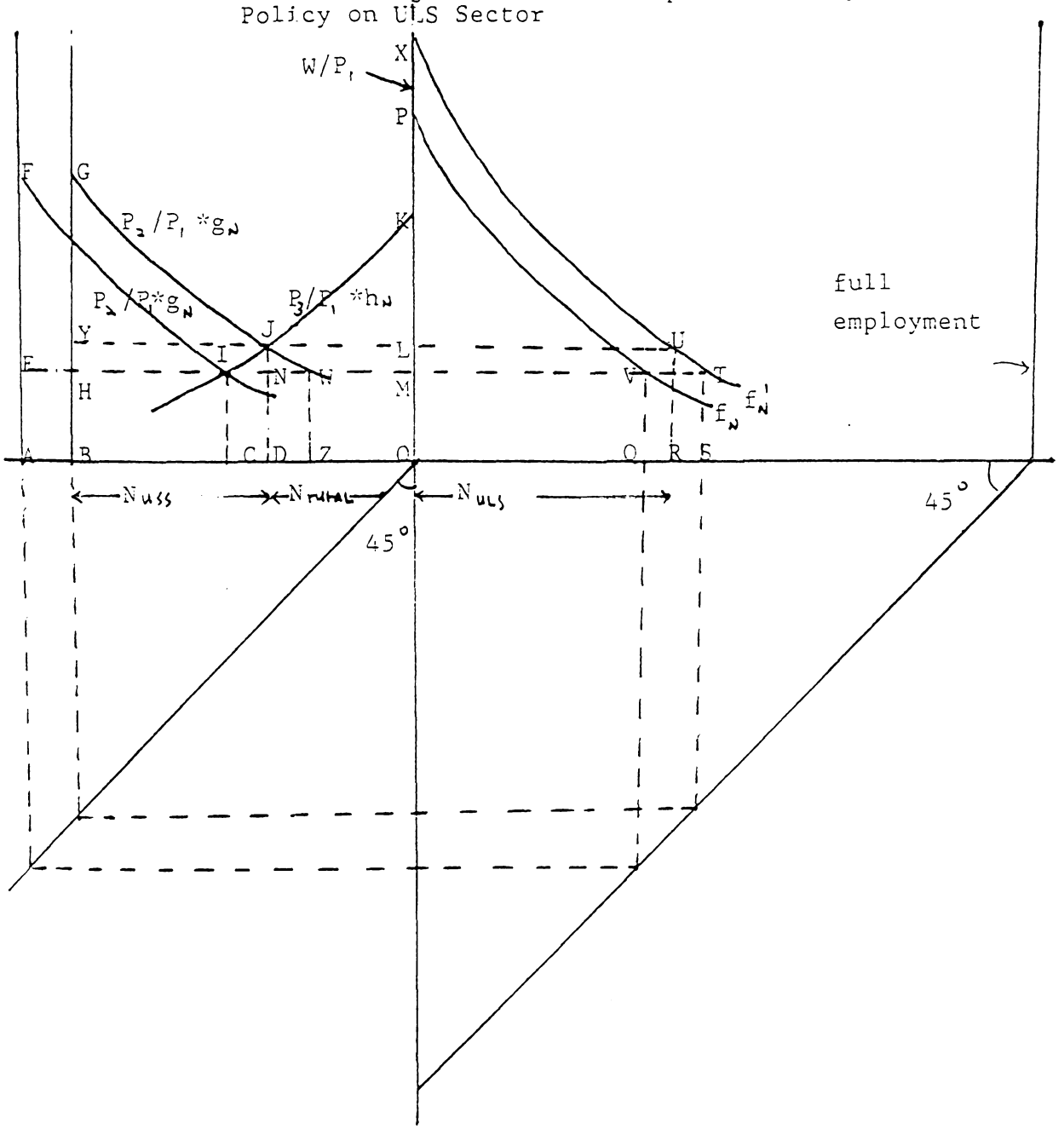


Figure 3.6

Labor Market Adjustment after Capital Subsidy Policy on ULS Sector



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employment : $\overline{OR}$ which is higher than previous $\overline{OQ}$.

output: $\square$ ORUX which is larger than previous $\square$ OQVP.

wage share: $\square$ ORUL which is larger than $\square$ OQVM.

rent share: $\triangle$ LUX (previous $\triangle$ MVP)

USS sector

employment: $\overline{BD}$ which is lower than previous $\overline{AC}$ or $\overline{BZ}$.

output: $\square$ BDJG which is smaller than previous $\square$ ACIF.

wage share: $\square$ BDJY (previous $\square$ ACIE)

rent share: $\triangle$ YJG which is smaller than $\triangle$ EIF.

Rural sector

employment: $\overline{OD}$ which is lower than previous $\overline{OC}$.

output: $\square$ ODJK which is smaller than previous $\square$ OCIK.

wage share: $\square$ ODJL (previous $\square$ OCIM)

rent share: $\triangle$ JLK which is smaller than $\triangle$ IMK.

Now we turn to analysis in the three dimensional PPFs model.

b. Three Dimensional PPFs Mechanism

With capital subsidy on the ULS sector, the PPF of the ULS sector expands but the PPF of the USS sector and the rural sector does not change. The relative prices of the three sectors do not change in this process. The capital inflow into the ULS sector will lead to expansion

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1) Adjustment Process (Figure 3.7)

Before a distortion by a capital subsidy policy, the equilibrium is L, given P_1, P_2, P_3. With the capital inflow into the ULS sector, the PPF for the ULS sector expands from B to C. The PPF curve for the ULS and the USS sectors expands from $\widehat{AB}$ to $\widehat{AC}$ and PPF curve for the ULS and the rural sectors expands from $\widehat{BK}$ to $\widehat{CK}$. With no change of relative prices among the three sectors, the new equilibrium production point is M.

2) Description of the Geometric Form at Equilibrium

At the new equilibrium point after the adjustment process in Figure 3.7, the output of the ULS sector rises from $\overline{ON}$ to $\overline{OG}$, the output of the USS sector declines from $\overline{QN}$ to $\overline{FG}$ and the output of the rural sector declines from $\overline{NR}$ to $\overline{GH}$.

c. Analysis of Sectoral Output Change with Rybczynski Line.

We have seen in the three dimensional PPFs model that a capital subsidy on the ULS sector will affect the outputs of all three sectors. The output changes in each sector can be further analysed with the Rybczynski line.

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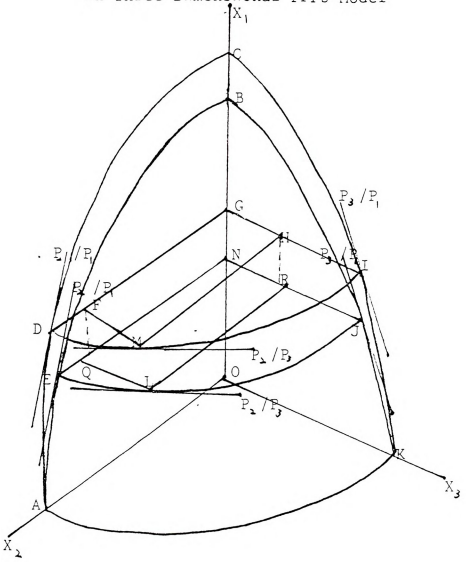
Figure 3.7

Effects of Capital Inflow on ULS Sector in Three Dimensional PPFs Model



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1) Description of the Geometric Form in Figure 3.8-1

Figure 3.8-1 shows the production possibility frontier curve between the ULS and USS sectors. Before the capital inflow into the ULS sector, an equilibrium output point on PPF($\widehat{HI}$) was at A with given relative price(P_2/P_1). After the capital inflow into the ULS sector, the PPF curve expands from $\widehat{HI}$ to $\widehat{GI}$. With no changes in relative price(P_2/P_1), the new equilibrium point is B. The line going through A and B is called the Rybczynski line(R line). The output of the ULS sector increases from $\overline{OE}$ to $\overline{OF}$, while the output of the USS sector declines from $\overline{OD}$ to $\overline{OC}$.

2) Description for Geometric Form in Figure 3.8-2

Figure 3.8-2 shows the production possibility frontier curve between the ULS and rural sectors. Before the capital inflow into the ULS sector, the equilibrium output point of PPF ($\widehat{HJ}$) was at L with given relative price (P_3 /P_1). After a capital inflow into the ULS sector, the PPF curve expands from $\widehat{HJ}$ to $\widehat{GJ}$. With no change in the relative price (P_3/P_1), the new equilibrium point is K. The line going through L and K is the Rybczynski line (R line). The output of the ULS sector increases from $\overline{OE}$ to $\overline{OF}$,while the output of rural sector declines from $\overline{OQ}$ to $\overline{OP}$.

Figure 3.8
Effects on Sectoral Output by Capital Inflow into MLS Sector

Figure 3.8

Effects on Sectoral Output by Capital Inflow into ULS Sector

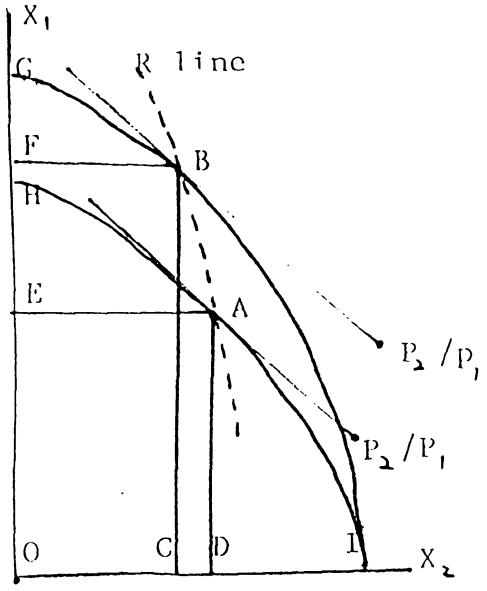

Figure 3.8-1

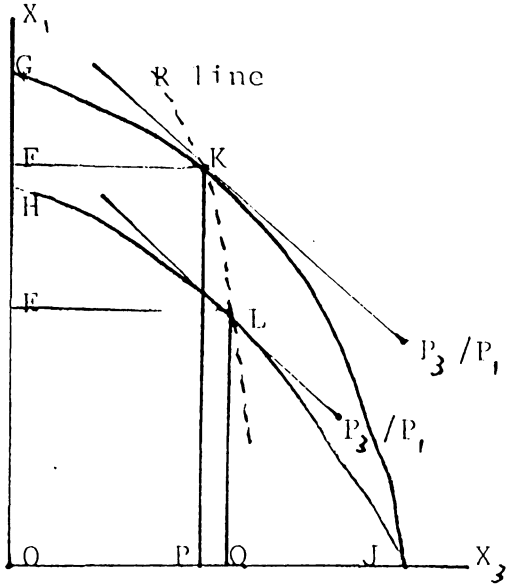

Figure 3.8-2

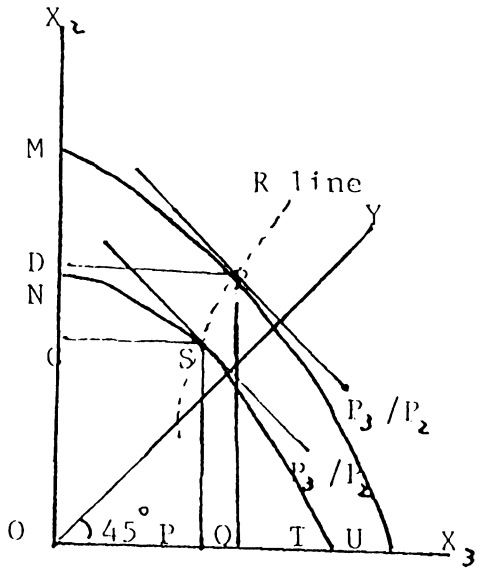

Figure 3.8-3

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3) Description of the Geometric Form in Figure 3.8-3

Figure 3.8-3 shows the production possibility frontier curve between the USS and rural sectors. Before the capital inflow into the ULS sector, the equilibrium output point of the PPF($\widehat{MU}$) was at R with given relative price(P_3/P_2). After a capital inflow into the ULS sector, the labor migration from USS and rural sectors into the ULS sector makes the PPF curve shrink from $\widehat{MU}$ to $\widehat{DT}$. With no change in the relative price (P_3/P_2), the new equilibrium point is S. The line going through S and R is the Rybczynski line(R line). The output of the USS sector declines from $\overline{OD}$ to $\overline{OC}$ and the output of the rural sector also declines from $\overline{OQ}$ to $\overline{OP}$.

But if the R line is above the 45^o line($\overline{OY}$), the output of the small scale sector declines more than proportionately to the decline in the output of rural sector. If the R line is below the 45^o line($\overline{OY}$), the output of the rural sector declines more than proportionately to the decline in the output of the USS sector. Which one occurs depends on the character of the USS and rural sectors of each country.

d. The Result of a Capital Subsidy on the ULS Sector

With the assumption of full employment , perfect competition, and heterogeneous products, a capital increase in the ULS sector will lead to an expansion of

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output and employment in the ULS sector, while the employment and output in the USS sector and the rural sector will decline. The real wage will increase due to the capital increase.

So far we have analyzed a capital subsidy on the ULS sector in the labor market model and the three dimensional PPFs model. Now we will analyse the impact of small scale oriented policies, which are a tariff and a capital subsidy on the USS sector, in the labor market model and the three dimensional PPFs model. We begin with an analysis of tariff policy.

3. Tariff Policy in the USS Sector

Tariff policy can be analysed in two ways: in the labor market model and in the three dimensional PPF model.

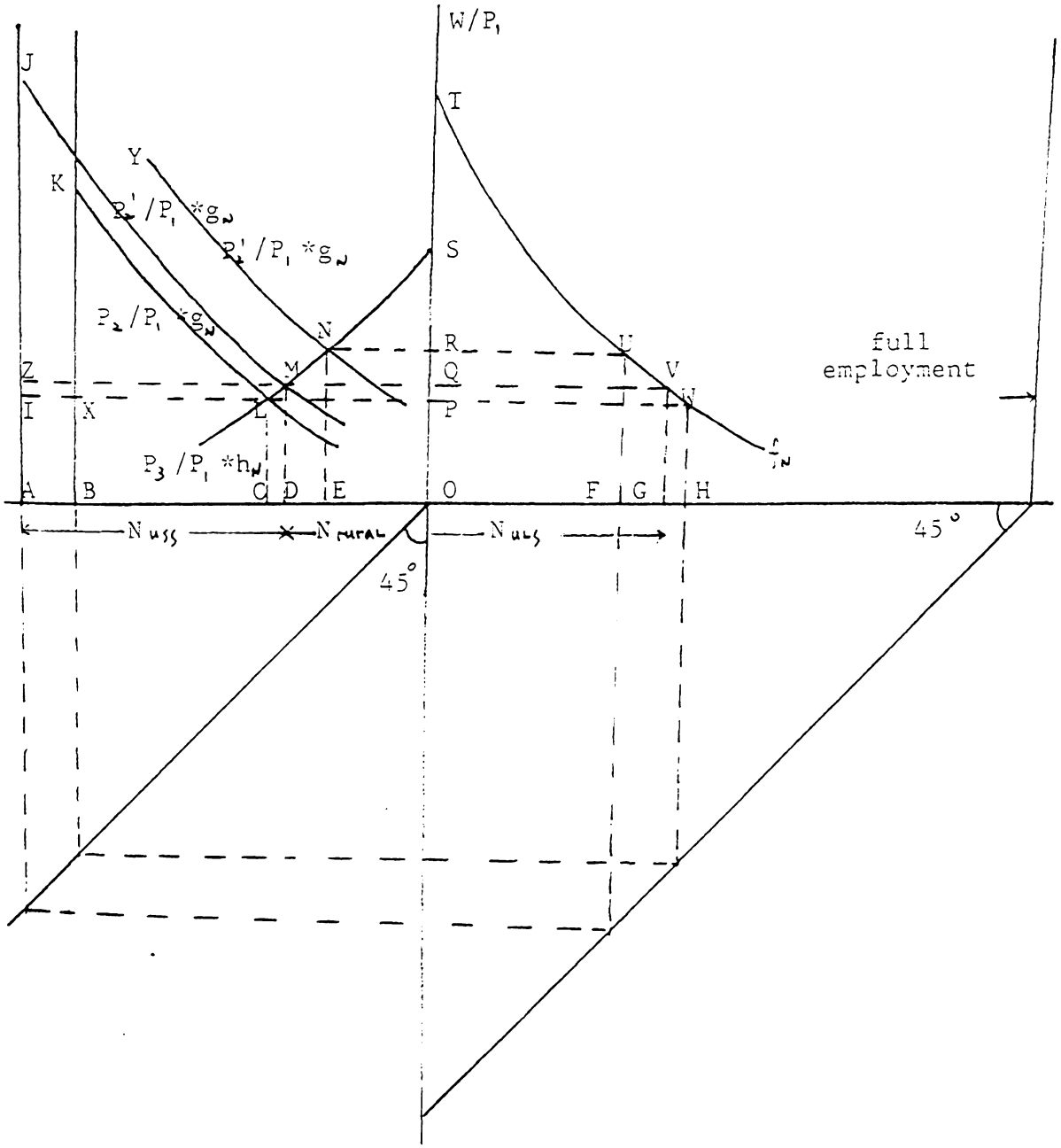
a. Labor market mechanism

If the government imposes a tariff on the USS product in order to protect the USS sector, the price of the USS product (P_2/P_1) will rise. Therefore the real wage of the small scale sector becomes higher. Because of this disturbance of the wage differential, labor will start to migrate from the ULS and rural sectors to the USS sector in order to attain a new equilibrium. The adjustment process is shown in Figure 3.9.

1) Adjustment Process in Figure 3.9.

Figure 3.9

Labor Market Adjustment after Tariff Policy on the USS Sector



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Before a distortion by tariff policy, equilibrium points are L and W where $P_2/P_1 * g_N = P_3/P_1 * h_N = f_N$. Now with tariff policy, P_2 rises to P_2' and the wage curve of the USS sector shifts up to the right($\widetilde{YN}$), where equilibrium wage between the USS and rural sectors becomes higher. Because of the wage differential between $\overline{OP}$ and $\overline{OR}$, $\overline{FH}(=\overline{AB})$ labor migrates from the ULS sector to the USS sector. Because of the expanded labor force in the USS sector, the wage curve of the USS sector shifts to the left($\widetilde{JM}$). Finally, the new equilibrium points are M and V.

2) Description of the Geometric Form at Equilibrium

At the new equilibrium point after adjustment process in Figure 3.9,

ULS sector

employment: $\overline{OG}$ which is lower than previous $\overline{OH}$.

output: $\square$OGVT which is smaller than previous $\square$OHWT.

wage share: $\square$OGVQ (previous $\square$OHWP)

rent share: $\triangle$QVT which is smaller than previous $\triangle$PWT.

USS sector

employment: $\overline{AD}$ which is higher than previous $\overline{BC}$.

output: $\square$ADMJ which is larger than previous $\square$BCLK.

wage share: $\square$ADMZ which is larger than previous $\square$BCLX.

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rent share: $\triangle$ ZMJ (previous $\triangle$ XLK)

Rural sector

employment: $\overline{OD}$ which is smaller than previous $\overline{OC}$.

output: $\square$ DOSM which is smaller than previous $\square$ COSL.

wage share: $\square$ DOQM (previous $\square$ COPL)

rent share : $\triangle$ MQS which is smaller than previous $\triangle$ LPS.

b. Three Dimensional PPFs Mechanism

With a tariff on the USS sector, the output price of the USS sector will rise and the relative prices such as P_2/P_1 & P_2/P_3 will rise, while P_3/P_1 does not change. The higher price for the products of the USS sector will lead to an increase in the production of the USS sector, while the lower relative price of the ULS and rural sector output will lead to a decrease of output in the ULS and rural sectors.

1) Adjustment Process in Figure 3.10

Before a distortion by tariff policy, the equilibrium point is B, given P_1, P_2, P_3 . Now with a tariff on the USS sector, P_2 rises to P_2' , and P_2/P_1 & P_2/P_3 will rise to P_2'/P_1 & P_2'/P_3 respectively. But P_3/P_1 does not change. Because of the change in relative prices, the new equilibrium production point is C.

2) Description of the Geometric Form at Equilibrium

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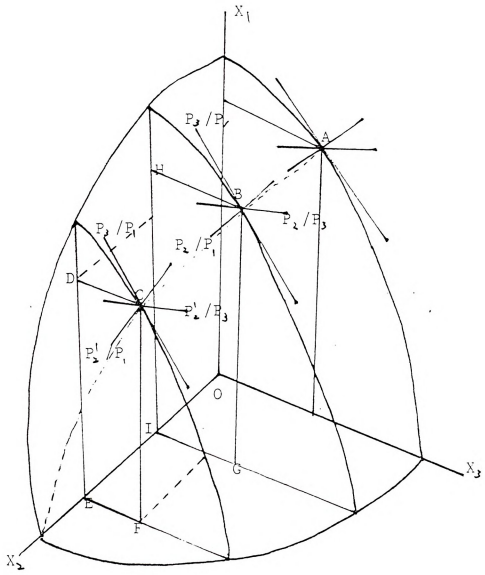
Figure 3.10

Effects of Tariff Policy on USS Sector Product in Three Dimensional PPFs Model



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At the new equilibrium point after adjustment process in Figure 3.10, the output of the ULS sector declines from $\overline{IH}$ to $\overline{ED}$, and the output of the USS sector rises from $\overline{OI}$ to $\overline{OE}$. The output of the rural sector declines from $\overline{IG}$ to $\overline{EF}$.

c. The Effect of the Tariff Policy on the USS Sector

With the assumptions of full employment, perfect competition, and heterogeneous products, the increase of output price in the USS sector due to the tariff will lead to an expansion of output and employment in the USS sector, while the output and employment in the ULS sector and the rural sector will decline. Real wage will increase due to the increase in the relative price.

4. a Capital Subsidy Policy in the USS Sector

a. Labor Market Mechanism

If the government practices a policy favoring the USS sector through low interest rates on loans etc., the marginal productivity of labor in the USS sector will rise, because labor in the USS sector has more capital to work with. This higher MPL in the USS sector pushes real wage in the USS sector upward. Because of this disturbance of the wage differential, labor will start to migrate from the ULS and the rural sectors to the USS sector in order

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1) Adjustment Process (Figure 3.11)

Before the distortion by a cheap capital policy, equilibrium points are K and M where $P_2/P_1 * g_N = P_3/P_1 * h_N = f_N$. Now with the cheap capital policy, the higher MPL in the USS sector shifts the wage curve of the USS sector up to the right($\widetilde{BC}$) or ($P_2/P_1 * g_N$). The higher real wage in the USS sector attracts $\overline{IL}$(=$\overline{QA}$) labor from the ULS sector to the USS sector. Considering the expanded labor force in the USS sector, the wage curve of the USS sector shifts to the left($\widetilde{ST}$). The new equilibrium points are T and U.

2) Description of the Geometric Form at Equilibrium

At new equilibrium point after adjustment process in Figure 3.11

ULS sector

employment: $\overline{OW}$ which is lower than previous $\overline{OL}$.

output: △OWUE which is smaller than previous △OLME.

wage share: □OWUV (previous □OLMP)

rent share: △VUE which is smaller than △PME.

USS sector

employment: $\overline{QX}$ which is higher than previous $\overline{AN}$.

output: △ QXTS which is larger than previous △ ANKJ.

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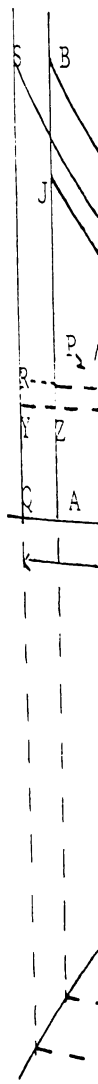
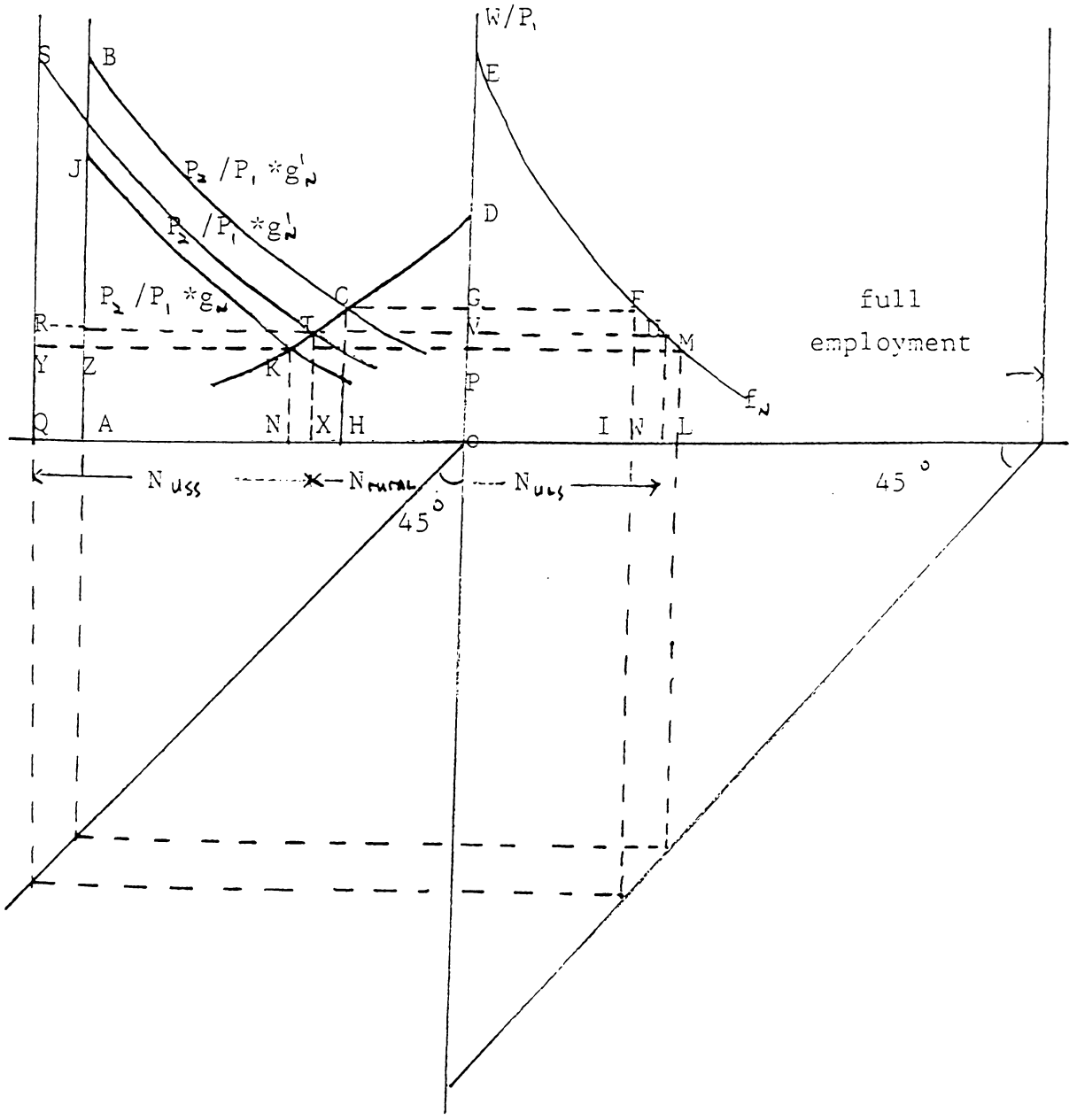


Figure 3.11

Labor Market Adjustment after Capital Subsidy Policy on USS Sector



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wage share: □ QXTR which is larger than previous □ ANKZ

rent share : △RTS (previous △ZKJ)

Rural sector

employment : $\overline{OX}$ which is lower than previous $\overline{ON}$.

output: □OXTD which is smaller than □ONKD.

wage share: □OXTV (previous □ONKP)

rent share: △TVD which is smaller than previous △KPD.

Now we turn to an analysis of the three dimensional PPF model.

b. Three Dimensional PPFs Mechanism

With a capital subsidy on the USS sector, the PPF of the USS sector expands but the PPFs of the ULS sector and the rural sector do not change. The relative prices of the outputs of the three sectors do not change during this process. The capital inflow into the USS sector will lead to an expansion of USS production but a reduction of ULS and rural production.

1) Adjustment Process (Figure 3.12)

Before the distortion by a capital subsidy policy, the equilibrium is K, given P_1, P_2, P_3. Now with a capital inflow into the USS sector, the PPF for the USS sector increases from R to B. The PPF curve for the ULS and USS sectors expands from $\overset{\frown}{AR}$ to $\overset{\frown}{AB}$ and the PPF curve for the

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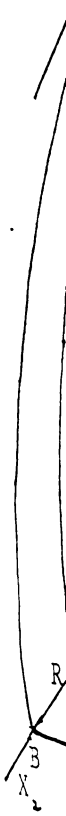
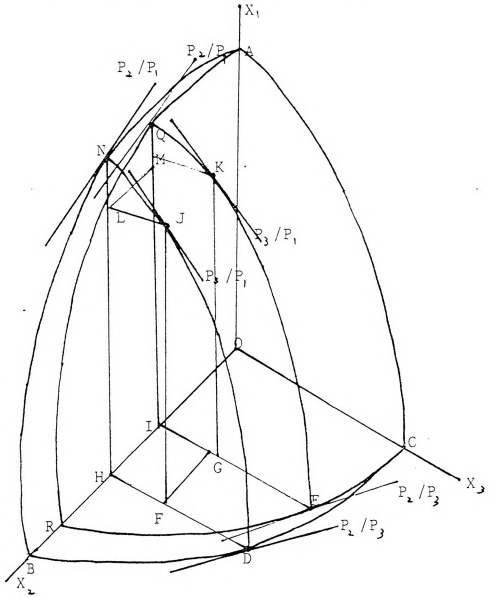


Figure 3.12

Effects of Capital Inflow on USS Sector
in Three Dimensional PPFs Model



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USS and rural sector expands from $\widehat{RC}$ to $\widehat{BC}$. With no change in the relative prices of outputs of the three sectors, the new equilibrium production point is J.

2) Description of the Geometric Form at Equilibrium

At the new equilibrium point after the adjustment process in Figure 3.12, the output of the ULS sector declines from $\overline{MI}$ to $\overline{HL}$, the output of the USS sector rises from $\overline{OI}$ to $\overline{OH}$, and the output of the rural sector declines from $\overline{IG}$ to $\overline{HF}$.

c. The Result of a Capital Subsidy on the USS Sector

With the assumptions of full employment, perfect competition, and heterogeneous products, the capital increase in the USS sector will lead to expansion of labor and output in the USS sector, while the output and labor in the ULS sector and the rural sector will decline. Real wage will increase due to the capital increase.

5. Minimum Wage Policy in the ULS Sector

Minimum wage policy can be analysed in the labor market model.

a. Labor Market Mechanism

If the government imposes a minimum wage policy on the ULS sector, the wage level in the ULS sector becomes

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independent of wage determination in the USS and rural sector. The migration process determines the new equilibrium wage level in the USS and rural sectors. In this case, a labor market equilibrium condition becomes the following.

$W_1=W_m>W_2=W_3$ or $P_1*f_N>P_2*g_N=P_3*h_N$

or $f_N>P_2/P_1*g_N=P_3/P_1*h_N$

Under the minimum wage system, the left-out labor in the ULS sector starts to migrate to the USS sector and rural sector in order to find jobs there. This migration process determines the new equilibrium wage level in the USS and rural sectors. The adjustment process can be shown in Figure 3.13.

b. Adjustment Process (Figure 3.13)

Before a distortion by minimum wage policy, the equilibrium points are L and V where $P_2/P_1*g_N= P_3/P_1*h_N = f_N$. Now with a minimum wage policy , the real wage level in the ULS sector is determined at $\overline{OS}$ or $\overline{OW}_m$. The left-out workers ($\overline{EF}$) start to migrate into the USS and rural sector. Because of the expanded labor force in the USS and rural sectors, the wage curve of the USS sector shifts to the left($\widetilde{HK}$). The new equilibrium points are K and U.

c. Description of the Geometric Form at Equilibrium

At new equilibrium point after adjustment process in

Figure 3.13

Labor Market Adjustment after Minimum Wage Policy on the ULS Sector

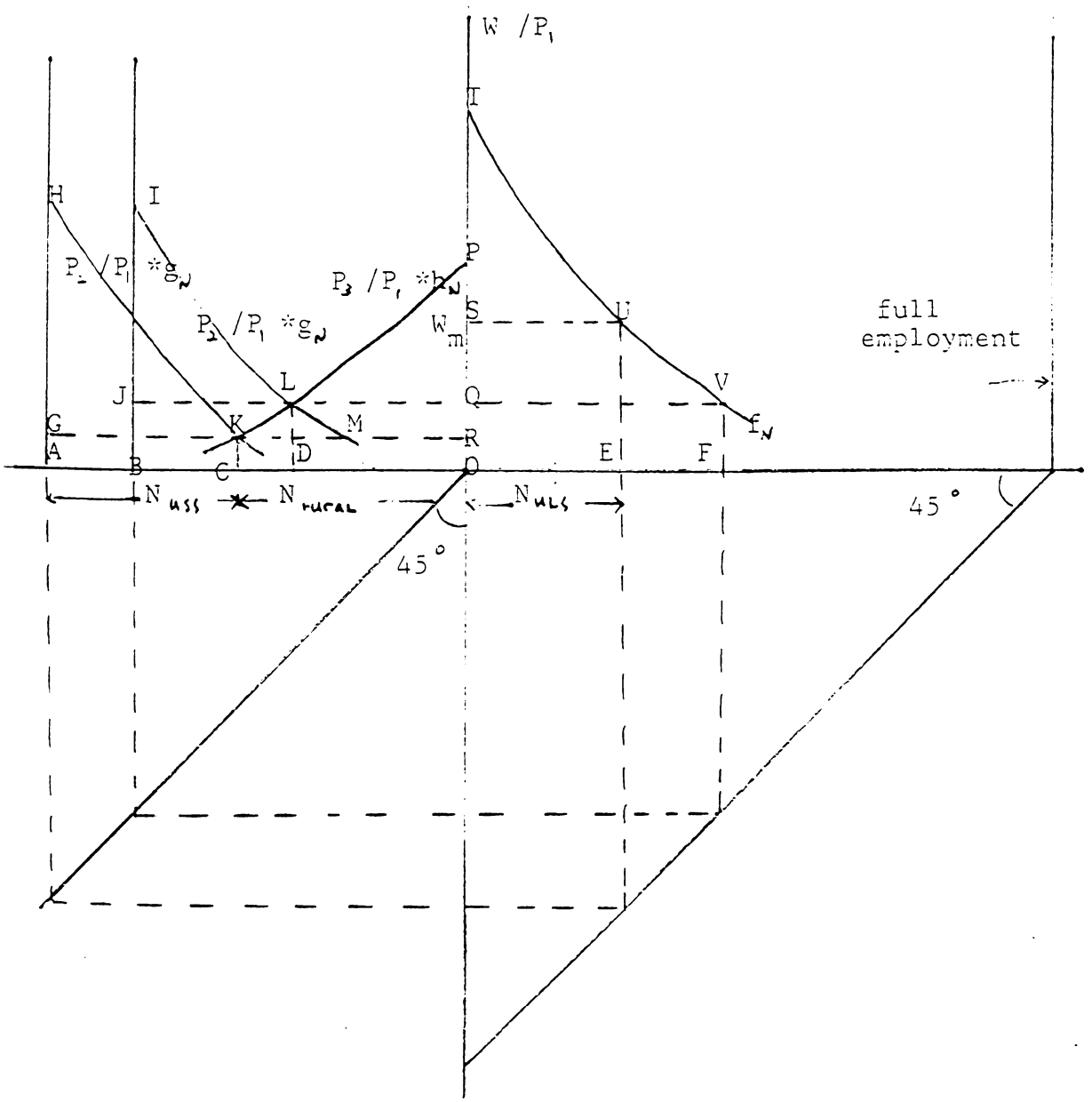

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Figure 3.13,

ULS sector

employment: $\overline{OE}$ which is lower than previous $\overline{OF}$.

output : $\square$OEUT which is smaller than previous $\square$OFVT.

wage share: $\square$OEUS (previous $\square$OFVQ)

rent share: $\triangle$SUT which is smaller than previous $\triangle$QVT.

USS sector

employment: $\overline{AC}$ which is higher than previous $\overline{BD}$.

output: $\square$ACKH which is larger than previous $\square$BDLI.

wage share: $\square$ACKG (previous $\square$BDLJ)

rent share: $\triangle$GKH which is larger than previous $\triangle$JLI.

Rural sector

employment: $\overline{OC}$ which is larger than previous $\overline{OD}$.

output: $\square$COPK which is larger than previous $\square$DOPL.

wage share: $\square$CORK (previous $\square$DOQL)

rent share: $\triangle$KRP which is larger than previous $\triangle$LQP.

Equilibrium wage in the USS and rural sector: $\overline{CK}$ or $\overline{OR}$ which is lower than previous $\overline{DL}$ or $\overline{OQ}$.

d. The Effect of a Minimum Wage in the ULS Sector

Given full employment, perfect competition, and heterogeneous products, the imposition of a minimum wage in the ULS sector will lead to decline of output and labor in the ULS sector, but a corresponding increase in the USS and rural sectors. The rent in the ULS sector will

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will decrease, while the rent in the USS and rural sectors will increase. Given this loss of rent the capitalist may demand a compensatory rent subsidy. As yet this is not a major issue.

6. Tariff Policy in the ULS Sector in the Situation Where Homogeneous Products Are Produced by the ULS and USS Sectors

Changing one of the previous assumptions , we now assume that the ULS and USS sectors produce the same products at the same price. The ULS and USS sectors use different production technologies and have different capital endowments. Under these assumptions, the labor market equilibrium condition becomes the following:

$$f_N = g_N = P_2 / P_1 * h_N$$

(Note: P_1- the price of the USS and ULS sector products, P_2- the price of the rural sector product)

Now the tariff policy on the ULS sector can be analysed in two ways: in the labor market model and the three dimensional PPFs model.

a. Labor Market Mechanism

If the government imposes a tariff on the ULS product in order to protect the ULS sector, the price of the output of the ULS sector will rise and relative prices

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such as P_2/P_1 will decline. Therefore the real wage of the USS and rural sectors becomes lower. Because of this disturbance of the wage differential, labor will start to migrate from the USS and rural sectors to the ULS sector in order to reach an equilibrium point. The adjustment process can be shown in Figure 3.14.

1) Adjustment Process (Figure 3.14)

Before a distortion by tariff policy, equilibrium points are E and D where $f_N = g_N = P_2 / P_1 * h_N$. Now with tariff policy, P_1 rises to P_1' and the wage curve of the rural sector shifts down to the $\widetilde{LK}$ curve, where the equilibrium wage in the USS and rural sectors falls to the $\overline{OX}$ level. Because of wage differential between $\overline{OI}$ and $\overline{OX}$, $\overline{AP}(=\overline{JN})$ labor migrate from USS and rural sectors to the ULS sector. Considering the shrunken labor force in the USS and rural sectors, the wage curve of the USS sector shifts to the right($\widetilde{RS}$). The new equilibrium points are S and U.

2) Description of the Geometric form at Equilibrium

At new equilibrium point after adjustment process in Figure 3.14,

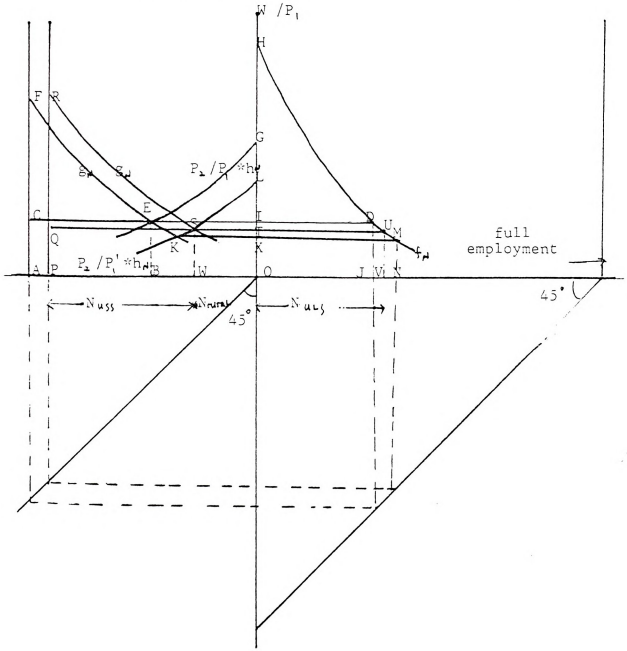
ULS sector

employment: $\overline{OV}$ which is higher than previous $\overline{OJ}$.

output: $\square$OVUH which is larger than previous $\square$OJDH.

Figure 3.14

Labor Market Adjustment after Tariff Policy on the ULS Sector in the Homogeneous Products Case of ULS and USS Sector



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wage share: □OVUT (previous □OJDI)

rent share: △TUH which is larger than previous △IDH.

USS sector

employment: $\overline{PW}$ which is higher than previous $\overline{AB}$.

output: □PWSR which is larger than previous □ABEF.

wage share: □PWSQ (previous □ABEC)

rent share: △QSR which is larger than previous △CEF.

Rural sector

employment: $\overline{OW}$ which is lower than previous $\overline{OB}$.

output: □OWSL which is smaller than previous □OBEG.

wage share: □OWST which is smaller than previous □OBEI.

rent share: ◿STL (previous ◿EIG)

Now we turn to analysis of three dimension PPFs model.

b. Three Dimensional PPFs Mechanism

With a tariff on the output of the ULS sector, the price of the output of the ULS sector will rise and the relative price (P_2 / P_1) will decline. The higher output price of the ULS and USS sectors will lead to an increase in the production of the ULS and USS sectors, while the lower relative price of the rural sector will lead to a decrease in the production of the rural sector.

1) Adjustment Process (Figure 3.15)

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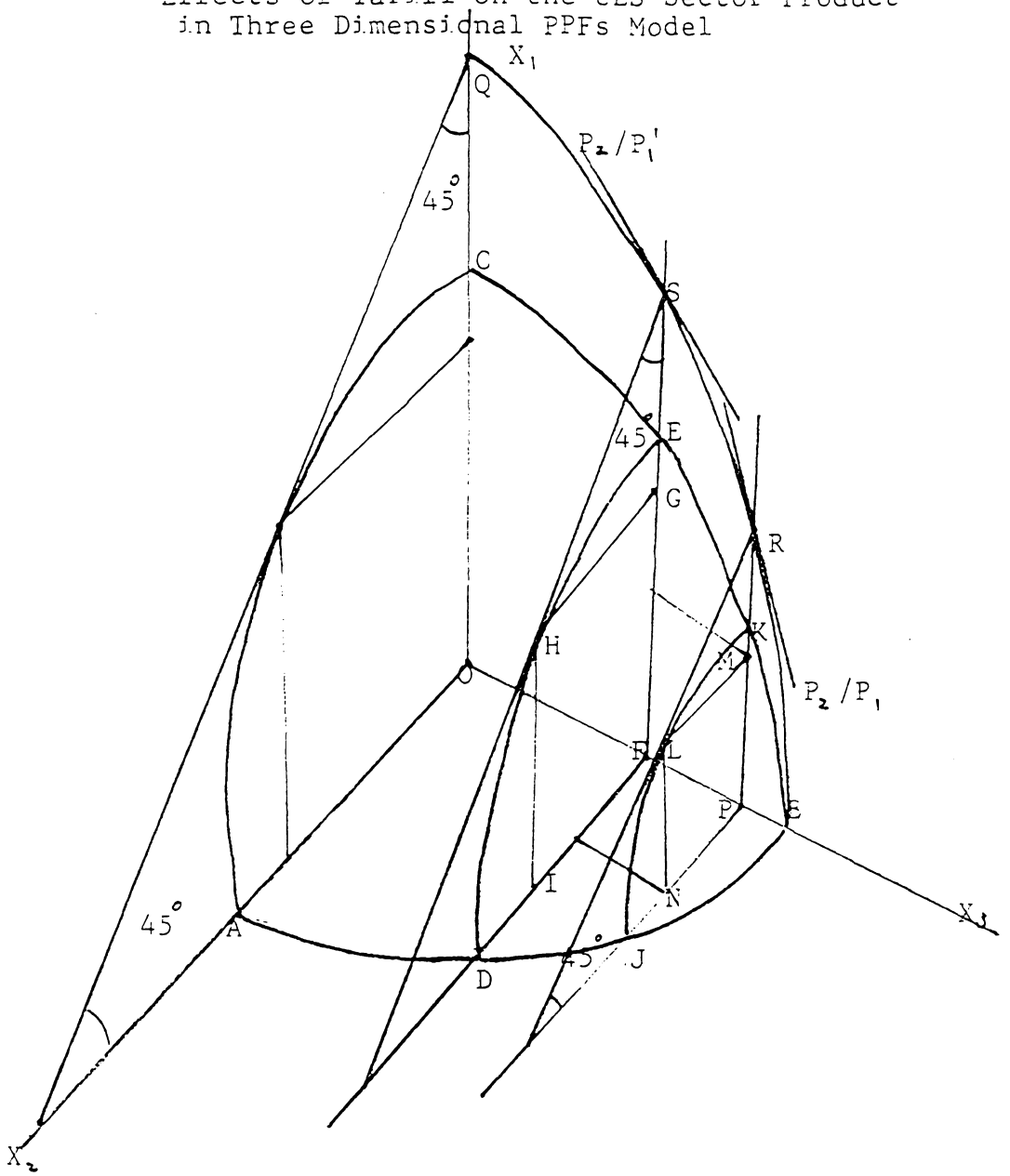
Figure 3.15

Effects of Tariff on the ULS Sector Product in Three Dimensional PPFs Model



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Before the distortion by tariff policy, the equilibrium point is L, given P_1, P_2. Under the assumption of homogeneous products in the ULS and USS sector, we can derive the PPF curve of the urban sector(ULS and USS) and the rural sector($\widehat{QB}$). At relative price P_2/P_1 from the three dimensional PPF, the ULS sector produces PM and the USS sector produces PN, while the rural sector produces OP. If a 45° line passes through point L of the three dimensional PPF, $\overline{PN}$ is equal to $\overline{MR}$. Therefore the total urban output is PR. Now with a tariff on the output of the ULS sector (as well as the output of the USS sector), P_1 rises to P_1' and P_2/P_1 declines to P_2/P_1'. Because of the change of relative price on the three dimension PPF, the new equilibrium production point is H.

2) Description of the Geometric Form at Equilibrium

At the new equilibrium point after adjustment process in Figure 3.15, the output of the ULS sector rises from $\overline{PM}$ to $\overline{FG}$, and the output of the USS sector rises from $\overline{PN}$ to $\overline{FI}$, while the output of the rural sector declines from $\overline{OP}$ to $\overline{OF}$.

Using the 45° line technique, the urban sector output(ULS and USS) can be derived as $\overline{SF}$ because $\overline{FI}$ is equal to $\overline{SG}$.

c. The Result of a Tariff on the ULS Sector

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With the assumptions of full employment, perfect competition and homogeneous products, the increase in the price of the output in the ULS sector due to the tariff will lead to an expansion of the output and labor in the ULS sector and the USS sector, while the output and labor in the rural sector will decline. And the real wage will decline due to the decline in the relative price.

E. Conclusion

So far we have developed a simple three sector model(ULS, USS, and Rural sector), which is based on three goods and two factors(capital, labor). Geometric exercises in the labor market model and the three dimensional PPF model gave us an opportunity to clarify some issues such as the change in output,employment, and real wage , which are caused by large vs. small scale oriented policy.

The analysis of the three sector model shows that a policy of boosting the large scale sector such as tariff and capital subsidy on the ULS sector leads to an expansion of the ULS sector but reduction of the USS and rural sectors in terms of employment and output.

A policy of boosting the small scale sector such as tariff and capital subsidy on the USS sector leads to an expansion of the USS sector but reduction of the ULS and rural sectors in terms of employment and output.

Also,a minimum wage policy in the ULS sector leads to a reduction of the ULS but expansion of the USS and

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rural sectors in terms of employment and output.

Finally,in the case where the ULS and USS produce homogeneous products, a policy of boosting the large scale sector such as tariff on the ULS(as well as USS) sector product leads to an expansion of the ULS and USS sectors but to a contraction of the rural sector in terms of employment and output.

Our analysis is based on the assumptions of full employment and perfect competition. Therefore our model can be applied to only fast growing economies, not to the many LDCs with high unemployment. Whether the theoretical analysis of the model is empirically true remains to be tested.

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CHAPTER 4

A REVIEW OF CHANGES IN THE KOREAN INDUSTRIAL STRUCTURE IN TERMS OF A THREE SECTOR MODEL & AN EMPIRICAL TIME-SERIES STUDY DURING 1966-1984

A. INTRODUCTION

Since the early 1960's, the Korean government has opted for an export-oriented developmental strategy,given its constraints of poor natural resources,high density of population, and a relatively small domestic market. This open door policy resulted in an expansion of the markets for Korean products. With this widening market, economies of scale and the large size of firms assumed importance in competing in the world market; thus large firms emerged and small firms expanded into larger ones.

In this process, the Korean government encouraged , directly or indirectly, the growth of LSEs at the expense of SSEs through various policy instruments. This discriminatory policy resulted in a distortion of the factor market,particularly the capital market. The main industrial policy during the last two decades seemed to favor LSEs,to the detriment of SSEs, in allocating capital or credit for their expansion.

This policy has become controversial because it has

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an impact on economic growth and equity. Therefore it is meaningful to analyse the change in the Korean industrial structure during 1966-1984, based on a three sector model (ULS, USS, and Rural sectors).

In building up this three sector model, I did a comparative static analysis based on a capital inflow in the ULS sector. Secondly, based on this analysis , I reviewed the change in the Korean industrial structure with time series data (1966-1984) on employment, real wage, capital intensity , etc.

B. Three Sector Model

1. Assumptions

The model consists of three sectors (ULS, USS,rural sector) and two factors (labor,capital) that are the inputs for the three sectors. The ULS and USS sectors produce homogeneous manufactured products and the rural sector produces agricultural goods. Labor is homogeneous and mobile between the sectors, but capital is specific to each sector. In this model we assume full employment and perfect competition.

2. Mathematical Framework

If the ULS and USS sectors produce the same manufactured product, the output price of the two sectors

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Production $X_1=f(N_1,K_1)$ $f_N>0, f_K>0, f_{NN}<0, f_{KK}<0,$

Wage $P_1*f_N=W_1$ Rent $P_1*f_K=R_1$

USS sector

Production $X_2=g(N_2,K_2)$ $g_N>0, g_K>0, g_{NN}<0, g_{KK}<0,$

Wage $P_1*g_N=W_2$ Rent $P_1*g_K=R_2$

Rural sector

Production $X_3=h(N_3,K_3)$ $h_N>0, h_K>0, h_{NN}<0, h_{KK}<0,$

Wage $P_2*h_N=W_3$ Rent $P_2*h_K=R_3$

Labor market equilibrium in three sectors

$W_1=W_2=W_3$, $P_1*f_N=P_1*g_N=P_2*h_N$, or $f_N=g_N=P_2/P_1*h_N$

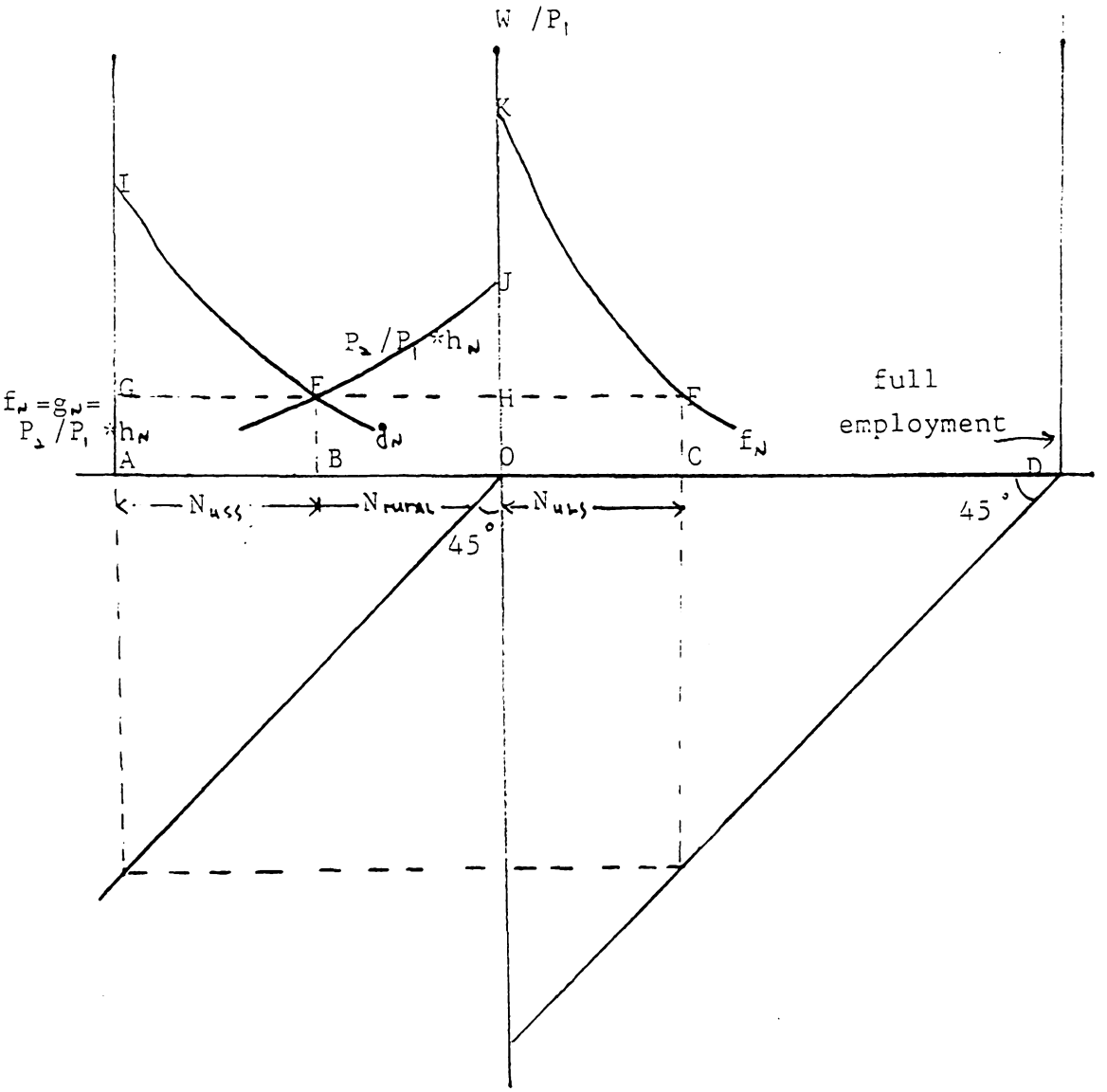
(Note; P_1 :manufactured product price, P_2 :Agricultural product price, X_1 : output by ULS sector, X_2 : output by USS sector, X_3 : output produced by rural sector, N_i : labor for i th sector (i=1, 2, 3), K_i: capital for i th sector (i =1,2,3), W_i : nominal wage for i th sector (i=1, 2,3) R_i : rent for i th sector (i=1 ,2, 3) , f_N : MPL for ULS sector, g_N : MPL for USS sector, h_N : MPL for rural sector, f_K: MPK for ULS sector, g_K : MPK for USS sector, h_K:MPK for rural sector)

3. Geometric Framework

Figure 4.1 shows a graphic drawing of the labor market equilibrium for a three sector model. The horizontal line AD shows the movement of the labor force

Figure 4.1

Labor Market Equilibrium in Korean Three Sectors
(Urban large, Urban small, Rural Sector)



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between the three sectors. The vertical line, $\overline{KO}$, shows the real wage in terms of manufactured product price, which is W/P_1. The curve, KF, shows the wage line of the ULS sector, which is f_N . The curve, $\overset{\smile}{IE}$, shows the wage line of the USS sector , which is g_N. The curve, $\overset{\smile}{JE}$, shows the wage line of the rural sector, which is $P_2 /P_1 *h_N$.

The equilibrium points of the labor market are E and F. The employment of the ULS sector is $\overline{OC}$, the employment of the USS sector is $\overline{AB}$, and the employment of the rural sector is $\overline{OB}$. The equilibrium real wage is $\overline{OH} = \overline{AG}$. Total labor endowment becomes $\overline{OD}$ in the graph, because the size of $\overline{OA}$ is assumed to be equal to $\overline{CD}$ technically.

4. Rationale of the Three Sector Model in the Korean Case

In the model,the urban sector is subdivided into the ULS and USS sectors. Because of data constraints,the urban sector is assumed to cover only the manufacturing industry, excluding mining, the service sector etc. According to Ho(1980), small scale establishments are defined as those employing 5-99 workers.

In Korean manufacturing industries, both the large and small scale establishments are concentrated around urban areas, such as Seoul, and Pusan. In 1984, 71% of Korean manufacturing industries were located in urban

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areas, establishing that the large and small scale sectors are urban based.

Because LSEs and SSEs are found together in almost every class of manufacturing industry, it is assumed that LSEs and SSEs produce homogeneous goods; further, the output price of both sectors is assumed to be equal. Although this assumption tends to oversimplify the reality of heterogeneous products , it still gives a basic intuition about the character of both sectors, under the constraint of the available empirical data about output prices. Therefore, the two sectors are assumed to be different in terms of their production techniques, rather than their outputs. Table 4.12 shows that the LSE tends to choose more capital-intensive production methods than the SSE, because of the fragmented capital market.

Also, capital is assumed to be specific to each sector. For their capital funding, SSEs tend to rely on their own savings, financial help from relatives or friends, and the informal credit market. In 1975 a survey of medium and small industries (those with 5-49 workers) revealed that ,for their fixed capital outlay, 32% were funded by financial institutions, 3% by private, and 65% were self-financed (presumably from their own savings and that of friends and relatives). Also in 1973 a survey of small and petty business showed that about 75% of the required working capital of small manufacturing

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enterprises was self-financed (Ho 1980). On the other hand, LSEs are financed by the institutional (formal) credit market. The rural sector tends to turn to private lenders for its capital requirements. The detachment of agriculture from organized finance seems to be notable in Korea. As an example, two-third of the farm household debt was held by individuals, mostly other farmers,rather than by financial institutions in the early 1970s(Kuznets 1977). This fragmented capital market affects the production method in each sector. Therefore, the capital becomes specific and not mobile between sectors.

During the period 1966-1984, Korea experienced a very low unemployment rate because of fast economic growth. So full employment is assumed in the model,based on Table 4.1.a.

(Table 4.1.a) Unemployment rate in Korea(%)

1966	1968	1970	1972	1974	1976	1978	1980	1982	1984
7.1	5.1	4.5	4.5	4.1	3.9	3.2	5.2	4.4	3.8

(Source; Statistical Handbook,Economic Planning Board, Republic of Korea, various issues)

The above evidences indicates that the three sector model fits the Korean case.

C. The Main Character of Korean Industrial Policy during 1966-1984

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In the last two decades Korea has undergone a rapid transition from a poor ag-oriented economy to a "New Industrializing Country" status. With an export-oriented strategy, economies of scale gave LSEs some advantages in competing in the world market. The growth of LSEs at the expense of SSEs was encouraged through various industrial policies, such as the trade regime, the interest rate,and taxation. This policy basically reduced the relative cost of capital for LSEs.

(Table 4.1.b) The percentage differences in LSEs' capital costs relative to SSEs' owing to :

Year	Trade regime	Interest rate	Taxes	Total
1973	5	-35	+10	-30

(Source; Liedholm,Carl, MSU IDP working paper No.27,1986,pp 31)

From the Table 4.1.b in 1973, the capital cost of LSEs is 30% cheaper than that of SSEs. Clearly, the Korean Government favored LSEs in the allocation of credit or capital. In order to transform the industrial structure from light industries to heavy industries, the government provided disproportional financial assistance to a few heavy, capital intensive, large scale industries. Based on this information, we study the effect of a capital inflow favoring the ULS sector in the three sector model. Through a comparative static analysis, we

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get a theoretical prediction about the Korean large scale-oriented industrial policy, and then appraise this prediction about change in the industrial structure against a time series data for the period 1966-1984.

D. A Comparative Static Analysis for Capital Inflow into the ULS Sector

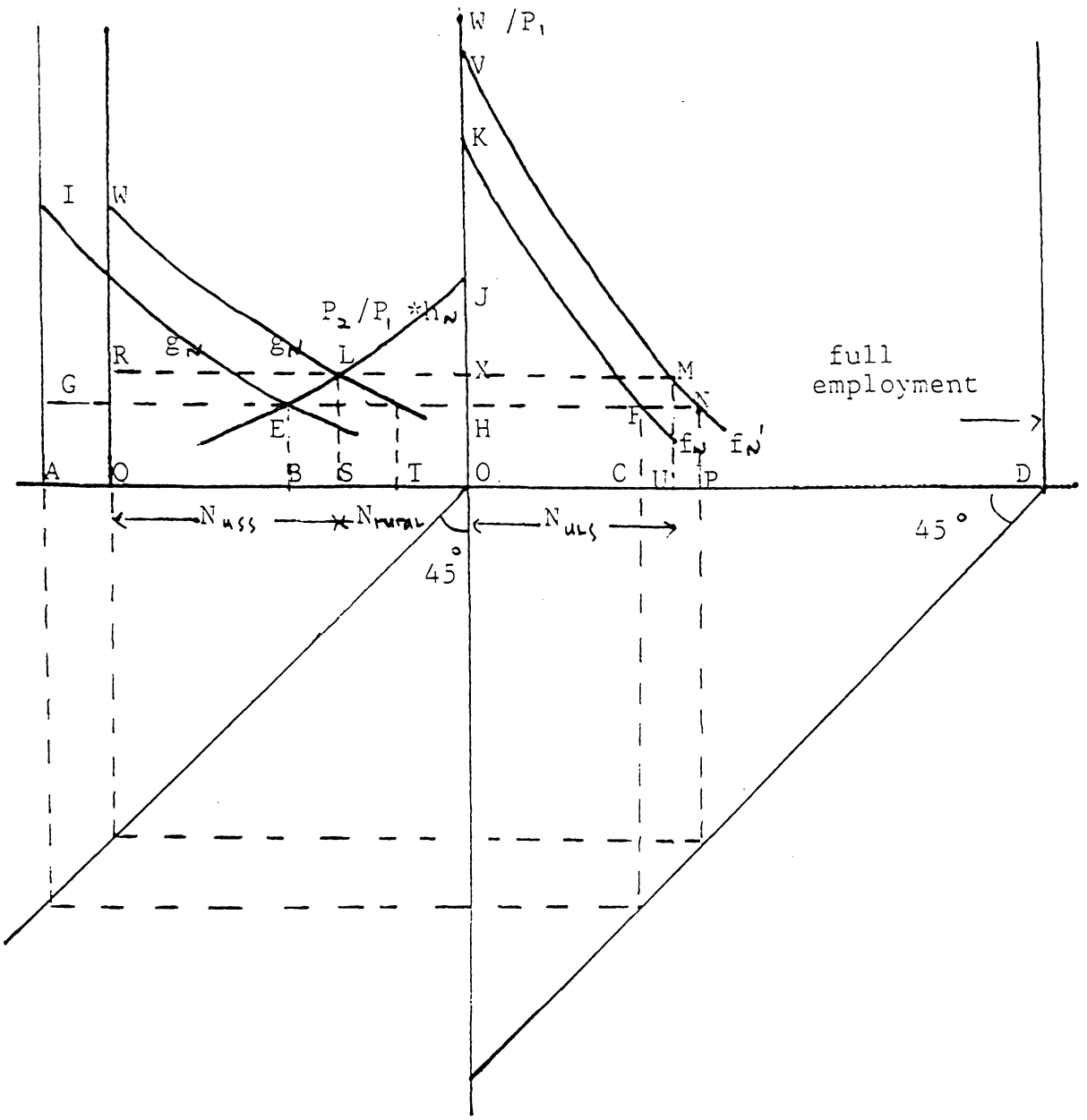
I assume new capital is injected specifically into the ULS sector. We would expect that this would increase MPL for the ULS sector. At the given real wage , the ULS sector can employ more labor, and ,eventually, will absorb labor from the rural and the USS sectors. This sudden increased labor demand will push up the real wage.

Geometrically, in Figure 4.2 the original equilibrium for the labor market is E and F. After a capital inflow into the ULS sector, the wage line shifts to the right from $\overset{\smile}{KF}$ into $\overset{\smile}{VN}$ because of increased MPL in this sector.

At the original real wage level, the ULS sector can employ more labor ($\overline{CP}$). Then the labor endowment for the rural and the USS sectors shrinks from $\overline{OA}$ to $\overline{OQ}$. This reduction in labor ($\overline{AQ}$) is equal to the possible increase in labor in the ULS sector ($\overline{CP}$) ,as shown by the geometric technique. With a smaller labor force, the wage line for the USS sector shifts to the right from $\overset{\smile}{IE}$ to $\overset{\smile}{WL}$. Finally a new equilibrium point is established; the ULS sector

Figure 4.2

Comparative Static Process with Capital Shock in Urban Large Scale Sector



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employs $\overline{OU}$,the USS sector employs $\overline{SQ}$ and the rural sector employs $\overline{OS}$. The new real wage is $\overline{OX}$. Summarizing the results of the new equilibrium,

1. ULS sector

employment : $\overline{OU}$, which is bigger than the previous $\overline{OC}$. output: $\square$ OVMU, which is bigger than the previous $\square$OKFC. wage : $\square$ OXMU, which is bigger than the previous $\square$OHFC.

2. USS sector

employment : $\overline{QS}$, which is smaller than the previous $\overline{AB}$ output: $\square$ QWLS, which is smaller than the previous $\square$ AIEB. wage : $\square$ QRLS, (previous $\square$ AGEB)

3. Rural sector

employment : $\overline{OS}$, which is smaller than the previous $\overline{OB}$. output: $\square$ OJLS, which is smaller than the previous $\square$ BOJE. wage : $\square$ SOXL (previous $\square$ BOHE)

The results from comparative static analysis show that a capital injection into the ULS sector will increase employment in this sector, but reduce employment in the rural and USS sectors, and the real wage will go up.

Although this comparative static analysis considers only a net increase of capital in the ULS sector, it is true that during the past industrialization process the USS sector did invest , only less than the ULS sector; but the assumption about a capital inflow into only the ULS sector in the model is convenient to simplify the

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E. A Time Series Analysis of the Korean Industrial Structure and Change over 1966-1984

1. The Establishment, and Employment in the Large vs. the Small Scale Sector

Table 4.1 shows that new enterprises in the ULS and the USS sector keep appearing, more so, in the former. In 1966, the LSEs covered 4 % of the total number of manufacturing establishments; but in 1984 the figure went up to 10%. On the other hand the number of SSEs hit the bottom with 87% in 1978 ,but ,since then, the number has shown some improvement. In our comparative static analysis, (with a capital inflow in the ULS sector), the employment in the ULS sector is supposed to improve, but the employment in the USS and rural sectors to decline.

Table 4.2 shows the employment change in the three sectors. As predicted, the ULS sector employment level of 283,614 workers,in 1966, rose to 1,541,767 workers in 1984. Contrary to the prediction, employment in the USS sector increased from 283,051 workers in 1966 to 801,826 in 1984.

But the rural population showed a continuous decline from 15,780,706 persons in 1966 to 9,014,745 persons in 1984. This shows that there was migration from the rural

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Table 4.1

Numbers of Establishments in Korean Manufacturing

Year	Total	Small Est. (5-99workers)	Composition (%)	Large Est. (100+workers)	Composition (%)
1966	22,718	21,887	(96)	831	(4)
1967	24,833	23,916	(96)	917	(4)
1968	24,109	23,039	(95)	1,070	(5)
1969	25,111	23,825	(94)	1,286	(6)
1970	24,114	22,813	(94)	1,301	(6)
1971	23,412	22,033	(94)	1,379	(6)
1972	23,729	22,141	(93)	1,588	(7)
1973	23,293	21,392	(91)	1,901	(9)
1974	22,632	20,471	(90)	2,161	(10)
1975	22,787	20,290	(89)	2,497	(11)
1976	24,957	21,938	(87)	3,019	(13)
1977	26,726	23,259	(87)	3,467	(13)
1978	29,863	26,145	(87)	3,718	(13)
1979	31,804	28,143	(88)	3,661	(12)
1980	30,823	27,294	(88)	3,529	(12)
1981	33,431	29,827	(89)	3,604	(11)
1982	36,799	33,203	(90)	3,596	(10)
1983	39,243	35,463	(90)	3,780	(10)
1984	41,549	37,600	(90)	3,949	(10)

Source: 'The Report on Mining and Manufacturing Survey 1966-1984' by Economic Planning Board, The Republic of Korea.

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Table 4.2

Korean Employment Survey

Year	Numbers of Workers in Manufacturing				Agriculture Population
	Small Est. (5-99workers)		Large Est. (100+workers)		
1966	283,051	(49%)	283,614	(51%)	15,780,706
1967	314,925	(48%)	333,886	(52%)	16,078,086
1968	331,300	(44%)	417,007	(56%)	15,907,664
1969	339,424	(40%)	489,620	(60%)	15,588,012
1970	335,893	(39%)	525,148	(61%)	14,421,730
1971	304,422	(35%)	543,772	(65%)	14,711,828
1972	333,433	(34%)	639,982	(66%)	14,676,944
1973	334,020	(28%)	823,809	(72%)	14,644,566
1974	344,790	(26%)	953,594	(74%)	13,459,195
1975	371,259	(26%)	1,048,885	(74%)	13,244,021
1976	424,078	(24%)	1,293,230	(76%)	12,785,456
1977	479,563	(24%)	1,439,368	(76%)	12,308,834
1978	548,928	(25%)	1,567,935	(75%)	11,527,459
1979	579,966	(27%)	1,536,842	(73%)	10,883,422
1980	577,265	(28%)	1,437,486	(72%)	10,826,748
1981	609,428	(29%)	1,434,841	(71%)	9,998,651
1982	686,741	(32%)	1,412,046	(68%)	9,688,222
1983	750,627	(33%)	1,464,606	(67%)	9,474,887
1984	801,826	(34%)	1,541,767	(66%)	9,014,745

Note: (%) shows a composition of workers in small and large establishments of manufacturing.

Sources: 'The Report on Mining and Manufacturing Survey' various issues by Economic Planning Board, The Republic of Korea.
'Economic Statistics Yearbook' various issues by The Bank of Korea.

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to the urban sector. Because of strong investment in the manufacturing sector during industrialization, the urban sector played an important role in absorbing labor from the agricultural sector; the increased employment in the USS sector implied that the investment activities in the USS sector, though small, continued to absorb labor.

Investment activities in the USS sector could divert labor from the rural as well as ULS sector, in the same way as a capital inflow in the ULS sector diverts labor from the rural areas and the USS sector. But because capital allocation clearly favored the LSE against the SSE, employment in the USS sector grew at a slower pace than employment in the ULS sector. The share of employment of the LSEs in the urban manufacturing sector improved steadily. In 1966 the share of employment in LSEs was 51%, and in 1984 it was 66%; it hit a peak with 76% in 1976 and 1977.

Finally,the predictions about employment mobility in the three sector model proved to be relevant, excepting in the ULS sector. The exception also could be attributed to the simplified assumption about capital inflow in the ULS sector only, rather than in both the ULS and USS sectors with different intensities. Other factors (e.g., larger labor force caused by a baby boom) must be considered (in addition to migration from the rural sector) in explaining the expanded employment in both sectors.

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2. Remuneration, and the Average Nominal Wage in the LSE vs. the SSE, and Agricultural Household Incomes

Table 4.3 shows that the remuneration of the LSEs and the SSEs continued to rise over this period. The remuneration share of the LSE in total manufacturing remuneration increased, relative to that of the SSE. The remuneration share of LSEs in 1966 was 60%, and this reached a peak in 1976 at 81 %. In 1984 it was still high, at 72%.

In order to look at the average wage per worker in each sector, we need to divide the total remuneration by the number of workers. Table 4.4 shows the average wage per worker in the LSEs and the SSEs. The average wage level of the LSEs and the SSEs rose continuously. In 1966, the wage in the SSE was 50,000 won per worker, reaching 2,260,000 won/worker in 1984. In LSE, also, the wage rose from 70,000 won/worker in 1966 to 3,030,000 won/worker in 1984. But the wage differential between the LSE and the SSE continued.

From the Table 4.5 we can see that the farm household income rose dramatically over time. In 1966 the farm household income was 130,176 won, increasing to 5,549,132 won in 1984. Because of migration from agricultural households, the average population of an ag-household declined from 6.21 in 1966 to 4.57 persons in

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Table 4.3

Employee's Nominal Remuneration
(Unit: Million Won)

Year	Mfg.	Small Est. (5-99workers)	composition (%)	Large Est. (100+workers)	composition (%)
1966	37,821	15,361	(40)	22,460	(60)
1967	53,422	21,172	(39)	32,250	(61)
1968	77,057	26,493	(34)	50,564	(66)
1969	106,791	33,796	(31)	72,995	(69)
1970	137,798	39,236	(28)	98,562	(72)
1971	161,544	42,756	(26)	118,788	(74)
1972	211,453	54,676	(25)	156,777	(75)
1973	310,587	71,356	(22)	239,231	(78)
1974	451,269	93,703	(20)	357,566	(80)
1975	651,614	133,330	(20)	518,284	(80)
1976	1,009,091	195,618	(19)	813,473	(81)
1977	1,460,575	295,671	(20)	1,164,904	(80)
1978	2,221,948	477,411	(21)	1,744,537	(79)
1979	2,922,064	690,260	(23)	2,231,804	(77)
1980	3,471,631	835,971	(24)	2,635,660	(76)
1981	4,133,252	1,020,316	(24)	3,112,936	(76)
1982	4,753,421	1,269,540	(26)	3,483,881	(74)
1983	5,499,607	1,509,448	(27)	3,990,159	(73)
1984	6,494,925	1,818,995	(28)	4,675,930	(72)

Source: 'The Report on Mining and Manufacturing Survey 1966-1984 ' by Economic Planning Board, The Republic of Korea.

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Table 4.4

Nominal Average Wage per Worker(Unit:Won/Worker)

Year	Mfg.	Small Est. (5-99 workers)	Large Est. (100+workers)
1966	60,000	50,000	70,000
1967	80,000	60,000	90,000
1968	100,000	70,000	120,000
1969	120,000	90,000	140,000
1970	160,000	110,000	180,000
1971	190,000	140,000	210,000
1972	210,000	160,000	240,000
1973	260,000	210,000	290,000
1974	340,000	270,000	370,000
1975	450,000	350,000	490,000
1976	580,000	460,000	620,000
1977	760,000	610,000	800,000
1978	1,040,000	860,000	1,110,000
1979	1,380,000	1,190,000	1,450,000
1980	1,720,000	1,440,000	1,830,000
1981	2,020,000	1,670,000	2,160,000
1982	2,260,000	1,840,000	2,460,000
1983	2,480,000	2,010,000	2,720,000
1984	2,770,000	2,260,000	3,030,000

Source: 'The Report on Mining and Manufacturing Survey 1966-1984' by Economic Planning Board, The Republic of Korea.

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Table 4.5

Major Indicators of Farm Household(average per household)

(Nominal Value) (Unit: Won)

Year	Population per household	Farm Household income	Agricultural income	Non-agricultural income
1966	6.21	130,176	101,430 (77%)	28,746 (23%)
1967	6.22	149,470	116,359 (77%)	33,111 (23%)
1968	6.17	178,959	136,936 (76%)	42,023 (24%)
1969	6.12	217,874	167,128 (76%)	50,746 (24%)
1970	5.81	255,804	194,037 (75%)	61,767 (25%)
1971	5.93	356,382	291,909 (81%)	64,473 (19%)
1972	5.99	429,394	353,381 (82%)	76,013 (18%)
1973	5.98	480,711	390,320 (81%)	90,391 (19%)
1974	5.65	674,451	541,902 (80%)	132,549 (20%)
1975	5.57	872,933	714,838 (81%)	158,095 (19%)
1976	5.47	1,156,254	921,193 (79%)	235,061 (21%)
1977	5.34	1,432,809	1,036,136 (72%)	396,673 (28%)
1978	5.18	1,884,194	1,355,668 (71%)	528,526 (29%)
1979	5.03	2,227,483	1,531,275 (68%)	696,208 (32%)
1980	5.02	2,693,110	1,754,816 (65%)	938,294 (35%)
1981	4.93	3,687,856	2,476,463 (67%)	1,211,393 (33%)
1982	4.85	4,465,175	3,031,358 (67%)	1,433,817 (33%)
1983	4.74	5,128,244	3,330,961 (64%)	1,797,283 (36%)
1984	4.57	5,549,132	3,699,318 (66%)	1,849,814 (34%)

Note: () means a composition of farm household income.

Source: 'Economic Statistics Yearbook' various issues, by The Bank of Korea.

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1984. The share of non-farming income in the total farm household income continued to rise. In 1966 the share of non-farming income was 23 %, reaching 34 % in 1984.

3. Real Wage in the Three Sectors

So far the wage or income has been reviewed in nominal value terms, not real value. The real wage in the model is defined as a nominal wage divided by the manufactured product price which is W/P_1. In order to see the real wage or real income for each sector, first we need to study the price index.

Table 4.6 shows the wholesale price index, for food vs. non-food prices with 1980 as the base year. As a proxy, the food price is assumed to be an Ag-product price and the non-food price is used as a manufactured product price in the model. From the Table 4.6 we can see that the terms of trade of the Ag-product improved over time. In 1966 the terms of trade of an Ag-product was .65, increasing to 1.00 in 1984. The disparity between the Ag-product price and the manufactured product price narrowed. This improvement in the terms of trade had a positive effect on production in the Ag-sector. But this did not prevent migration from the rural sector to the urban areas.

Table 4.7 shows that the real wages of the ULS and the USS sectors showed a continuous improvement. The real

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Table 4.6

Wholesale Price Indexes

(Price Index of base year 1980:100)

Year	Food(A) : P_2	Non-food(B) : P_1	A/B
1966	10.4	15.9	.65
1967	11.3	16.8	.67
1968	12.7	17.8	.71
1969	14.2	18.6	.76
1970	15.9	20.1	.79
1971	18.3	21.2	.86
1972	21.9	23.6	.92
1973	22.9	25.6	.89
1974	30.6	37.4	.81
1975	41.6	45.6	.91
1976	49.0	50.1	.97
1977	56.6	53.3	1.06
1978	70.4	56.4	1.24
1979	78.3	69.3	1.12
1980	100.0	100.0	1.00
1981	125.2	118.8	1.05
1982	126.0	126.1	.99
1983	127.6	125.8	1.01
1984	128.0	126.9	1.00

Source: 'Economic Statistics Yearbook', various issues by The Bank of Korea.

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Table 4.7

Real Wage per Worker based on Non-food Price
(Unit: Won/Worker)

Year	Mfg.	Small Est. (5-99workers)	Large Est. (100+workers)
1966	370,000	310,000	440,000
1967	470,000	350,000	530,000
1968	560,000	390,000	670,000
1969	640,000	480,000	750,000
1970	790,000	540,000	890,000
1971	890,000	660,000	990,000
1972	880,000	670,000	1,010,000
1973	1,010,000	820,000	1,130,000
1974	900,000	720,000	980,000
1975	980,000	760,000	1,070,000
1976	1,150,000	910,000	1,230,000
1977	1,420,000	1,140,000	1,500,000
1978	1,840,000	1,520,000	1,960,000
1979	1,990,000	1,710,000	2,090,000
1980	1,720,000	1,440,000	1,830,000
1981	1,700,000	1,400,000	1,810,000
1982	1,790,000	1,450,000	1,950,000
1983	1,970,000	1,590,000	2,150,000
1984	2,180,000	1,780,000	2,380,000

Note: The real wage is calculated by (average nominal wage/non-food price).

Source: 'The Report on Mining and Manufacturing Survey 1966-1984' by Economic Planning Board, The Republic of Korea.
'Economic Statistics Yearbook' various issues.

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wage of LSEs improved from 440,000 won in 1966 to 2,380,000 won in 1984. For the SSEs it improved from 310,000 won in 1966 to 1,780,000 won in 1984. The real wage gap between the LSE and the SSE still persisted. In the model, we assumed homogeneous labor but ,in fact, the difference in productivity is a factor affecting the real wage gap between the LSE and the SSE.

Table 4.8 shows the Ag-household income, per capita, and real Ag -household income, per capita, based on the non-food price index. The rural income, per capita, rose dramatically from 20,000 won in 1966 to 1,210,000 won in 1984,because the migration pushed up the Ag wage and schemes like the 'New Village Movement' improved ag-productivity and non-farming activity.

In 1966, the real ag household income per capita was 120,000 won, increasing to 950,000 won in 1984. When we compare the real wage of the urban area and the real ag income, per capita, the gap turns out to be very large. But the comparison has its shortcomings, as the ag population in ag households includes non-active dependent persons in the calculation of its average per capita income, whereas the real wage in urban area counts only the active workers.

Table 4.9 shows a more reasonable comparison between incomes in the urban and rural areas. Clearly a gap between the two sectors' incomes exists. In 1984 the rural

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Table 4.8

Agricultural Income per Capita and Real Agricultural Income per Capita based on Non-food Price

(Unit: Won/Person)

Year	Ag. Income per capita(A)	(A)/Non-food Price
1966	20,000	120,000
1967	20,000	110,000
1968	20,000	110,000
1969	30,000	160,000
1970	40,000	190,000
1971	60,000	280,000
1972	70,000	290,000
1973	80,000	310,000
1974	110,000	290,000
1975	150,000	320,000
1976	210,000	410,000
1977	260,000	480,000
1978	360,000	630,000
1979	440,000	630,000
1980	530,000	530,000
1981	740,000	620,000
1982	920,000	720,000
1983	1,080,000	850,000
1984	1,210,000	950,000

Source: 'Economic Statistics Yearbook' , various issues by the Bank of Korea.

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Table 4.9

Comparison of Rural and Urban Income
(Income; 1,000won, Ratio; percentage)

	1965	1970	1976	1980
Rural household Income(1)	112	256	1,156	2,693
Urban household Income(2)	112.6	381	1,152	3,205
Rural Income per Capita(3)	17.8	43.2	208.2	536
Urban Income per Capita(4)	20.3	71.4	228.1	683
Parity Ratio(1)/(2)	99.6	67.2	100.3	84
Parity Ratio(3)/(4)	87.7	60.5	91.5	78

Source: Kwack, Sung Yeung., 1986, 'The Economic Development of the Republic of Korea,1965-1981' in " Models of Development; Comparative Study of Economic Growth in South Korea and Taiwan" edited by Lawrence J. Lau.

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per capita income was only 78% of the urban per capita income. This disparity of income between the urban and rural areas has caused continuous migration from rural areas to urban area. Over time the gap did not diminish much. In 1966, rural per capita income was 87.7 % of the urban per capita income. In dynamic time series data, the real wage gap between urban and rural areas exists, because of a continuous expansion in the urban areas unlike in the rural areas; this differs from the comparative static predictions of the model with full employment and perfect competition.

4. Value Added, Rent and Capital Intensity of LSE and SSE

From Table 4.10 we can see that the value added by the LSEs and the SSEs in the manufacturing sector continued to rise during the 1966-1984 period. But the degree of expansion of the LSEs and the SSEs was different. Over time the LSEs expanded faster than the SSEs. In 1966 the share of the value added of the LSE was 67%, rising to 82 % in 1984. Therefore it is evident that the LSEs became a dominant force in industry, while the output growth of SSEs was slow.

Table 4.11 shows that the rent of the LSE and the SSE improved steadily. Over time the rent of the former grew faster than that of the latter. In 1966 the rent of

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Table 4.10

Value Added Survey in Korean Manufacturing(Million Won)

Year	Mfg.	Small Est. (5-99workers)	(%)	Large Est. (100+workers)	(%)
1966	156,174	52,258	(33)	103,916	(67)
1967	207,219	64,496	(31)	142,723	(69)
1968	301,445	83,761	(27)	217,684	(73)
1969	426,041	93,841	(22)	332,200	(78)
1970	549,793	113,823	(20)	435,970	(80)
1971	690,534	136,071	(19)	554,463	(81)
1972	899,407	169,107	(18)	730,300	(82)
1973	1,380,000	233,598	(16)	1,146,415	(84)
1974	1,867,176	307,132	(16)	1,560,044	(84)
1975	2,828,148	430,483	(15)	2,397,665	(85)
1976	4,075,055	586,398	(14)	3,488,657	(86)
1977	5,596,716	886,024	(15)	4,710,692	(85)
1978	7,960,218	1,390,504	(17)	6,569,714	(83)
1979	9,207,982	1,668,325	(18)	7,539,657	(82)
1980	11,856,589	2,012,491	(16)	9,844,098	(84)
1981	15,412,773	2,657,383	(17)	12,755,390	(83)
1982	17,305,636	3,117,232	(18)	14,188,404	(82)
1983	20,911,446	3,953,435	(18)	16,958,011	(82)
1984	24,654,407	4,651,488	(18)	20,002,919	(82)

Note: (%) shows a composition of value added in small and large establishments of Korean manufacturing.

Source: 'The Report on Mining and Manufacturing Survey, 1966-1984' by Economic Planning Board, The Republic of Korea.

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Table 4.11

Rent in Korean Manufacturing (Value in million Won)

Year	Mfg.	Small Est. (5-99workers)	(%)	Large Est. (100+workers)	(%)
1966	118,353	36,897	(31)	81,456	(69)
1967	153,797	43,324	(28)	110,473	(72)
1968	224,388	57,268	(37)	167,120	(63)
1969	319,250	60,045	(26)	259,205	(74)
1970	411,995	74,587	(18)	337,408	(82)
1971	528,990	93,315	(17)	435,675	(83)
1972	687,954	114,431	(16)	573,523	(84)
1973	1,069,426	162,242	(15)	907,184	(85)
1974	1,415,907	213,429	(15)	1,202,478	(85)
1975	2,176,534	297,153	(13)	1,879,381	(87)
1976	3,065,964	390,780	(12)	2,675,184	(88)
1977	4,136,141	590,353	(14)	3,545,788	(86)
1978	5,738,270	913,093	(15)	4,825,177	(85)
1979	6,285,918	978,065	(15)	5,307,853	(85)
1980	8,384,958	1,176,520	(14)	7,208,438	(86)
1981	11,279,521	1,637,067	(14)	9,642,454	(86)
1982	12,552,215	1,847,692	(14)	10,704,523	(86)
1983	15,411,839	2,443,987	(15)	12,967,852	(85)
1984	18,159,482	2,832,493	(15)	15,326,989	(85)

Note: Rent is calculated by 'Value Added - Wage Remuneration'
(%) shows a composition of rent in small and large establishments.

Source: 'The Report on Mining and Manufacturing Survey, 1966-1984' by Economic Planning Board, The Republic of Korea.

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the LSE was 69%, increasing to 85% in 1984.

Table 4.12 shows that the capital intensity of both the LSE and the SSE has been increasing. The capital intensity is calculated by the rent/labor ratio. In 1966 the capital intensity of the LSE and the SSE was 280,000 and 130,000 won/worker respectively, then in 1984 the capital intensity rose to 9,940,000 and 3,530,000 won/worker respectively. Of course, the LSE proved more capital intensive than the SSE. Clearly, the average rent per worker was not equalized between the two sectors, as the model predicted.

Table 4.13 shows that the real wage gap between the LSEs and the SSEs can be explained by the productivity differential between them. In 1984 the real wage level of SSEs was 74 % of the real wage of LSEs. At the same time the labor productivity of SSEs was 44 % of that of the LSEs. Because of this differential, the worker of the LSE should be paid a higher wage than his counterpart in the SSE.

This wider productivity gap, when compared with the wage gap, shows that the LSE' wage did not catch up with the productivity increase; labor productivity of the LSEs increased 35 times during 1966-1984, but their real wage increased only 5 times during the same period. Union activity was weak , and was suppressed by the government ; this resulted in poor labor management relation and poor

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Table 4.12

Capital Intensity Survey in Korean Manufacturing
(Rent/Labor ratio) (Won/worker)

Year	Mfg.	Small Est. (5-99workers)	Large Est. (100+workers)
1966	200,000	130,000	280,000
1967	230,000	130,000	330,000
1968	290,000	170,000	400,000
1969	380,000	170,000	520,000
1970	470,000	220,000	640,000
1971	620,000	300,000	800,000
1972	700,000	340,000	890,000
1973	920,000	480,000	1,100,000
1974	1,090,000	610,000	1,260,000
1975	1,530,000	800,000	1,790,000
1976	1,780,000	920,000	2,060,000
1977	2,150,000	1,230,000	2,460,000
1978	2,710,000	1,660,000	3,070,000
1979	2,960,000	1,680,000	3,450,000
1980	4,160,000	2,030,000	5,010,000
1981	5,510,000	2,680,000	6,720,000
1982	5,980,000	2,690,000	7,580,000
1983	6,950,000	3,250,000	8,850,000
1984	7,740,000	3,530,000	9,940,000

Source: 'The Report on Mining and Manufacturing Survey, 1966-1984' by Economic Planning Board, The Republic of Korea.

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Table 4.13

Labor Productivity and Real Wage in large Scale and Small Scale Establishments

Year	Labor Productivity (000V.A/worker)		Ratio of Labor Productivity (Small/Large firm)	Ratio of Real Wage (Small/Large firm)
	Small firm (A)	Large firm (B)	(A)/(B)	
1966	184	366	.50	.70
1967	204	427	.47	.66
1968	252	522	.48	.58
1969	276	678	.40	.64
1970	338	830	.40	.60
1971	446	1,019	.43	.66
1972	507	1,141	.44	.66
1973	699	1,391	.50	.72
1974	890	1,635	.54	.73
1975	1,159	2,285	.50	.71
1976	1,382	2,697	.51	.73
1977	1,847	3,272	.56	.76
1978	2,533	4,190	.60	.77
1979	2,876	4,905	.58	.81
1980	3,486	6,848	.50	.78
1981	4,360	8,889	.49	.77
1982	4,539	10,048	.45	.74
1983	5,266	11,578	.45	.73
1984	5,801	12,974	.44	.74

Source: 'The Report on Mining and Manufacturing Survey 1966-1984' by Economic Planning Board, The Republic of Korea.

bargaining power. Overall, labor did not benefit fully from the increases in productivity, and was involuntarily instrumental in the nation's economic growth.

F. Some Empirical Findings in the Case of Taiwan

Contrasted with the Korean policy which favored LSEs against SSEs, and manufacturing industry against the agricultural sector, the Taiwanese policy emphasized a progressive balance between the LSEs and the SSEs, and between manufacturing industry and the agricultural sector. This policy in Taiwan created the contrasting change in the industrial structure.

With the help of a more neutral policy between the LSEs and SSEs , the composition of Taiwan's SSEs has been stable. The SSEs with 1-99 workers in Taiwan employed 43 % of total manufacturing labor in 1966, while the number became stable at 43.97% in 1981(Table 7.2).

The migration from rural area to the urban sector in Taiwan was not so drastic as in Korea. Taiwan's population in farm households showed a slight decline from 5,806,298 persons in 1966 to 4,250,543 persons in 1984. Successful development in the rural sector in terms of higher ag-productivity and more non-farming activity slowed down the migration to the urban area.

As the model with capital inflow into the ULS sector predicted, the Korean real wage in manufacturing industry

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has been increasing a little faster than that in Taiwan. During 1965-1981, Korean real wage in manufacturing industry increased at 7.9 % , while in Taiwan it increased at 7.3 %(Table 7.1-1).

G. CONCLUSION

So far I have reviewed the theoretical three sector model based on the Korean time series data (1966-1984) on change in the industrial structure.

From the comparative static analysis with a capital inflow in the ULS sector, we predicted an increase in the employment in this sector, and empirically it was so. Employment in the rural areas was supposed to decline, and empirically this was so. Employment in the USS sector was also supposed to decline. But empirically it was not so, because contrary to the assumptions of the model, investment activities in the USS sector has increased the employment potential, despite a relatively lower capital-intensity than in the ULS sector.

The real wage in the three sectors was supposed to increase in the model. Empirically it was so. But, contrary to the prediction, the difference in the real wage between the three sectors persisted, because of the productivity differences and the different pace of expansion.

The most distinctive feature of this industrial

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change was that the ULS sector expanded faster than the USS sector, during 1966-1984; as a result, the position of the SSEs in the overall structure became worse. This fact proved that the capital allocation policy evidently favored the ULS sector. This capital market distortion was partly reflected in the decline of the USS sector.

Basically, the comparative static analysis ,through the three sector model, gives a sound intuitive explanation for the Korean time series data on industrial structural changes during 1966-1984.

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CHAPTER 5

SMALL SCALE ENTERPRISES IN KOREA

A. INTRODUCTION

The empirical study in Ch.4 indicated that during the last two decades (1966-84), the Korean industrial structure has been increasingly dominated by LSEs. In 1966, LSEs (100+ workers) employed 51% of the total labor force in the manufacturing sector and produced 67 % of the total value added; but in 1984, LSEs employed 66 % of the total labor force , and produced 82 % of the total value added; therefore, the Korean SSEs have been progressively losing ground. This does not necessarily mean that the SSEs were no longer important in the Korean industrial set-up; a further study of their current status within the overall industrial picture needs to be conducted.

I should begin with the methodology of research: the SSEs will be examined in terms of their employment or value added based on size (very small, small, large), industry (two digit), location (urban, rural) and a time series classification. I then examine their efficiency, or the growth change through a 'Survivor' criterion ,and finally their relative efficiency, through the

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B. Methodology of Research

In this chapter, the research on SSEs is based on the updating and extension of Ho's(1980) report. The term 'Small scale enterprise' is not a clear-cut concept. There are several ways of measuring the size of a firm; it may be measured by the number of its employees, the volume of output or sales, or the value of its assets. Depending on the definition used, the classification of the size of a firm can change, but would still be arbitrary. Due to the limitations of data availability, this chapter uses as a base-line, the number of employees; this seems to be the most practical definition for the purposes of international comparison.

For consistency, I adhered to Ho's cut-off point(100 workers) in this study; a firm with 100 workers or less, is defined as an SSE, and one with over 100 workers as an LSE. According to Ho, this cut-off point classifies enterprises into groups with significantly different characteristics.

The term 'Urban/rural area' is, again, an arbitrary one. There are several ways of defining a rural area. According to a residual approach by the UN, such an area covers less than twenty thousand inhabitants. The 'Standard Rural Area'(SRA) is defined as one with about

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150,000-200,000 inhabitants. I have followed Ho's definition of a rural area. The urban areas in Korea include Seoul, Pusan, Kyonggi-Do, and Kyongsangnam-Do; the remaining areas are defined as rural.

The prime sources of data for research are the 'Report on Mining and Manufacturing Survey 1979, 1984' published by the Economic Planning Board, The Republic of Korea.

C. The Status, Location, and Efficiency of Korean SSEs

1. The Share of Very Small Scale Enterprises(VSSEs) in Manufacturing

The study of SSEs tends to overlook very small scale activities, because of poor availability of relevant data. The VSSEs employ 1-4 workers, and sometimes are located in private households. The official census finds it difficult to maintain a record of these activities, as most small proprietors tend to keep poor written records(Liedholm 1986). According to various empirical studies, the role of very small scale activities tends to decline with a rise in the level of economic development(Staley & Morse 1965). The Korean data supports this belief.

Table 5.1 shows that the share of the VSSEs declined

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c) 'Report
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Table 5.1

The Relative Position of SSEs in Manufacturing Korea

	1975[a]		1984	
	in '000s workers	(%)	in '000s workers	(%)
1. Total Employment in Manufacturing	2,211	100	3,345[b]	100
2. Employment in Small Scale Establishment	371	17	801[c]	24
Est. with 5-49	247	11	524	16
Est. with 50-99	124	6	277	8
3. Employment in Large Scale Establishment (+ 100 workers)	1,049	47	1,542	46
4. Employment in Very Small Scale Est. (1 - 4 workers)	791	36	1,002	30

Sources:

a) 'Small scale enterprises in Korea and Taiwan' by Ho, 1980, World Bank Staff Working Paper, No.384, P5, Table 2.1.

b) 'Korean Statistical Handbook , 1984' PP 81 - 82 Economic Planning Board, The Republic of Korea.

c) 'Report on Mining and Manufacturing Survey, 1984' issued at April, 1986 by Economic Planning Board, The Republic of Korea.

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from 36 % ,in 1975, to 30 % of total manufacturing employment in 1984. On the other hand, the employment share of the SSEs(with 5-99 workers) expanded from 17 % in 1975 to 24 % in 1984, with the share of LSEs' in total employment remaining constant. This may imply that the VSSEs were transforming themselves into SSEs of a larger size; this change may have arisen due to the introduction and adoption of modern technology and the need for more labor as the VSSEs expanded.

2. Structural Characteristics of SSEs in the Manufacturing Industry

Table 5.2 shows employment increases by a subsector of the manufacturing industry. Employment in the textile industry increased by only 14 % between 1979 and 1984, (employment increase between 1968 and 1975 was 39.2 %), whereas both the chemicals and metal machinery industries continued to expand rapidly. From 1979 to 1984, the metal machinery industry, itself, accounted for half the employment growth in all the manufacturing industries. This table confirms that the overall industrial structure was being transformed from light(food processing and textiles) to heavy industry(chemicals and metal machinery).

In the early stages of their development, food and clothing are believed to be the main outputs of the SSEs

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Industry	Total Mfg. Employment (000)
Food,beverage Tobacco	
Textile,leath	
Wood,its proc	
Paper,its pro publishing	
Chemicals,pet coal, rubber	
Non-metallic minerals	
Basic metals	
Metal produc machinery	
Other Mfg.	
Total percen	

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Table 5.2

Manufacturing Employment and its Percentage Distribution by Industry : 1968-1975,1979-1984

Industry	1968	1975	Net Increase (1968-75)	1979	1984	Net Increase (1979-84)
Total Mfg. Employment (000)	748	1,420	672	2,117	2,344	227
Food,beverage Tobacco	12.7	10.6	8.0	8.7	8.2	3.0
Textile,leather	32.3	35.5	39.2	30.3	28.7	14.0
Wood,its product	5.8	3.8	1.7	3.5	2.8	-4.1
Paper,its product publishing	6.0	4.9	3.7	4.3	4.4	4.8
Chemicals,petroleum coal, rubber	11.7	11.1	10.5	12.1	12.5	15.9
Non-metallic minerals	6.8	4.3	1.5	4.7	4.6	3.0
Basic metals	3.8	3.3	2.8	4.2	4.2	4.2
Metal products machinery	15.7	19.4	23.6	28.1	30.2	49.6
Other Mfg.	5.2	6.9	8.9	3.5	4.0	9.4
Total percentage	100	100	100	100	100	100

Sources: For 1968,1975 data,'Small scale enterprises in Korea and Taiwan' by Ho. 1980, World Bank Staff Working Paper, No.384, P28, Table 3.2.

For 1979, 1984 data,'Report on Mining and Manufacturing Survey 1979, 1984' by Economic Planning Board, The Republic of Korea.

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in the LDCs. But this structure of SSEs changes with industrialization. Table 5.3 shows that SSEs are playing an important role in the Korean textile industry. In 1984 , SSEs with 5-49 and 50-99 workers in textile industries employed 26 % and 33 % of the total manufacturing employment, respectively. On the other hand, the food, beverage and tobacco industries are losing ground in their share of employment and production. Between 1973 and 1984, SSEs' employment in the 5-49 workers category in the food and related industries declined from 19 % to 9.7 % ,and in the 5-99 workers category from 11 % to 8.6 %.

As industrialization proceeds, SSEs are emerging in larger numbers in capital-intensive and heavy industries, such as chemicals, with a sizable share of 15.3 %(with 5-49 workers) and 17.4 %(with 50-99 workers) of the total small scale manufacturing value added in 1984. In the machinery industry between 1973 and 1984 , SSEs' employment (in those with 5-49 workers) increased from 19 % to 26.9% and (in those with 50-99 workers) from 21 % to 25.6% .

Tables 5.3 and 5.4 demonstrate the nature of this transformation. This trend suggests that the SSEs will play an important role in the capital-intensive and heavy industries, complementing or competing with LSEs.

3. Spatial Distribution of SSEs in Manufacturing

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3. Wood,wood

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Sources: a)

b)

Table 5.3

SSE's Employment distributed by Industry

Year : 1973 and 1984

Industry	Establishments with 5-49workers		Establishments with 50-99workers	
	1973[a]	1984[b]	1973	1984
Manufacturing(00)				
Percentage Distribution	100	100	100	100
1. Food,beverage,tobacco	19	9.7	11	8.6
2. Textile,wearing apparel leather product	26	25.7	32	33.3
3. Wood,wood product	7	5.7	2	2.1
4. Paper,its product publishing,printing	8	7.5	7	5.4
5. Products of chemical, petroleum,coal,rubber, plastic	8	10.8	10	10.8
6. Non-metallic mineral	7	5.7	6	4.8
7. Basic metals	2	3.1	4	3.4
8. Metal products,machinery and equipment	19	26.9	21	25.6
9. Other manufacturing	3	4.5	6	5.7
Total Employment in Manufacturing	256,578	524,881	97,442	276,945

Sources: a) 'Small scale enterprises in Korea and Taiwan' by Ho, 1980, World Bank Staff Working Paper, No. 384, P14.

b) 'Report on Mining and Manufacturing Survey, 1984' issued at April,1986 by Economic Planning Board, The Republic of Korea.

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Table 5.4

SSE's Value Added distributed by Industry
Year : 1973 and 1984

Industry	Establishments with 5-49workers		Establishments with 50-99workers	
	1973[a]	1984[b]	1973	1984
Manufacturing(00)				
Percentage Distribution	100	100	100	100
1. Food,beverage,tobacco	23	9.9	16	9.4
2. Textile,wearing apparel leather product	21	20.0	17	22.2
3. Wood,its product	8	5.0	2	1.9
4. Paper,its product publishing,printing	8	8.2	6	5.5
5. Products of chemical, petroleum,coal,rubber, plastic	13	15.3	17	17.4
6. Non-metallic mineral	5	5.4	21	9.9
7. Basic metals	3	4.6	3	4.5
8. Metal product,machinery and equipment	18	27.7	15	25.1
9. Other manufacturing	2	3.5	3	3.5
Total Value Added in Manufacturing	140,368[c]	2,704,159	93,233	1,947,329

Sources: a) 'Small scale enterprises in Korea and Taiwan' by Ho 1980, World Bank Staff Working Paper, No.384, P 14.

b) 'Report on Mining and Manufacturing Survey, 1984' issued at April,1986 by Economic Planning Board, The Republic of Korea.

c) Units : Million Won

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As urban areas provide a pool of skilled or unskilled labor, easy access to capital through the banking system, and a market for manufactured goods, manufacturing industries tend to be concentrated in and around urban areas in the LDCs.

At this stage, we need to define the term, 'urban area' in Korea. Unfortunately, in Korea, manufacturing data are available only for aggregated administrative divisions. Ho(1980) arranged data to demarcate the most important urban-industrial centers in his definition of an urban area; this includes the big cities of Seoul,Pusan, Inchon, and the provinces (Kyonggi-Do, and Kyongsangnam-Do) adjacent to these cities. Figure 5.1 shows the map of Korea, in which the locations of the urban areas are shown in detail. Technically the rest of the area is defined as 'rural' in our research.

Table 5.5-1 shows that manufacturers are concentrated in and around urban areas, 75 % of the total labor engaged in manufacturing was in the urban area in 1984; SSEs, also, are largely located in the urban area; urban SSEs employed 73 % of the total SSE labor force in 1984. In Table 5.5-2, manufacturers in the urban area produced 71 % of the total manufacturing value added in 1984; in the same year, SSEs in urban area produced 82% of the total SSEs' value added.

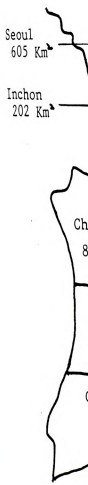
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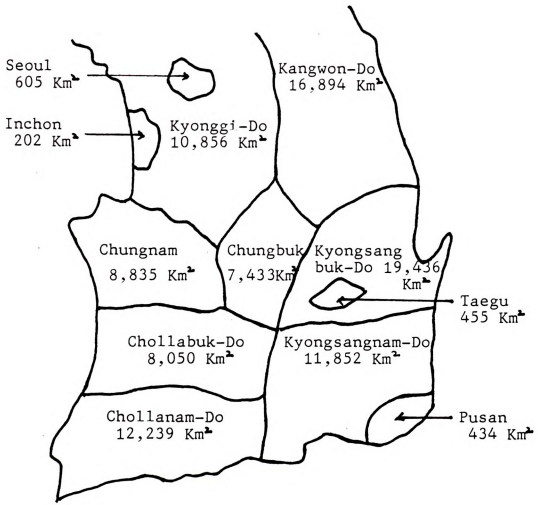
Figure 5.1

Area by Province (1984)

South Korea



Urban area: Seoul, Pusan, Inchon, Kyonggi-Do, Kyongsangnam-Do

Southwest: Chollabuk-Do, Chollanam-Do

Southeast: Pusan, Taegu, Kyongsangbuk-Do, Kyongsangnam-Do

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Table 5.5-1

Manufacturing Employment Distribution by Location of Establishment (Units: '000 workers)

Year	Total Mfg.	Urban[a]	Rural
1975	2,211[b]	1,541	670
(%)	(100)	(70)	(30)
1984	2,343	1,762	581
(%)	(100)	(75)	(25)
Small Establishment (5-99workers)	802	585	217
(%)	(100)	(73)	(27)

Year	Total Mfg.	South-west[c]	South-east[d]
1984	2,343	127	942
(%)	(100)	(5)	(40)
Small Establishment (5-99workers)	802	56	248
(%)	(100)	(7)	(31)

Note: a) Urban : Seoul, Pusan, Inchon, Kyonggi-Do, Kyongsangnam-Do
Rural : the rest of area

b) 1975 data includes very small(1-4workers) est. employment, but 1984 data exclude it.

c) South-west: Chollabuk-Do, Chollanam-Do

d) South-east; Pusan, Taegu, Kyongsangbuk-Do, Kyongsangnam-Do

Sources: For 1975 data,'Small Scale Enterprises in Korea and Taiwan' by Ho. 1980, World Bank Staff Paper No.384, PP 21.

For 1984 data,'Report on Mining and Manufacturing Survey 1984' Economic Planning Board, The Republic of Korea.

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Year	1984 (%)	Small Est. (5-99workers (%)	Year	1984 (%)	Small Est. (5-99workers (%)

Note: Urban
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Table 5.5-2

Manufacturing Value Added distributed by Location

Unit: Million Won

Year	Total Mfg.	Urban	Rural
1984	24,654,407	17,397,352	7,257,055
(%)	(100)	(71)	(29)
Small Est. (5-99workers)	4,279,773	3,529,928	749,845
(%)	(100)	(82)	(18)
Year	Total Mfg.	South-west	South-east
1984	24,654,407	1,802,355	9,925,532
(%)	(100)	(7)	(40)
Small Est. (5-99workers)	4,279,773	248,719	1,418,555
(%)	(100)	(6)	(33)

Note: Urban; Seoul,Pusan,Inchon,Kyonggi-Do,Kyongsangnam-Do
Rural ; The rest of area
South-west; Chollabuk-Do, Chollanam-Do
South-east; Pusan,Taegu,Kyongsangbuk-Do,
Kyongsangnam-Do

Source: 'Report on Mining and Manufacturing Survey 1984'
Economic Planning Board, The Republic of Korea.

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It appears that because of a possible linkage between LSEs and SSEs, their location is positively correlated in the urban area. The SSEs seem to rely on the urban market with its purchasing power, and an urban labor market with its skilled or semi-skilled labor pool.

When the Southwest (Chollabuk-Do,Chollanam-Do) region is compared to the southeast(Kyongsangnam-Do,Kyongsangbuk-Do) region, the regional differences in location of manufacture are distinct. In Table 5.5-1, the share of manufacturing employment , in 1984,in the Southwest is only 5 %, while that in the Southeast is 40 %. As Table 5.5-2 shows, the bulk of the value added in manufacturing by SSEs is from those located in the Southeast rather than the South-west.

The distinct differences in location can lead to regional inequity ,and agitations in those areas which see themselves as unfairly treated; but this situation might have been due to optimal locational and economic considerations which the concerned population may not understand.

4. Time-series Relative Position of the SSEs in Manufacturing Industry

Table 5.6 shows the dramatic change in the relative position of the SSEs within the overall manufacturing industry. During the last two decades, SSEs have been

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1958	1
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1975	
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Table 5.6

Distribution of Manufacturing Employment by Establishment Size in Percentage

Year	5-9	10-19	20-49	50-99	100-499	500+	Total
1958	17	16	21	13	21	12	100
1963	15	14	16	12	21	22	100
1975	4	5	8	9	30	44	100
1984	4	6	12	12	28	38	100

Sources:

For 1958, 1963, 1975, ' Small Scale Enterprises in Korea and Taiwan' by Ho, 1980, World Bank Staff Working Paper, No. 384, PP 27, Table 3.1. For 1984, 'Report on Mining and Manufacturing Survey 1984' issued at April, 1986 by Economic Planning Board, The Republic of Korea.

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sustaining a loss in the share of manufacturing employment. In 1958 , the employment share of SSEs(5-99 workers) was 67 % but, by 1984 , this dropped to only 34 %, although it reached a bottom of 26 % in 1975. This trend indicates that the SSEs became larger and that there are economies of scale.

5. Efficient Plant Size

The relative position of SSEs in a given industry depends on whether or not economies of scale are important. The minimum efficient size of a plant needs to be established on the available evidence about economies of scale in order to understand the dynamic change in SSEs. For this purpose I have applied the 'Survivor technique'. By definition, the Survivor technique calculates for two points in time the share of an industry's output(or the value of shipment) by the size of the establishment. Those groups which produce increases in their shares are presumed to be efficient.

Despite the convenience in calculation, this 'Survivor technique' has the following limits: first, the census bases its establishment data on the number of workers in each plant. If innovation is labor saving, all plants may appear to be shrinking faster than their true output levels are. But the actual survivor tests have been unable to discern coherent shift patterns in most

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industries(Shepherd 1979). Secondly, the efficient plant size , as determined by a survivor test , is not the same as the plant size corresponding to the lowest point on the long run average cost curve, either outside or inside the estimated range of optimal scale(Ho 1980, Shepherd 1979). Thirdly, because the test considers only the private cost and benefit, the Survivor test does not measure social efficiency. For social efficiency, we need to apply a 'Social Benefit and Cost analysis' (Chapter 6).

In conducting this 'Survivor technique', I selected four-digit breakdowns in Korean manufacturing, in 1979 and 1984. Then I identified those similar industries for which the Survivor technique is applicable. As a result, 72 industries were selected for two time periods between 1979 and 1984. Next, I compared each industry's shares by size categories of the value of shipment in 1979 and 1984. When a industry in a given size category shows a positive(+) value in Table 5.7-2, this is identified as the efficient size, but when it shows a negative(-) value, this is identified as the inefficient size. A size class , which is contiguous to an efficient size but registering no change, is identified as efficient. This occurred in the case of jewelery production.

Table 5.7-1 shows the number of industries according to efficient sizes during 1968-75 and 1979-84. As Table 5.7-1 shows, of the 72 industries, 14 are in the food

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Industry group(00)	
Food(31)	
1979-84	
(1968-75)	
Textile(32	
1979-84	
(1968-75)	
Wood(33,34	
1979-84	
(1968-75)	
Chemicals(	
1979-84	
(1968-75)	
Non-metals	
1979-84	
(1968-75)	
Basic meta	
1979-84	
(1968-75)	
Fabricated	
1979-84	
(1968-75)	
Other Mfg	
1979-84	
(1968-75)	
Total	
1979-84	
(1968-75)	

Sources:

Table 5.7-1

Efficient Plant Size according to 'Survivor Criterion': 1968-1975 and 1979-1984

Industry group(00)	# of Industry in group	# of Industry with efficient plants in size category				
		5-49	50-99	100-199	200-499	500+
Food(31)						
1979-84	14	5	10	9	10	2
(1968-75)	(11)	(2)	(4)	(6)	(6)	(3)
Textile(32)						
1979-84	11	8	9	6	4	4
(1968-75)	(15)	(2)	(3)	(8)	(11)	(11)
Wood(33,34)						
1979-84	8	4	5	4	5	2
(1968-75)	(8)	(1)	(2)	(4)	(6)	(4)
Chemicals(35)						
1979-84	9	8	5	6	5	3
(1968-75)	(5)	(1)	(1)	(3)	(3)	(2)
Non-metals(36)						
1979-84	5	3	4	2	1	2
(1968-75)	(7)	(0)	(3)	(4)	(3)	(3)
Basic metals(37)						
1979-84	2	1	1	1	1	2
(1968-75)	(1)	(0)	(0)	(0)	(0)	(1)
Fabricated metal(38)						
1979-84	19	10	7	7	7	13
(1968-75)	(12)	(1)	(3)	(7)	(8)	(5)
Other Mfg.(39)						
1979-84	4	3	3	2	1	3
(1968-75)	(4)	(0)	(1)	(2)	(2)	(3)
Total						
1979-84	72	42	43	37	34	31
(1968-75)	(63)	(7)	(17)	(34)	(39)	(32)

Sources: For 1968-75 data,'Small Scale Enterprises in Korea and Taiwan' by Ho.1980,World Bank Staff Working Paper, No384, Table 3.5. For 1979-84 data,'Report on Mining and Manufacturing Survey 1979,1984' by Economic Planning Board, The Republic of Korea.

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1984 Indus
Code Descr

Food(31)
3111 Land a
3112 Dairy
3113 Fruits
3114 Fish,c
3115 Vege.a
3116 Grain
3117 Bakery
3118 Sugar
3122 Food p
3123 Animal
3131 Distil
3132 Wine
3133 Malt l
3140 Tobacc

Textile(32)
3211 Silk&y
3214 Textil
3215 Knitti
3216 Carpet
3212 Weavi
3213 Bleach
3219 Texti
322 Wear,
3231 Tanne
3233 Leath
3240 Footw

Wood(33,34
3311 Sawmi
3312 Woode
3319 Wood&
3320 Furni
3411 Pulp,
3412 Cont.
3419 Pulp,
3423 Print

Chemicals
3521 Paint
3522 Drug
3523 Soap

Table 5.7-2

'Survivor' Estimates of Efficient Plant Size for Korean Manufacturing Industries; 1979-84

1984 Code	Industry Description	Changes in the Percentage Share of Value of Shipment by Size of Establishment;1979-84				
		5-49	50-99	100-199	200-499	500+
Food(31)						
3111	Land animal meat	+.3	+4.5	+7.0	-3.5	-8.2
3112	Dairy products	+2.3	+2.5	+ .1	+29.6	-34.6
3113	Fruits,vegetable	+7.3	-4.3	-10.4	+6.0	+1.5
3114	Fish,crustacea	+5.6	+2.9	+ .3	-6.2	-2.6
3115	Vege.animal oil	-9.9	-1.0	-8.0	+67.4	-48.6
3116	Grain mill	-11.6	+ .6	+5.1	+5.8	
3117	Bakery products	-2.0	+ .4	+2.7	+ .9	-2.1
3118	Sugar refinery	- .6	- .3		+16.5	-15.5
3122	Food prod.N.E.C.	-1.9	+5.6	+3.8	-1.5	-6.0
3123	Animal feeds	-2.5	+1.8	-2.5	+5.6	-2.3
3131	Distilling&etc.	+ .2	+4.8	+3.0	+2.4	-10.3
3132	Wine	-17.7	+1.0	+5.9	+10.8	
3133	Malt liquors				-36.1	+36.1
3140	Tobacco		+ .3	+ .2	+1.2	-1.6
Textile(32)						
3211	Silk&yarn spin	- .2	+2.5	- .9	- .6	- .8
3214	Textile,wearing	+6.7	+3.5	+4.4	-4.4	-10.3
3215	Knitting mills	+7.6	+2.0	-3.1	-6.8	+ .2
3216	Carpet & rugs	-15.0	-5.9	+20.8		
3212	Weaving textile	+2.7	+ .2	+ .6	+2.3	-5.8
3213	Bleaching,dye	+3.1	+1.1	-5.7	-4.9	+6.4
3219	Textiles N.E.C.	+16	+11	+13.1	+8.4	-48.6
322	Wear,exc.footwear	-1	+5.1	+6.7	+5.3	-16.2
3231	Tanneries&leather	+4.1	+14.3	- .6	+ .4	-18.3
3233	Leather	+16.5	+4.2	+1.9	-26.7	+4.0
3240	Footwear	+4.7	- .2	-6.3	- .4	+2.4
Wood(33,34)						
3311	Sawmill,plan	+21	+5.4	+3.7	+ .1	-30.1
3312	Wooden,cane	-4.3	+3.2	-23.5	+24.6	
3319	Wood&cork,N.E.C.	+18.4	-14.9	-3.5		
3320	Furniture&fix.	-7.7	+1.7	-2.7	-1.9	+10.7
3411	Pulp,paper	-11.2	+ .2	+1.2	+13.1	-12.3
3412	Cont. of paper	+7.2	+ .1	-2.1	-5.3	
3419	Pulp,paper,N.E.C	-6.7	-10.3	+8.6	+6.5	+1.9
3423	Print allied	+17.4	-2.6	+2.5	+2.3	-19.6
Chemicals(35)						
3521	Paint&lacquare	+ .4	-10.2	-7.2	+4.5	+12.5
3522	Drug&medicine	+1.4	+3.9	+2.2	+4.5	-12.1
3523	Soap&cleaning	+1.9	+1.4	+4.4	-1.4	-6.4

1984 Code	Indust Descri
3529	Chemica
3530	Petrol
3540	Misc.
3551	Tyre &
3559	Rubber
3560	Plasti
Non-metalli	
3610	Potter
3620	Glass
3691	Clay
3692	Cement
3699	Non-me minera
Basic Metal	
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3812	Fur. c
3813	Struc.
3821	Engine
3822	Ag. ma
3823	Metal
3824	Spec.m
3825	Offic
3829	Machi Elect
3831	Elect
3832	Sound
3833	Elect
3841	Shipb
3842	Railr
3843	Motor
3844	Mot.&
3849	Trans N.E.C
3852	Photo
3853	Watch
Other Manu	
3901	Jewel
3902	Music
3903	Sport
3909	Mfg.M

Sources:

Table 5.7-2(cont'd.)

1984 Code	Industry Description	Changes in the Percentage Share of Value of Shipment by Size of Establishment;1979-84				
		5-49	50-99	100-199	200-499	500+
3529	Chemical,N.E.C	+1	-1.7	-18.8	+24.5	-5
3530	Petroleum ref.	- .5	- .3	+ .5	-34.2	+34.6
3540	Misc. petroleum	+3.4	+7.3	+2.4	-3.6	-9.4
3551	Tyre & tube	+ .3	-1.3	- .4	+ .1	+1.2
3559	Rubber N.E.C.	+2.3	+1.2	+2.4	+2	-7.9
3560	Plastic N.E.C.	+10.7	+8.9	+6.9	-9	-17.5
Non-metallic Mineral(36)						
3610	Pottery&china	-1.3	-2.2	+3.7	-10.3	+10.1
3620	Glass	+1.2	+2	-7	-22.6	+26.3
3691	Clay	+4.5	+4.0	-7.8	+5	-5.9
3692	Cement,lime	-1.6	+ .8	+13.3	-2.0	-10.6
3699	Non-metallic mineral	+16.1	+14.3	-2.1	-12.6	-15.7
Basic Metal(37)						
371	Iron&steel	+ .5	+ .1	-2.2	+1.0	+ .6
372	Non-ferrous met.	-1.0	-1.6	+3.1	-12.4	+12
Fabricated Metal(38)						
3811	Cutley,tool	-3.4	+6.7	- .5	-4.2	+1.4
3812	Fur. of metal	-4.7	+4.7	+1.9	-1.8	
3813	Struc. metal	+ .2	-11.7	-2.6	-6.5	+20.5
3821	Engine&turbine	-7.0		-15.4	+12.4	+10.2
3822	Ag. machine	+ .8	+6.3	- .9	-8.1	+2.0
3823	Metal machinery	+25.4	+9.7	+8.2	+8.6	-51.8
3824	Spec.machin.	+6.9	-2	-5.3	-14.7	+15.0
3825	Office machin.	+1.9	-12.6	+ .2	-2.1	+12.7
3829	Machine exc. Electric N.E.C.	+ .3	-1.2	+ .9	+ .8	- .8
3831	Elect.machine	- .9	-2.9	-8.8	-10.4	+23
3832	Sound,Image eq.	+ .9	- .5	-1.3	-4.3	+5.1
3833	Elect.appl.	+1.3	+2.5	+3.2	+3.3	-10.4
3841	Shipbuilding	-4.2	-2.2	- .1	-1.6	+8.2
3842	Railroad eq.	-2.2	-4.1	+2.9	+1.5	+1.9
3843	Motor vehicle	+1.5	+ .5	+ .9	+2.9	-5.8
3844	Mot.&bicycle	-1.1	-9.8	-5.1	- .2	+16.3
3849	Transport eq. N.E.C.	-56		-33.6	+89.6	
3852	Photogra.goods	+ .9	+4.0	-3.8	-5.3	+4.1
3853	Watch&clock	-1.6	-3.4	-1.1	-26.9	+32.9
Other Manufacturing						
3901	Jewellery	+2.3	+13.1	0	+3.5	-18.7
3902	Musical Ins.	+ .2	-1.2	-2.6	-10.2	+13.9
3903	Sporting goods	+4.9	+3.5	-4.3	-15.1	+12.2
3909	Mfg.N.E.C.	-11.8	-1.5	+1.4	-18.2	+7.7

Sources: 'Report on Mining and Manufacturing Survey 1979, 1984' by Economic Planning Board,The Republic of Korea.

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group , and the efficient plant size in 5 of the 14 food industries include the size category 5-49 workers during 1979-84. Between 1979 and 1984, 42 of the 72 industries had efficient plants in the size category 5-49 workers; 43 in the size category 50-99 workers; 37 in the size category 100-199 workers; 34 in the size category 200-499 workers; and 31 in the size category 500+ workers. Thus the Survivor criterion indicates that during 1979-84, all sizes of plant were fairly efficient.

The situation in the period 1979 to 1984 contrasts with in the period 1968 to 1975. As Table 5.7-1 shows, during 1968-75, the statistics indicate that the LSE was more efficient than the SSE. Between 1968 and 1975, 7 out of 63 industries had efficient plants in the size category 5-49 workers; 17 in the size category 50-99 workers; 34 in the size category 100-199 workers; 39 in the size category 200-499 workers; and 32 in the size category 500+ workers.

This data about an efficient size suggests that the future of the SSEs is not so pessimistic. It is true, however, that the LSEs have more opportunities to improve their efficiency through capital accumulation, technology innovation, and scale of economies than the SSEs. Table 5.7-1 shows that the LSEs with 100+ workers show a slightly higher frequency of being the efficient size than the SSEs with 5-99 workers. The LSEs are efficient in 102 industries, but the SSEs are efficient in only 85.

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6. Changes in the Competitive Bases of SSEs

If SSEs with fewer than 100 workers account for half or more of the industry's employment, they may be said to be predominant in an industry. An industry in which SSEs predominate is called a small scale industry(Ho 1980). Following this classification, Table 5.8 shows that in 1984 SSEs(those with 5-99 workers) accounted for half or more of the industry's employment in 37 of the 104 four-digit manufacturing industries. SSEs employed 61% of the workers and produced 47 % of the value added in these 37 small scale industries.

The establishments with 5-49 workers employed a sizable 44 % of the workers and produced 31 % of the value added in the same 37 industries. The statistics indicate the importance of SSEs with 5-49 workers in the small scale industry. As for their relative importance in overall manufacturing, SSEs in the small scale industries employed 13.4 % of all manufacturing workers and produced 8 % of the total manufacturing value added in 1984.

On the other hand, SSEs in the 67 industries where small plants do not predominate employed 21.7 % of all manufacturing workers and produced 10.9 % of the total value added in the manufacturing industries, greater than the total volume of the small firm activity in the 37 industries, in which they were predominant. In those

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Sources:
For 19
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Table 5.8

Share of Small Establishments in Employment and Value Added by Five-digit Industries:1975& by Four-digit Industries:1984

% of workers in Small Est.(5-99)	Industry Year	# of Industry	Share of Total Mfg.Employment(%) Size of Industries 5-99	10-49	50-99	100-499	500+	Total
75-100	1984	10	.3	.9	.2	.3	0	1.7
	(1975)	(114)	(1)	(2.2)	(1)	(.4)	(0)	(4.6)
50-74	1984	27	1.8	6.6	3.6	5.8	2.4	20.2
	(1975)	(61)	(1.3)	(3.1)	(1.6)	(3)	(1)	(10)
25-49	1984	39	1.3	7.9	5.8	14.5	11.7	41.2
	(1975)	(86)	(1.6)	(5.0)	(3.6)	(10.2)	(6.6)	(27)
0 -24	1984	28	.5	3.8	2.4	7.0	23.2	36.9
	(1975)	(112)	(.5)	(2.6)	(2.6)	(16.6)	(36.1)	(58.4)
Total	1984	104	3.9	19.2	12	27.6	37.3	100
	(1975)	(373)	(4.4)	(13)	(8.7)	(30.2)	(43.7)	(100)

% of workers in Small Est.(5-99)	Industry Year	# of Industry	Share of Total Mfg.Value Added(%) Size of Industries 5-99	10-49	50-99	100-499	500+	Total
75-100	1984	10	.2	.5	.1	.4	0	1.2
	(1975)	(114)	(.5)	(1.4)	(.9)	(.3)	(0)	(3.0)
50-74	1984	27	.7	3.8	2.7	5.4	3.1	15.7
	(1975)	(61)	(.5)	(1.6)	(1.1)	(2.7)	(1.6)	(7.4)
25-49	1984	39	.5	3.8	3.5	13.0	12.4	33.2
	(1975)	(86)	(.6)	(2.4)	(1.8)	(7.4)	(4.5)	(16.6)
0 -24	1984	28	.1	1.5	1.5	7.2	39.6	49.9
	(1975)	(112)	(.2)	(1.4)	(2.9)	(18.4)	(50.0)	(72.9)
Total	1984	104	1.5	9.6	7.8	26	55.1	100
	(1975)	(373)	(1.7)	(6.7)	(6.8)	(28.7)	(56.1)	(100)

Sources:

For 1975 data, 'Small Scale Enterprises in Korea and Taiwan' by Ho, 1980, World Bank Staff Working Paper, No.384, PP40, Table 3.7.

For 1984 data, 'Report on Mining and Manufacturing Survey 1984' by Economic Planning Board, The Republic of Korea.

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industries where they are not predominant, SSEs seem to exist by "filling the cracks' not occupied by the LSEs (Staley & Morse 1965).

7. The Factors Influencing Competitiveness in the SSEs

For the small entrepreneurs who would like to appraise particular product groups for feasibility of small scale manufacture in their own economic environment, a study of the economic and technical circumstances favoring SSEs can give some practical guidance for their future operation. The main factors favoring SSEs are as follows: a) locational incidence factors of high transport costs b) the need for personal contact between producers and customers c) a simple technology not based on scale economies , and d) market influences.

Staley and Morse(1965) classified into 8 categories the above factors that help determine the SSEs predominance in manufacturing industries.

1) Locational Influence

1A. Dispersed resources processors

1B. Market oriented industries

1C. Service industries

2) Process Influence

2A. Separable manufacturing operations

2B. Craft handwork

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2C. Simple assembly,mixing and finishing operation

3) Market Influence

3A. Differentiated products having low scale economies

3B. Industries serving small total markets

This categorization was applied to 37 Korean small scale industries, where SSEs are predominant. In Table 5.9-2, 5 out of 37 small scale industries were identified as 1A class in 1984; 9 as 1B; 4 as 1C ; 6 as 2A ; 2 as 2B ; 3 as 2C; 8 as 3B.

Table 5.9-1 shows that with better transportation facilities, the locational influence seems to be less important.(1A,1B,1C group employment; 59.5% in 1975 but 55.3 % in 1984) Within this category market oriented industry was growing larger in terms of employment (30.3%) and value added (32.3%) in 1984. The reason seems to be partly that the SSEs are concentrated around an urban area for the urban market. On the other hand, the SSEs in the industries which process dispersed raw materials were contracting in terms of employment (from 23.4% in 1975 to 19.6% in 1984) and value added (from 26.4% in 1975 to 16.6 % in 1984).

Again, with a wider market due to an export-oriented policy, the pattern of production in SSEs changes from a simple assembly and mixing method, to more advanced separable manufacturing stages. (2A. group employment

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2B Craft

2C Simple

3B Small

Total

Sources:

Table 5.9-1

Relative Importance of Types of Industry in which Small Establishments(5-99) predominate: 1975 & 1984

Industry Type	Year	Employment in Small Establish. Person	Percentage
1A Dispersed resource proces.	1984	63,894	19.6
	(1975)	(38,845)	(23.4)
1B Market oriented industry	1984	98,426	30,3
	(1975)	(38,020)	(26.3)
1C Service industry	1984	17,676	5.4
	(1975)	(14,202)	(9.8)
2A Seperable Mfg. operation	1984	59,725	18.4
	(1975)	(25,022)	(17.3)
2B Craft handwork	1984	6,038	1.9
	(1975)	(1,666)	(1.2)
2C Simple Assembly	1984	32,492	10,0
	(1975)	(25,462)	(17.6)
3B Small Total Market	1984	46,770	14.4
	(1975)	(6,474)	(4.5)
Total	1984	325,021	100
	(1975)	(144,691)	(100)

Industry Type	Year	Value Added in Small Est. Million Won	Percentage
1A Dispersed resource proces.	1984	324,732	16.6
	(1975)	(44,095)	(26.4)
1B Market oriented industry	1984	632,605	32.3
	(1975)	(41,790)	(25.1)
1C Service Industry	1984	107,702	5.5
	(1975)	(12,370)	(7.4)
2A Seperable Mfg. operation	1984	373,943	19.1
	(1975)	(26,577)	(15.9)
2B Craft handwork	1984	26,160	1.3
	(1975)	(800)	(.5)
2C Simple Assembly	1984	200,073	10.2
	(1975)	(35,997)	(21.6)
3B Small Total	1984	294,638	15.0
	(1975)	(5,037)	(3.0)
Total	1984	1,959,853	100.0
	(1975)	(166,667)	(100.0)

Sources: For 1975 data,'Small Scale Enterprises in Korea and Taiwan' by Ho. 1980, World Bank Staff Working Paper, No.384, PP42,Table 3.8.
For 1984 data,'Report on Mining and Manufacturing Survey 1984' by Economic Planning Board, The Republic of Korea.

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3114 Pres
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3819 Fab
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Table 5.9-2

Korean Industries in which Small Establishments(5-99) employed 50% or more of the Workers in the Particular Industry in 1984

Industry(0000)	# of Small Est.	Workers in Small Est. person	%share of Ind.	V.A in Small Est. (million)	%share of Ind.
1A Dispersed Resources Processors					
3114 Preserving Fish	994	24,162	60	81,766	52
3119 Processing Food	510	7,575	92	36,052	83
3132 Wine	927	8,088	88	57,535	75
3231 Tan & leather	184	5,687	52	39,029	39
3311 Sawmill,plan.	1,288	18,382	55	110,350	53
Total	3,903	63,894	69	324,732	60
1B Market oriented Industries					
3122 Food,N.E.C.	549	8,165	57	50,697	29
3312 Wooden contain	124	1,844	74	8,621	67
3412 Paper contain	639	14,387	74	84,301	65
3419 Pulp,paper board	257	5,375	53	33,774	30
3516 Ag. medicine	14	2,056	83	14,400	20
3560 Plastic N.E.C.	1,705	34,824	64	223,881	43
3693 Concrete	1,457	17,293	55	127,161	43
3699 Non-metal min.	532	9,234	71	64,188	59
3812 Metal furniture	276	5,248	71	25,582	58
Total	5,553	98,426	60	632,605	41
1C Service Industries					
3423 Printing allied	280	4,655	78	23,379	84
3711 Steel works	35	1,343	52	19,820	51
3724 Non-ferrous fou.	84	1,303	86	6,932	82
3814 Metal heating	545	10,375	62	57,571	47
Total	944	17,676	70	107,702	66
2A Seperable Manufacture Operation					
3722 Smelting Metal	26	493	63	5,472	62
3822 Ag. machinery	238	5,505	52	28,276	34
3819 Fabricated metal	1052	21,714	50	135,002	38
3823 Wood machine	749	14,434	69	92,750	61
3824 Special equip.	844	15,687	62	103,855	40
3851 Medical Instru.	102	1,892	53	8,588	44
Total	3,011	59,725	58	373,943	47

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2B Craft Har
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3901 Jewlly
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2C Simple As
3215 Knittin
3512 Inorgar
3513 Pigment
Total
3B Small Tot
3214 Madeup
3216 Carpet
3219 Textile
3221 Custom
3233 Leathe
3319 Wood,
3422 Commer
3540 Misc.o
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Table 5.9-2(cont'd.)

Industry(0000)	# of Small Est.	Workers in Small Est. person	%share of Ind.	V.A in Small Est. (million)	%share of Ind.
2B Craft Handwork					
3232 Dressed furskin	35	1,156	79	4,883	73
3901 Jewlly	228	4,882	77	21,277	76
Total	263	6,038	78	26,160	75
2C Simple Assembly					
3215 Knitting mills	1,328	25,892	50	108,527	37
3512 Inorganic chem.	201	5,246	71	75,868	60
3513 Pigment	55	1,354	51	15,678	40
Total	1,584	32,492	57	200,073	46
3B Small Total Market					
3214 Madeup textile	489	11,272	53	56,542	49
3216 Carpet & rugs	46	1,087	75	3,839	61
3219 Textile N.E.C.	222	4,759	72	27,166	61
3221 Custom tailor	731	6,290	54	26,509	55
3233 Leather prod.	457	10,056	63	44,753	53
3319 Wood, N.E.C.	225	3,683	88	11,573	87
3422 Commercial print	159	2,156	80	12,141	82
3540 Misc.of Petrol.	270	7,467	62	112,115	53
Total	2,599	46,770	68	294,638	63

Source:
'Report on Mining and Manufacturing Survey 1984'
by Economic Planning Board, The Republic of Korea.

17.3% in 1975, 18.4% in 1984, 2C. group employment: 17.6% in 1975, 10.0% in 1984) The SSEs in an industry serving a small total market, are expanding in terms of employment(14.4% in 1984).

As Table 5.9-1 shows, in 1975 the locational and process influences were most important in determining the SSEs' predominance in manufacturing industry in Korea.(1A,B,C and 2A,B,C group employment took a major share of 95.5% in 1975, 97% of the total value added in the same year)

8. Efficiency Relative to Capital Intensity in SSEs

Empirical studies in LDCs have often shown that SSEs are labor intensive. Now let us see the relative efficiency of Korean SSEs in terms of capital productivity. In Table 5.10-1, the capital productivity (value added /fixed assets) of SSEs in the textile industry is relatively high (1.19 in 1984), while that of the food industry is relatively low (0.67 in 1984). The capital productivities in basic metal and fabricated metal industries are 1.12 and 1.26 in 1984 respectively.

The SSE in the textile industry is less capital - intensive (3,593,000 won/worker). Within the textile industry, the SSEs in the silk reeling section have a high capital-intensity (7,097,000 won/worker), while the SSEs in the ready made apparel have a low capital-

Table 5.10-1

Output/Capital & Capital/Labor ratios of 4-digit Industry
Year; 1984

Manufacturing	% V.A in Small.	% emp. in Small.	V.A per Fixed Assets	Fixed Assets per worker (000)
Food,beverage(31)	13	39	0.67	9000
Proce. of meat(3111)	27	34	0.67	13022
Dairy product(3112)	9	16	0.80	14906
Can of fruit(3113)	40	43	0.84	6370
Proce. of fish(3114)	52	61	0.90	3744
Vegetable oil(3115)	14	34	0.63	12590
Grain mill(3116)	21	49	0.30	23357
Bakery(3117)	7	19	0.58	6301
Sugar(3118)	0	1	0.10	38125
Food for trade(3119)	83	93	0.33	14303
Condiment(3121)	15	33	0.77	9488
Food N.E.C.(3122)	29	58	0.48	12919
Animal feed(3123)	34	49	0.97	16891
Distilling(3131)	7	13	1.72	10786
Wine(3132)	76	88	1.09	6502
Non-alchol(3134)	4	7	0.46	27255
Tobacco(3140)	0	1	5.06	2500
Textile(32)	24	34	1.19	3593
Silk reel(3211)	7	13	0.69	7097
Weaving(3212)	27	38	0.81	5465
Bleaching(3213)	36	45	0.92	5854
Madeup textile(3214)	49	53	1.12	4492
Knitting mill(3215)	37	51	1.53	2742
Carpet(3216)	61	76	0.83	4249
Cordage(3217)	23	27	0.81	5223
Textile N.E.C(3219)	61	73	0.91	6303
Custom tailor(3221)	55	54	1.80	2338
Ready apparel(3222)	21	29	2.94	1178
Tanneries(3231)	39	52	1.39	4932
Furskin(3232)	73	80	1.43	2963
Leather(3233)	53	64	2.50	1778
Footwear(3240)	19	28	1.93	2031
Wood(33)	44	54	0.91	5325
Sawmill(3311)	53	55	0.85	7091
Cane contain(3312)	67	75	1.08	4325
Cork N.E.C.(3319)	87	89	0.97	3236
Furniture(3320)	27	46	1.03	3478
Paper(34)	29	53	1.07	5660
Pulp paper(3411)	15	36	0.93	7012
Paper contain(3412)	65	75	1.22	4821
Pulp N.E.C.(3419)	30	53	1.04	6052

Table 5.10-1(cont'd.)

Output/Capital & Capital/Labor ratios of 4-digit Industry Year; 1984

Manufacturing	% V.A in Small.	% emp. in Small.	V.A per Fixed Assets	Fixed Assets per worker (000)
Newspaper(3421)	24	45	1.06	6067
Comm. print(3422)	82	81	0.98	5744
Print allied(3423)	76	78	1.18	3831
Chemical(35)	17	30	1.03	8429
Organic chem(3511)	10	39	0.69	13741
Inorga. chem(3512)	60	71	0.75	19405
Tanning mat.(3513)	40	52	1.33	8697
Chem.fibre(3514)	3	13	0.53	10734
Chem.fertil.(3515)	4	17	0.34	21656
Ag-medicine(3516)	20	24	1.64	14851
Paint(3521)	21	34	1.33	8007
Drugs(3522)	15	29	1.12	10164
Soap(3523)	8	16	1.00	11872
Chem.N.E.C.(3529)	33	45	1.20	8217
Petrol.refi.(3539)	1	8	1.54	13182
Petrol.coal(3540)	53	62	1.78	8436
Tyre & tube(3551)	2	7	1.00	4921
Rubber prod.(3559)	12	10	1.24	3824
Pastic prod.(3560)	43	65	0.97	6653
Nonmetal min.(36)	29	40	0.86	9192
Pottery(3610)	14	21	0.77	4396
Glass(3620)	11	23	1.19	4511
Clay(3691)	32	44	0.62	7785
Cement(3692)	23	15	1.90	26050
Concrete(3693)	43	55	0.60	12340
Refractory(3694)	19	41	0.74	6498
Nonmetal min(3699)	59	72	1.17	5937
Basic metal(37)	11	26	1.12	7354
Blast fur.(3711)	51	53	2.12	6952
Steel roll(3712)	5	12	0.91	11268
Iron(3713)	31	44	1.29	4294
Iron N.E.C.(3719)	17	40	1.14	8169
Primary sme.(3721)	17	20	1.90	9757
Secon.smelt(3722)	62	63	1.40	7903
Rolling(3723)	29	39	1.00	6612
Hammer(3724)	82	86	1.17	4563
Nonfer.N.E.C(3729)	38	46	0.89	7837
Fabricated me.(38)	17	30	1.26	4618
Handtool(3811)	37	41	1.17	4680
Furniture(3812)	58	71	1.52	3212

Table 5.10-1(cont'd.)

Manufacturing	% V.A in Small.	% emp. in Small.	V.A per Fixed Assets	Fixed Assets per worker (000)
Struc.metal(3813)	32	42	1.35	5208
Metal stam.(3814)	70	62	1.27	4385
Fabr.metal(3819)	38	51	1.26	4922
Engine(3821)	2	7	0.47	9088
Ag-machine(3822)	34	53	0.93	5502
Metal mach.(3823)	61	70	1.26	5086
Specia.mac.(3824)	40	63	1.33	498
Office mac.(3825)	15	20	1.32	5854
Service ma.(3826)	27	39	1.84	4076
Mach.N.E.C.(3829)	23	36	1.15	5749
Elect.mach.(3831)	25	38	1.62	3995
Sound mach.(3832)	7	18	1.38	3514
Elec.appli.(3833)	15	31	1.22	3757
Elect.mach.(3834)	8	13	1.16	3694
El.mac.N.E.C(3839)	20	36	1.27	4300
Shipbuild(3841)	5	10	1.32	4564
Rail. equi.(3842)	7	20	1.31	6048
Motor veh.(3843)	10	22	1.00	5860
Bicycle(3844)	22	37	1.08	4182
Trans.equi.(3849)	7	34	0.73	6218
Med.instru.(3851)	44	53	1.12	4036
Optical good(3852)	24	33	1.02	5112
Watches(3853)	13	19	1.87	2527
Science eq.(3854)	43	46	1.60	3876
Other manu.(39)	35	41	1.57	2671
Jewellery(3901)	76	77	1.70	2562
Musical ins.(3902)	8	12	0.98	4336
Sport good(3903)	32	40	1.47	2985
Dolls(3904)	34	39	2.57	1372
Costume jew.(3905)	50	47	2.22	1922
Manu.N.E.C.(3909)	39	47	1.13	4316

Source; 'Report on Mining and Manufacturing Survey 1984' issued at April, 1986 by Economic Planning Board, The Republic of Korea.

intensity(1,178,000won/worker).

On the other hand, the SSEs in the food industry are more capital- intensive (9,000,000 won/worker). This shows that food industry has become larger and more capital-intensive. Within food industry, the SSEs in the sugar section have a high capital intensity (38,125,000won /worker),while the SSEs in the tobacco section have a low capital intensity (2,500,000won/worker). Because of its potential for employment generation, the Korean small scale textile industry has a bright future. As Table 5.10-1 shows, depending on the specific industry, SSEs tend to have varying degrees of capital intensity.

When we examine the capital intensity of SSEs in the small scale dominant industries, within the overall picture of the manufacturing industry, they still tend to be labor intensive, compared to the LSEs. Supporting this idea, Table 5.10-2 shows that their capital/labor ratio lies between 4,000,000-6,000,000 won/worker but the capital/labor ratio of all manufacturing industry (including the large and small scale) is far above 10,000,000 won/worker. Therefore in labor abundant LDCs ,like Korea, SSEs have a growth potential.

D. CONCLUSION

So far I have reviewed the structure of Korean SSEs in terms of micro prospects. The analysis covered the

Table 5.10-2

Output/Capital and Capital/Labor Ratio for Industries in which Small Establishments predominate, by Industry

1984

	Value Added per Unit of Fixed Assets[a]	Fixed Assets per Workers (000won/person)[b]
Total Manufacturing	1.00	10,534
Small Scale Industry Accross-the-board Mfg.	1.06	5,496
1A Resources processors	0.79	6,413
1B Market oriented	1.19	5,359
1C Service Industry	1.37	4,447
2A Seperable Mfg.operation	1.25	5,028
2B Craft handwork	1.64	2,639
2C Simle Assembly	1.08	5,680
3B Small Total Market	1.44	4,386

Source: 'Report on Mining and Manufacturing Survey 1984' by Economic Planning Board, The Republic of Korea.

Note: a) This data covers only small establishments(with 5-99 workers) in small scale industries.

b) This data covers only small establishments(with 5-99 workers) in small scale industries.

specific industrial, regional and dynamic prospects, efficient size, and capital intensity. The findings from this analysis follow:

First, with economic development the role of very small scale activities(with 1-4 workers) in Korea is declining. The share of very small scale activities declined from 36% in 1975 to 30 % of total manufacturing employment in 1984.

Second, as industrialization progresses, SSEs are emerging in capital-intensive and heavy industries such as chemicals and the metal machinery industry; in 1984, the SSEs in the chemical industry took a sizable share (15.3% - those with 5-49 workers and 17.4% - those with 50-99 workers) of the total small scale manufacturing value added.

Third, the SSEs are generally located in the urban area: in 1984, 73% of the total labor force employed by SSE was in the urban area.

Fourth, during the last couple of decades, the SSEs have been losing in the share of manufacturing employment. In 1958 the employment share of SSEs (5-99 workers) was 67%, but by 1984 this figure dropped to 34%, although it reached a low of 26% in 1975.

Fifth, the Survivor criterion shows that during 1979-84 all plants, SSEs and LSEs were fairly efficient. On the other hand, during 1968-75 the Survivor test shows

that the LSEs were much more efficient than the SSEs; but it must be noted that the Survivor test is a measurement of private efficiency, not social efficiency. This Survivor test implies that the private efficiency of the SSEs improved during 1979-84.

Sixth, with better transportation , the locational influence in the competitiveness of SSEs became less important. The market-oriented industry (by the Staley & Morse classification) was getting larger in terms of employment (30.3%) and the value added (32.3%), in 1984.

Seventh, depending on the specific industry, the SSEs in the manufacturing industries tend to have various ranges of capital intensity. However, compared with the overall average for manufacturing industry, SSEs still tend to be labor intensive. The study shows that there exists a bright future for Korean SSEs, if they can keep improving their efficiency and correct the urban concentration problem, and if government policies are not biased against them.

CHAPTER 6

THE ISSUES AND POLICY IMPLICATIONS FOR SSES IN KOREA

A. INTRODUCTION

During the last two decades of economic development, the Korean industrial structure has been transformed into one dominated by LSEs. The importance of SSEs has been intensively debated; with the expansion of LSEs, problems of income inequality have surfaced. The Korean government has been accused of needlessly accelerating the growth of LSEs at the expense of SSEs; so it is meaningful to review the problems besetting Korean SSEs and to suggest a feasible solution.

First, I begin with the past industrial policies in terms of overvaluation of the exchange rate, subsidized interest rate and taxes. Second , I review the location of SSEs. Third, I continue to check the relative efficiency of the SSEs, using Ho's method, and 'Social Benefit and Cost(SBC)'. Finally, I review the general policy implications for SSEs.

B. Large Scale Oriented Industrial Structure

1. SSEs in Korean Industry

From the early 1960s, the government chose an export-oriented policy as its economic development strategy. This was an open door policy that led to the expansion of markets. With this enlarged market, economies of scale and a large size of the firm have become more important. As a result LSEs emerged and SSEs expanded into LSEs.

Table 6.1 shows that in 1979 SSEs with 5-99 workers employed 28% of the labor force in the manufacturing industry, while LSEs with 100+ workers employed 72%. But by 1984 ,the LSEs with 100+ workers employed 66% of this labor force. Today LSEs dominate in manufacturing employment. The large scale oriented industrial structure is a controversial issue because of its potential for monopolies and restrictive behavior, and its potential for reducing social welfare. LSEs, also, tend to be capital intensive. The Korean case is not exceptional. This situation can adversely affect employment and income equality objectives. For these reasons, I favor a greater role for the small scale industry.

2. Korean Industrial Policy

In Korea, technological necessity, possible economies of scale, and government policy had all combined to increase the size of the plant. Here I would like to

Table 6.1

Korean Employment in Manufacturing Industry

(Table 6.1-1)
Mfg. employment by size of establishment
Korea 1975, 1979, 1984 (unit:000person)

Year	5-9	10-19	20-49	50-99	100-199	200-499	500+	Total
1975	63	69	115	124	163	266	619	1,420
(%)	(4)	(5)	(8)	(9)	(11)	(19)	(44)	(100)
1979	76	94	205	205	256	361	920	2,117
(%)	(4)	(4)	(10)	(10)	(12)	(17)	(43)	(100)
1984	93	143	289	277	294	357	891	2,344
(%)	(4)	(6)	(12)	(12)	(13)	(15)	(38)	(100)

(Table 6.1-2)
Employment Growth of Manufacturing
Korea 1975-1979 and 1979-1984(in percentage)

Year	5-9	10-19	20-49	50-99	100-199	200-499	500+	Total
1975 -1979	21	36	78	65	57	36	48	49
1979 -1984	23	52	41	35	15	-1	-3	11

Source: 'Korean Statistical Yearbook 1975'

'Report on Mining and Manufacturing Survey 1979, 1984' by Economic Planning Board, The Republic of Korea.

focus on government policy, which has favored LSEs. It is reflected in the lower relative cost of capital for LSEs. This discriminatory policy resulted in creating a distortion in the factor (capital) market.

Tariffs favor the importation of machinery and equipment. Import licensing is linked to minimum export requirements ,and the government provided repayment guarantees to foreign suppliers(Kusnets 1977). Also, the overvaluation of the Korean currency the 'won' and the high domestic interest rate policy, after the fall of 1965, made imports and foreign loans (primarily supplies credit) cheaper relative to domestic goods and loans.

The Korea Development Banks provided funds for industrial enterprises (government invested corporations) at rates well below those charged in the unorganized money market. Firms with access to these institutions, mainly LSEs, obtained domestic credit at subsidized rates. Clearly the government favored LSEs in the allocation of credit; for example, in 1963, SSEs accounted for 60 % of manufacturing output, but received less than 27% of domestic loans (here SSEs are defined as firms with less than 30 million won in assets, or with fewer than 200 workers)(Kusnets 1977).

a. Capital Market

To see the policy-induced capital cost distortions

over the last decade , we need to analyse the quantitative data on policy in terms of the trade regime, interest rate,and tax rate. Table 6.2 shows the impact of these policy-induced distortions on the LSEs and the SSEs. The trade regime favored LSEs by overvalued exchange rates , making capital costs cheaper for them relative to the capital cost for SSEs; again, the interest policy favored the LSEs by a lower official rate, further accentuating the condition.

During the last decade(except 1975 , 1981), the overvalued exchange rates tended to favor LSEs despite some negative effects on balance of payment. On the other hand, the official lending rate for LSEs was lower than the black or private market rate for the SSEs, although this differential has narrowed since 1981. The higher interest rate on the black market could be argued as reflecting the higher risk and transaction costs where the borrowers are small, such as SSEs. But Liedholm(1986) found in some carefully designed programs that only the small portion of interest gap could be traced to administrative and risk transaction costs differential. Specially when I compare the Korean situation with situation in Taiwan with a similiar risk condition, the interest gap still gives some rationale for measuring the capital cost differential for LSEs & SSEs.

Over time, however, the tax policy favored the

Table 6.2

Policy-induced Capital Cost Distortion in Large and Small Scale Enterprises (Korea)

(Expressed as the percent difference in large firms' cost to small firms)

Year	Percentage Difference in Capital Cost owing to: Trade regime (overvaluation)	Interest	Taxes	Total Capital
1973[a)]	-5	-35	+10	-30
1976	-2.1	-30.4	+10	-22.5
1977	-5.3	-28.5	+10	-23.8
1978	-7.7	-28	+10	-25.7
1979	-15	-33	+10	-38
1980	-1.6	-32.5	+10	-21.1
1981	-2.2	-23	+10	-15.2
1982	-7.5	-21.7	+10	-19.2
1983	-5.8	-15.5	+10	-11.3
1984	-0.1	-16.4	+10	-6.5

Source: a) For 1973 data, 'The Effect of Policy & Policy Reforms on Non-Agricultural Enterprises & Employment in Developing Countries: A Review of Past Experiences ' by Steve Haggblade, Carl Liedholm, & Donald C Mead. MSU IDP Working Paper, No.27, 1986, P32, Table 7.

Note: The calculation for Korean data is shown in Appendix A.

small firms with a 10% lower corporate tax rate. Overall, the government policy favored LSEs, though, since 1981, the difference has been declining. In 1973,the total capital cost for the LSEs was 30 % cheaper than that for the SSEs, but ,in 1984, this figure fell to 6.5 % . Considering that the payoff from capital investment occurs over a relatively long period of time, the impact of the declining capital cost gap on the industrial structure may appear with lag.

b. Labor Market

The studies(Hong,1981,Ho,1980,Lindauer,1984) agreed that the labor market in Korea is relatively free from distortions. The reason for this conclusion is the fact that the union activities are suppressed by the government, which limits the scope of bargaining agents and the resort to strikes; and the minimum wage scheme is not generally practiced. These factors contributed to preventing wage determination above market clearing levels.

But as shown in Ch.4, there is a real wage gap between LSEs and SSEs; this gap is explained in different ways. According to a competitive theorist, training and hiring costs are believed to produce this differential; a bargaining theorist says this is the consequence of some bilateral monopoly; and the dual labor

market theorist points to the size of the firm as a critical boundary segmenting the primary and secondary labor markets(Lindauer 1984). In Korea this gap seems to be relatively small, if the labor productivity differential (quality, skill or training) is considered.

c. Product Market

Levy(1986) observed that the Korean duty drawback scheme tends to discriminate against SSEs. The original purpose of the drawback scheme, which repays exporters their taxes on imports, was to ensure that exporters did not face high input costs in competing on equal terms with foreign competitors. At the same time, it ensured that local suppliers of inputs needed by exporters could compete against foreign imported inputs. But this scheme seems to be available only for firms above a minimum size threshold because of transaction costs that firms must bear in dealing with the government. These transaction costs imply that the minimum scale at which firms may enter export markets, is likely to be relatively large.

Levy(1986) further indicated that the Export Processing Zone (EPZ) tended to discriminate against SSEs because of stiff licensing requirements for entry. Originally, an EPZ was conceived for giving firms, within a delineated area, the opportunity for tariff-free trade in order to ensure competitiveness in the world market. In

1971, the first zone was opened in Masan, the second zone was opened, in 1975, in Iri city; this system provided a favorable environment for foreign investors.

Levy(1986) found that the Korean targeted cross-subsidization policy was likely to discriminate against small and medium enterprises; from the government's point of view, the time and effort required to negotiate a subsidy, in return for a specific export response, tends to be high in the SSEs compared with that in the LSEs. Therefore, the government rationally tends to allocate scarce time and effort in negotiating cross-subsidization arrangements only with LSEs.

From these experiences we may conclude that the government should alter the bias against the SSEs in order to sustain fair competition between the SSEs and the LSEs. Levy suggested that in the duty drawback scheme the government should set up information channels, such as trading institutions, to be a source of information cost or transaction cost for SSEs. According to Levy, a "laissez-faire" outward-looking policy is preferable to a policy involving protectionism plus a drawback scheme for the SSEs.

Liedholm(1986) pointed out that there exists a minimum export value for firms , qualifying for subsidies under the transaction law of 1957; exporters have to exceed an annual $ 20,000 and importers have to exceed

$100,000 in order to maintain this privileged status; this pre-condition worked against the SSE.

Since late 1960s, the Korean government has selectively exercised the incentive policies and instruments of protection in favor of large scale heavy industries where there remained opportunities for substantial import substitution. Further this selective import substitution strategy has allowed the concentration of scarce investment resources in a few key sectors at a time and exploited the effects of economies of scale and linkage among closely allied activities(Westphal 1977).

For example, during 1977-79, to assist in accelerating the process of industrialization, the government focused on the heavy and chemicals industries pumping in financial assistance of 2,806 billion won. This investment amounted to approximately four times that in light industries. But the majority of large plants built during this period faced a serious shortage of demand in the domestic and foreign markets. This massive injection of capital proved to be too ambitious(Lau 1986). Westphal (1981) suspected that the difficulty of this strategy stemmed from the Korean government's decision to promote too many infant industries at once. The sudden change in the industrial strategy contributed to the domination of the LSEs, heavy industry belonging to this category.

Table 6.2.a) Percentage composition of manufactured output

	1960	1971	1979
all light industry	70%	54.7%	44.7%
all heavy industry	30%	45.3%	55.3%

source:Tibor Scitovsky, 1985 'Economic Development in Taiwan and South Korea; 1965-1981'

Table 6.2.a shows that as industrialization progressed, the heavy industry sector output dominated the scene. In 1960, light industry output was 70 % of the total industrial output; but by 1979, heavy industry produced a major portion (55.3 %) of the total industrial output, further establishing the large scale dominated industrial structure.

C. Urban Concentration of SSEs

As industry expanded, labor migration from the Ag sector accelerated because of job opportunities in the urban area. This continuous migration resulted in overurbanization, city life becoming intolerable with a shortage of housing, public facilities etc. The problem of overurbanization lies partly in the fact that many manufacturing industries are located in the urban area; the Korean case is not exceptional; the Korean SSEs, also, are concentrated in the urban area of Seoul and Pusan.

Table 6.2-1 shows that the majority of manufacturing

Table 6.2-1

Manufacturing Establishments by Location and by Size of Establishment, Korea. 1979 and 1984

	Year	Size of Establishments (workers)							
		Total	5-9	10-19	20-49	50-99	100-199	200-499	500+
Est.	1984	41549	14009	10521	9128	3942	2109	1213	627
	1979	31804	11915	6851	6482	2895	1829	1200	632
Seoul Pusan area	1984	71	64	74	73	74	75	74	75
	(1979)	(62)	(50)	(65)	(68)	(72)	(71)	(74)	(77)
Seoul	1984	31	35	35	27	24	20	19	16
	(1979)	(26)	(22)	(31)	(28)	(26)	(25)	(22)	(25)
Pusan	1984	12	9	13	13	11	14	14	16
	(1979)	(11)	(7)	(12)	(14)	(13)	(13)	(16)	(14)
Kyong gi-Do	1984	23	15	22	28	33	34	31	25
	(1979)	(18)	(13)	(16)	(20)	(27)	(27)	(27)	(25)
Kyong sang namDo	1984	5	5	4	5	6	7	10	18
	(1979)	(7)	(8)	(6)	(6)	(6)	(6)	(9)	(13)
Rest of Korea	1984	29	36	26	27	26	25	26	25
	(1979)	(38)	(50)	(35)	(32)	(28)	(29)	(26)	(23)
Total(%)		100	100	100	100	100	100	100	100

Source: 'Report on Mining and Manufacturing Survey, 1979 & 1984' by Economic Planning Board, The Republic of Korea.

establishments are urban-based. In 1984, 71 % of these were located in and around Seoul and Pusan, this status having developed between 1979 and 1984. In 1984, 64% of the firms, with 5-9 workers and 74 % of the firms with 10-19 workers , were urban-based. Table 6.2-2 indicates that employment for each category by size of firms was similar in terms of urban concentration. The urban concentration of firms is directly related to the issues of overurbanization. This locational pattern acted as an inducement to this momentum of overurbanization. In the short run, it deepens the regional income inequality, unless there is a drastic improvement in the rural quality of life. Given this status quo, there seems to be a great need to expand SSEs in the rural areas.

The Liedholm study(1986) pointed out that rural non-farming activitiy within a small scale may be promising in the LDCs. This may be true for Korea also; as the rural income rises, the Ag household tends to demand more consumer or non-Ag goods produced by the local SSEs. Liedholm, also, found the income elasticity of demand for goods produced by the rural non-farming activities tends to be ,very often, positive in many LDCs; therefore there seems to be a potential role for SSEs in the rural areas in terms of forward linkage (food processing etc.) and backward linkage (ag-tool, fertilizers etc.) industries. This potential for rural non-farming activity in Korea

Table 6.2-2

Manufacturing Employment by Location and by Size of Establishment, Korea. 1979 and 1984

		Size of Establishments(workers) (000)						
Year	Total	5-9	10-19	20-49	50-99	100-199	200-499	500+
Est. 1984	2843	93	143	288	276	293	356	890
1979	2116	75	94	204	204	256	361	919
Seoul Pusan area 1984	75	66	74	74	74	75	75	77
(1979)	(74)	(52)	(65)	(68)	(72)	(71)	(74)	(80)
Seoul 1984	20	36	35	27	24	20	19	14
(1979)	(24)	(24)	(31)	(28)	(27)	(25)	(22)	(22)
Pusan 1984	15	10	13	13	11	14	14	18
(1979)	(16)	(7)	(12)	(14)	(13)	(13)	(16)	(20)
Kyong gi Do 1984	27	16	22	28	33	34	31	22
(1979)	(23)	(13)	(16)	(26)	(26)	(27)	(27)	(22)
Kyong sang namDo 1984	13	4	4	6	6	7	11	23
(1979)	(11)	(8)	(6)	(6)	(6)	(6)	(9)	(16)
Rest of Korea 1984	25	45	26	26	26	25	25	23
(1979)	(26)	(48)	(35)	(32)	(28)	(29)	(26)	(20)
Total(%)	100	100	100	100	100	100	100	100

Source: 'Report on Mining and Manufacturing Survey 1979 & 1984' by Economic Planning Board, The Republic of Korea.

suggests that the government's policy should encourage SSEs to move into the rural area through tax concessions, loans etc; for example, the Local Industry Development Law was enacted in 1970 to promote the decentralization of industrial development. This law provided a reduction in acquisition , property , registration and corporation taxes within 5 years ,for those industries located in the designated local industrial estate, (where the size is not less than 100,000m^2 for the inland estates and 200,000m^2 for the coastal ones).

The government should consider an uni-modal agricultural strategy rather than a bi-modal policy, because the former will have more demand effects on the labor intensive and small scale oriented industrial activities(Liedholm 1986). At the same time the policy of developing the infrastructure, such as transportation, power, and water availability, should precede the above aggressive agricultural policy; as a good example, the Korean 'New Village Movement', since the early 1970s , should continue and expand in order to improve the environment for agricultural productivity.

D. Relative Inefficiency of SSEs in Small Scale Industry

Before advocating the cause of the SSEs in Korea, we need to review whether SSEs are ,in fact,efficient. In the

measurement of efficiency, the concept of the total factor productivity is gaining popularity in economic development literature. A firm's efficiency depends not only on its capital productivity , but also on other factors. Technically there are various modes of measuring the total factor productivity. Here, Ho's(1980) relative efficiency measurement and 'Social Benefit-Cost' ratios are adopted for a more objective assessment, each method,though, having its own limitations.

1. Ho's Method

Ho reformulated the Christensen-Jorgensen index. Ho's method appears to be crude, but it offers a check on the results of more sophisticated methods; it has the advantage of being relatively easy to calculate and depends on fewer assumptions about the production relationship. But this method should be adjusted for differences between the actual factor price and the opportunity costs as well as any differential impact of trade protectionism on the value added between the LSEs and SSEs.

There is a tendency towards biased efficiency measures in different sized categories of firms, because the SSEs tend to underreport their value added, use a lower quality of labor, have a lower rate of capacity utilization and operate in far more competitive

conditions, which make for a lower efficiency rating. there is, also, an element for favoring SSEs in terms of efficiency ,because the capital usage may be understated to a greater extent(Tyler Biggs 1986).

Let us begin by applying Ho's method. For convenience we assume two factors of production , capital and labor, and we apply this measurement to the Korean 4-digit manufacturing small scale-dominated industry, where the SSEs have over 50% of employment. The reason I chose 'the small scale industry' for an efficiency analysis is that the small scale industry is a favorable environment for employment creation /generation and tends to face competitive market conditions.

According to Ho, we assume a 20% shadow price of capital and no distortion in the labor market. Technically the total factor productivity(A) becomes

$$\left(\frac{\text{value added}}{(.2)*K}\right)^{\frac{(.2)K}{(.2)K+W}} * \left(\frac{\text{value added}}{W}\right)^{\frac{W}{(.2)K+W}}$$

where K is fixed assets and W is wage bill,capital factor share is (.2)K/(.2)K+W & labor factor share is W/(.2)K+W. Total factor productivity of j- th category(A(j)) becomes

$$\left(\frac{\text{Value added(j)}}{(.2)K(j)}\right)^{\frac{(.2)K(j)}{(.2)K(j)+W(j)}} * \left(\frac{\text{Value added(j)}}{W(j)}\right)^{\frac{W(j)}{(.2)K(j)+W(j)}}$$

The relative efficiency measurement then becomes the ratio of the total factor productivity of the establishment in a given size group to that of all

establishments in the industry, such as A(j)/A.

Table 6.3-1 shows A and A(j) of the industries dominated by SSEs in 1984. Table 6.3-2 shows the relative efficiency measurement(A(j)/A) in the 4-digit industries dominated by SSEs in 1984. Table 6.3-3 shows that in only a few instances is the total factor productivity by the relative efficiency measurement highest in SSEs of small scale industries. In 1984 , the total factor productivity was highest in only 9 small establishments, with 5-99 workers, but the total factor productivity was highest in 21 large establishments with over 100 workers.

This 1984 result contrasts with the 1968 result. In 1968 total factor productivity was highest in 38 SSEs with 5-99 workers of small scale industries but the total factor productivity was highest in 33 LSEs with over 100 workers of small scale industries. In 1968 the SSEs were far more efficient than LSEs in small scale industries(Ho 1980).

In 1984, the LSEs in the small scale industry became relatively more efficient than the SSEs and the numbers of small scale industries also declined. This data implies that by 1984 the social efficiency of the SSEs in the small scale industry declined, compared to the 1968 level.

According to Ho's study ,however, the relative efficiency measurements tend to be biased against the SSEs. Although he recognized that understating the capital

Table 6.3-1

Total Factor Productivity of Establishments for Industries in which Small Establishments predominate, by Type of Industry & by Size of Establishments(Worker), Korea. 1984.

4-digit industry	average A	5-9 A(j)	10-19	20-49	50-99	100-199	200-499	500+
of industry								
1A								
3114	3.7	2.69	3.35	3.36	3.94	3.64	4.32	2.71
3119	2.16	1.75	1.82	2.12	3.40	2.82	4.95	
3132	4.61	3.2	3.61	6.17	6.78	7.41	5.0	
3231	4.12	3.52	2.94	3.02	3.81	4.59	5.22	3.86
3311	2.67	2.25	2.94	2.85	3.99	2.37	1.5	2.61
1B								
3122	3.88	1.67	2.02	2.43	6.57	1.93	4.28	7.09
3312	2.76	2.82	2.64	2.98	2.58	2.27	2.54	
3412	3.37	3.16	3.27	3.22	3.3	3.69	3.4	
3419	4.47	3.23	3.51	3.32	2.95	3.33	6.57	6.22
3516	9.08	.86	2.59	9.88	6.23	8.73	14.49	
3560	4.04	2.91	2.66	3.2	3.95	3.57	4.04	5.21
3693	3.53	2.09	2.64	3.35	3.59	4.22	3.81	3.57
3699	3.79	2.64	3.66	3.48	3.57	4.14	4.6	4.71
3812	3.28	2.43	3.18	2.91	2.8	2.79	5.14	
1C								
3423	2.65	3.05	2.72	2.6	2.3	4.1	2.13	
3711	5.1	4.00	2.59	2.73	7.75	3.36	6.55	
3724	2.82	3.12	2.58	2.75	2.06		2.81	
3814	3.66	2.82	2.73	2.69	3.75	6.43	3.27	3.58
2A								
3722	4.07	1.71	4.22	4.49	2.1	4.22		
3819	3.64	2.79	2.97	3.31	3.71	4.21	3.8	3.2
3822	3.53	2.56	2.42	2.69	3.02	2.61	3.25	4.48
3823	3.09	2.65	2.83	2.9	2.97	3.06	3.66	
3824	3.66	2.87	2.95	2.98	3.38	3.68	3.27	4.02
3851	3.01	2.54	2.33	2.99	2.67	3.47	3.13	
2B								
3232	2.75	2.22	1.89	2.51	2.85	2.91		
3901	2.76	2.97	3.01	2.9	2.40	2.8	2.48	
2C								
3215	3.58	2.59	2.45	2.77	3.06	3.12	3.3	5.33
3512	4.12	2.76	3.29	4.22	3.85	5.29	3.76	2.97
3513	4.54	4.67	2.84	3.84	4.14	6.00	4.6	
3B								
3214	2.86	3.13	2.85	2.99	3.19	3.15	1.99	2.34
3216	3.09	2.15	2.26	2.50	2.44	4.78		
3219	3.49	2.46	2.69	2.92	3.62	3.47	5.68	
3221	2.73	3.08	3.84	2.44	1.75	2.60	2.87	2.00
3233	3.34	2.75	2.58	3.05	2.80	3.87	4.40	3.74

Table 6.3-1 (cont'd.)

4-digit industry	average of industry	5-9	10-19	20-49	50-99	100-199	200-499	500+
3319	2.39	2.54	2.53	2.16	3.06	3.13		
3422	2.74	3.20	2.43	2.82	3.77	2.16	2.06	
3540	6.39	3.98	4.56	8.18	4.84	6.14	8.15	

Note: A(total factor productivity in given industry) measurement was obtainted by $(V.A/.2K)^{a_1}*(V.A/W)^{a_2}$ where V.A is value added, K is fixed asets, W is wage bill. We assume shadow price of capital is 20% and there is no distortion in labor market. And a_1 is capital factor share which is .2K/(.2K+W), while a_2 is labor factor share which is W/(.2K+W). A(j) is total factor productivity in j-th size category of given industry. This measurement can be obtained by same process by only using data of j-th category.

Source: The calculation is based on data in 'Report on Mining and Manufacturing, 1984'

Table 6.3-2

Relative Efficiency of Establishments for Industries in which Small Establishments predominate, by Type of Industry and by Size of Establishment(Worker), Korea,1984. A(j)/A

	5-9	10-19	20-49	50-99	100-199	200-499	500+
1A Resource processors							
3114 fish	.73	.91	.91	1.06	.98	1.17	.73
3119 food proces.	.81	.84	.98	1.57	1.31	2.29	
3132 wine	.69	.78	1.34	1.47	1.61	1.08	
3231 leather	.85	.71	.73	.92	1.14	1.27	.93
3311 saw mill	.84	1.1	1.07	1.49	.89	.56	.98
1B Market-oriented industries							
3122 food N.E.C.	.43	.52	.63	1.69	.50	1.10	1.83
3312 cane contain	1.02	.96	1.08	.93	.82	.92	
3412 paper board	.94	.97	.96	.98	1.09	1.01	
3419 paper board N.E.C.	.72	.79	.74	.66	.74	1.47	1.39
3516 Ag.medicine	.09	.29	1.09	.69	.96	1.6	
3560 Plastic NEC.	.72	.66	.79	.98	.88	1	1.29
3693 concrete	.52	.75	.95	1.02	1.2	1.08	1.01
3699 mineral NEC.	.7	.97	.92	.94	1.09	1.21	1.24
3812 furniture	.74	.97	.89	.85	.85	1.57	
1C Service industries							
3423 printing all.	1.15	1.03	.98	.87	1.55	.8	
3711 blast furnace	.78	.51	.54	1.52	.66	1.28	
3724 foundaries	1.11	.91	.98	.73		1	
3814 metal stamp.	.77	.75	.73	1.02	1.76	.89	
2A Seperable manufacturing operation							
3722 smelt&refine	.42	1.04	1.1	.52	1.04		
3819 fab.metal	.77	.82	.91	1.02	1.16	1.04	.88
3822 Ag.machine	.73	.69	.76	.86	.74	.92	1.27
3823 metal machine	.86	.92	.94	.96	.99	1.18	
3824 special mach.	.78	.81	.81	.92	1.01	.89	1.1
3851 medical ins.	.84	.77	.99	.89	1.15	1.04	
2B Craft handwork							
3232 dressed fursk.	.81	.68	.91	1.04	1.06		
3901 Jewelley	1.08	1.09	1.05	.87	1.01	.9	
2C Simple assembly,mixing and finishing							
3215 knitting mill	.72	.68	.77	.85	.87	.92	1.49
3512 inorga.che.	.67	.8	1.02	.93	1.28	.91	.72
3513 dyestuff	1.03	.63	.85	.91	1.32	1.01	
3B Small total market							
3214 textile	1.09	1.00	1.05	1.12	1.1	.7	.82
3216 carpets	.7	.73	.81	.79	1.55		
3219 textile NEC.	.7	.77	.84	1.04	.99	1.63	
3221 custom tailor	1.13	1.41	.89	.64	.95	1.05	.73
3233 leather sub.	.82	.77	.91	.84	1.16	1.32	1.12

Table 6.3-2 (cont'd.)

	5-9	10-19	20-49	50-99	100-199	200-499	500+
Small total market continued							
3319 cork NEC.	1.06	1.06	.9	1.28	1.31		
3422 com.print	1.17	.89	1.03	1.38	.79	.75	
3540 mis.petroleum & coal	.62	.71	1.28	.76	.96	1.28	

Note: Small establishments(those with 5-99 workers) are considered to predominate in an industry if they account for half or more of the industry's employment. The relative efficiency measure is the ratio of the total factor productivity of establishments in a given size group to that of all establishments in the industry. This relative efficiency measures were obtained by assuming capital share to be .2K/(.2K+W), where K is the industry's fixed assets and W is the industry's actual wage bill.
All industries which contain the words 'miscellaneous' or 'not elsewhere classified' in their titles are classified as 'excluded' category of size group in Table 6.3-3.

Source: The calculation is based on data in 'Report on .. mining and Manufacturing,1984'.

Table 6.3-3

Number of Industries where Total Productivity(Capital Shadow Priced at 20%) is greatest in the Size Category Indicated, Korea 1968 and 1984
-Small Scale Industries(Industries where SSEs have 50% + of employment) -

	Year	5-9	10-19	20-49	50-99	100-199	200-499	500+	excl.
1A	1984	0	0	0	1	1	3	0	0
	(1968)	(0)	(0)	(1)	(3)	(2)	(4)	(0)	(3)
1B	1984	0	0	1	0	2	2	0	4
	(1968)	(0)	(1)	(1)	(5)	(4)	(3)	(3)	(5)
1C	1984	1	0	0	1	2	0	0	0
	(1968)	(0)	(1)	(0)	(0)	(0)	(1)	(1)	(0)
2A	1984	0	0	1	0	2	1	2	0
	(1968)	(0)	(0)	(1)	(3)	(3)	(4)	(0)	(6)
2B	1984	0	1	0	0	1	0	0	0
	(1968)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2)
2C	1984	0	0	0	0	2	0	1	0
	(1968)	(2)	(1)	(5)	(7)	(1)	(2)	(2)	(7)
Sub total									
	1984	1	1	2	2	10	6	3	4
	(1968)	(2)	(3)	(8)	(18)	(10)	(14)	(6)	(23)
3B	1984	0	1	0	2	1	1	0	3
	(1968)	(1)	(0)	(2)	(4)	(2)	(1)	(0)	(38)
Total									
	1984	1	2	2	4	11	7	3	7
	(1968)	(3)	(3)	(10)	(22)	(12)	(15)	(6)	(61)

Source: For 1968 data,'Small Scale Enterprises in Korea and Taiwan' by Ho, 1980. P65, Table 4.5.

For 1984 data,'Report on Mining and Manufacturing 1984' by Economic Planning Board, The Republic of Korea.

may have a positive effect on these figures, he insisted that a negative bias is still strong in relative efficiency measurements.

According to the above data, SSEs with 5-99 workers do not tend to generate large amount of employment efficiently because SSEs were efficient in only a few industries. Therefore we may expect further invasions and take-over bids by modern ,efficient, and capital intensive LSEs, unless the efficiency of SSEs increases so that they can effectively compete against the LSEs. The possible domination by LSEs may weaken the competitive market conditions in the small scale industries ,reduce the employment effects, and endanger the status of the small scale industry itself.

2. Social Benefit - Cost Analysis

To complement Ho's measurement of total factor productivity, I will use another technique, the 'Social Benefit and ost' ratio; this involves calculating the social opportunity cost in terms of capital and labor. The SBC method, in a some sense, only measures technical efficiency in production possibility frontier measurement, because the SBC using social input cost takes care of the allocational efficiency issues.

In practice, this method uses a single estimate of the social opportunity cost of capital applied to all

sources, as well as a sectoral average wage for each skilled category as the cost to all firms of labor in that category. If the SBC does not use a shadow price to evaluate outputs or raw material inputs, it can only be used to compare Benefit and Costs of firms in the same sector, having a similar input and output mix. When the SBC ratio is used to measure the relative performance of enterprise , a ratio greater than one implies that the firm has a positive effect on the total output of the economy, while a ratio of less than one implies a negative effect on the economy(Tyler Biggs 1986).

I apply this measurement to the 4-digit manufacturing small scale dominated industry, where the SSEs have over 50 % of employment. Following Ho, I assumed a 20 % shadow price of capital and no distortion in the labor market. Keeping in mind that union activities are suppressed and that the minimum wage system is not generally practiced, I can justify the actual wage expenditures as the social labor costs.

Technically, a Benefit and Cost ratio of j-th size category in the given industry becomes

$$\frac{\text{Value Added(j)}}{(.2)*K(j)+W(j)}$$

where K(j) is the fixed assets of j - th size category, and W(j) is the wage bill of j -th size category. Table 6.4-1 shows the Benefit and Cost ratio of

Table 6.4-1

Benefit-Cost ratio of Establishments for Industries in which Small Establishments predominate, by Type of Industry & by Size of Establishments(workers), Korea. 1984.

	5-9	10-19	20-49	50-99	100-199	200-499	500+
1A Resource processors							
3114 fish	1.38	1.68	1.75	2.08	1.98	2.47	1.46
3119 food proce.	.94	.95	1.06	1.76	1.53	2.53	
3132 wine	1.63	1.85	3.32	3.39	3.82	2.50	
3231 leather	1.87	1.59	1.76	2.07	2.40	2.66	1.96
3311 saw mill	1.13	1.55	1.58	2.19	1.21	.75	1.30
1B Market-oriented industries							
3122 food NEC.	.87	1.02	1.22	3.32	1.03	2.16	3.56
3312 cane conta.	1.52	1.62	1.67	1.33	1.64	1.69	
3412 paper board	1.70	1.86	1.80	1.75	1.95	1.87	
3419 paper board N.E.C.	1.78	1.84	1.81	1.32	1.67	3.35	3.12
3516 Ag.machine	.43	1.97	5.14	3.11	4.37	7.32	
3560 plastic NEC	1.49	.85	1.66	2.04	1.85	2.02	2.67
3693 concrete	1.05	1.33	1.67	1.80	2.13	1.97	1.79
3699 mineral NEC	1.35	1.89	1.88	2.00	2.17	2.31	2.36
3812 furniture	1.32	1.81	1.76	1.70	1.64	3.08	
1C Service industries							
3423 printing al	1.72	1.47	1.52	1.30	2.33	1.50	
3711 blast furn.	2.39	1.44	1.55	4.14	1.73	3.48	
3724 foundaries	1.75	1.41	1.54	1.64		1.40	
3824 metal stamp	1.54	1.52	1.53	2.06	3.37	1.87	2.04
2A Seperable manufacturing operations							
3722 smelt&refin	.87	2.77	2.34	1.30	2.50		
3819 fab. metal	1.47	1.67	1.85	1.98	2.29	1.92	1.65
3822 Ag. machine	1.28	1.24	1.46	1.67	1.47	1.85	2.27
3823 metal mach.	1.51	1.63	1.59	1.75	1.72	1.86	
3824 spec.mach.	1.57	1.60	1.72	1.95	1.99	1.87	2.00
3851 medi.ins.	1.50	1.38	1.99	1.38	1.87	1.93	
2B Craft handwork							
3232 dres.fur	1.25	1.06	1.59	1.64	1.52		
3901 jewelley	1.72	1.75	1.81	1.48	1.93	1.76	
2C Simple assembly							
3215 knit mill	1.39	1.42	1.68	1.85	1.89	1.88	3.08
3512 inor.chem.	1.41	1.69	2.12	2.00	2.65	2.15	1.58
3513 dyestuff	2.33	1.43	2.19	2.22	3.29	2.30	
3B Small total market							
3214 textile	1.68	1.55	1.57	1.84	1.78	1.01	1.18
3216 carpets	1.08	1.16	1.30	1.51	2.93		

Table 6.4-1 (cont'd.)

		5-9	10-19	20-49	50-99	100-199	200-499	500+
Small total market continued								
3219	textile N.E.C.	1.24	1.37	1.52	1.99	1.84	2.90	
3221	custom ta.	1.79	2.30	1.47	1.40	1.80	1.92	1.15
3233	leather su	1.68	1.73	2.03	1.79	2.20	2.89	2.49
3319	cork NEC.	1.34	1.37	1.22	1.32	1.88		
3422	com.print	1.79	1.3	1.52	1.94	1.14	1.09	
3540	misc. petroleum& coal	2.00	2.35	4.22	2.65	3.41	4.26	

Note: Small establishments (those with 5-99 workers) are considered to predominate in an industry if they account for half or more of the industry's employment. The benefit-cost ratio is a way of measuring total factor productivity and is the ratio of the value added to the input cost in given size group of industry. The input cost is assumed to be r * K + W, where r is the shadow price of capital (here 20%), K is fixed assets and W is wage bill. Here we assume no distortion in labor market.

Source: The calculation is based on data in 'Report on Mining and Manufacturing Survey, 1984'.

the 4-digit small scale industry based on the size category; for example, the Social Benefit-Cost ratio of fish industry(3114), with a size category of 5-9 workers, is 1.38. The most efficient firm size in the fish industry becomes the size category of 200-499 workers, which has a highest SBC ratio(2.47). Based on this process,Table 6.4-2, shows the number of industries in which the Benefit-Cost ratio is the highest in the size category indicated.

Table 6.4-2 shows that in only a few of small scale industries, SSEs have the highest total factor productivity. These figures confirmed the conclusions of Ho's relative efficiency measurements. In 1984, the Benefit-Cost ratio was highest in only 9 small establishments with 5-99 workers of small scale industries but the Social Benefit and Cost ratio was highest in 21 large establishments with over 100 workers of the small scale industries. The optimal size among the most efficient SSEs was 50-99 workers.

The industries which do not fare very well on the efficiency criterion by Ho's method and the SBC ratio are as follows; Cane container(3312), Smelting and refining (3722), Medical instrument(3851), Dressed fur skin(3232), Jewellery(3901), Mis. petroleum and coal(3540). In these cases, the two methods do not reveal the consistent bias in efficiency measures for either the LSEs or the SSEs.

From the analysis of results based on these two

Table 6.4-2

Number of Industries where Benefit-Cost(Capital Shadow Priced at 20%) is greatest in the Size Category Indicated -Small Scale Industries(Industries where SSEs have 50% + of Employment) -

Korea 1984

	5-9	10-19	20-49	50-99	100-199	200-499	500+	exc.
1A	0	0	0	1	1	3	0	0
1B	0	0	0	0	2	3	0	4
1C	1	0	0	1	2	0	0	0
2A	0	1	1	0	1	1	2	0
2B	0	0	0	1	1	0	0	0
2C	0	0	0	0	2	0	1	0
Subtotal	1	1	1	3	9	7	3	4
3B	0	1	0	2	1	1	0	3
Total	1	2	1	5	10	8	3	7

Source: 'Report on Mining and Manufacturing Survey,1984' by Economic Planning Board, The Republic of Korea.

Note: All industries which contain the words 'miscellaneous' or 'Not Elsewhere Classified(N.E.C.)' in their titles are classified as 'excluded' category of size group in Table 6.4-2.

measurements, I conclude that policies favoring the LSEs including the cheap capital policy might partly contribute to the increasing efficiency displayed by the LSEs as compared to the SSEs in the small scale industry, by utilizing the economies of scale in the LSE. The lower capital cost resulted in accelerating the modernization of the LSEs in the small scale industries. On the other hand, the higher capital cost resulted in delaying modernization and endangering the survival of SSEs in the small scale industries.

The selective manner in which government intervention in Korea was carried out is not fully covered and could not be within the framework of my simple model. But it is important because Korean policy resembles that of Japan which directed investment to the profitable export markets. This may be a significant explanation of the efficiency of Korean LSEs.

3. Technical and Pecuniary Economies of Scale

In the literature on industrial organization , the term 'economies of scale' is defined as including the technical as well as pecuniary economies of scale. The former refers to the actual physical organization of production activities by reducing the ratio of inputs to output; thus achieving an increase in social economic efficiency. On the other hand, a pecuniary economy of

scale stems from a lower input price and the ability to exert market power by exploiting the advantage of a larger sized firm , which provides private economic gains.

The policy favoring LSEs, by providing cheaper financial assistance to LSEs, might enable them to accelerate their technical and pecuniary economy of scale at the expense of SSEs; this,again, is partly reflected in the higher efficiency of LSEs in small scale industries. But this result was obtained at the expense of weakening the employment increases created by SSEs, which partly contributed to worsening income inequality.

Therefore the government should try to establish a fair and equal investment climate for both SSEs as well as LSEs. In order to do this , first ,the factor market for capital and labor should have no distortion. Then the rent and the wage will reflect the correct values of capital and labor. The correct price signal through the market mechanism will lead to an optimal resource allocation and improve the total factor productivity of SSEs in the small scale industry. But as the study of Korean SSEs shows, a distortion in the capital market, created by a policy favoring LSEs , led to less efficient resource allocation and a worsening TFP in SSEs in the small scale industry.

By the same token, another distortion in the capital market, created by a policy favoring SSEs, also

may make SSEs more capital intensive, reduce their employment potential and let inefficient SSEs survive longer in the market.

E. General Policy toward SSEs for Entry & Expansion

1. Entrepreneurship Promotion

Clearly, the future of the SSEs lies in the hands of entrepreneurs ,who are willing to take risks in order to make profits. These entrepreneurs are called innovative organizers. In order to promote SSEs, first the cultivation of entrepreneurs in terms of numbers and quality is more important. The way to promote entrepreneurs is through education or social campaign encouraging potential entrepreneurs to enter small scale industries.

The government should remove legal and policy constraints for easy entry of potential entrepreneurs. Complicated licensing procedures usually tend to discourage the development of a small scale business. As long as the legal regulations require minimum qualifications such as preventing overcrowding, or avoiding an excessive demand for imported equipment etc., the government should simplify these procedures.

2. Fair Access to Capital

Usually, the SSEs rely on personal saving and the unorganized money market for their capital funding, because the low credit rating and high risks of SSEs tend to ruin the chance of borrowing from institutional banking organization. Also the failure to meet needs of working capital can draw a cloud over the future of SSEs. Hence, the existing banking institutions for assisting SSEs should be fully utilized. Liedholm's study(1986) suggested that the interest rate charged by lending agencies should be high enough to cover the operating expenses including the cost of funds; then these agencies would be more successful in negotiating loans to the SSEs.

3. Information Service

In order to enter and expand into the market, entrepreneurs require information about the market , managerial skills and technical training. To promote efficiency in SSEs , the government or lending agency should assist with specific information regarding the product market, utilization of capital, expertise and other relevant data, through the medium of loan screening. This non-financial assistance can significantly alter their outlook.

The government, or trade and industry associations such as the small and medium industry promotion corporation and Korea production technology service

corporation can set up or utilize some agencies specialized in such information services.

Kilby's study(1986) found that this non-financial assistance was especially successful in situations where there seemed to be only 'one single missing ingredient' that needed to be supplied to the firms in LDCs. Also providing market informations to small firms is one way of strengthening the market condition.

4. Competitive Relations with LSEs

When the SSEs aim at the domestic as well as the export market as an outlet for their products, they face tough competition from the LSEs. When the economy grows fast enough to cause labor shortages in the industrial sector, and reduces the wage disparity between the LSEs and the SSEs, it is more difficult for SSEs to compete against LSEs by utilizing cheap wages as a weapon. The only way to overcome this challenge is by SSEs maximizing their efforts at increasing labor productivity through mechanization. Further, the SSEs should improve their total factor productivity , by advances in technology, resulting in technical efficiency.

Since the early 1960's Japan has experienced a labor shortage.(Japanese economic survey 1963-64) In the future Korea may face a similar situation.

Table 6.5 Korean average wage per worker in manufacturing

(real unit; million won/worker)

	1975	1977	1979
small firms(5-99workers):A	.76	1.14	1.71
large firms(100+workers):B	1.07	1.50	3.09
B/A (%)	140	131	122

(Source:report on mining and manufacturing 1975, 1977, and 1979, Economic Planning Board,Korea note:real wage is calculated by nominal average wage/ non-food prices)

Although the wage gap between the LSEs and the SSEs still exists in Korea as shown in Table 6.5, the future labor shortage may further reduce the wage gap. In Japan, when the SSEs relied on loans to mechanize their facilities, it caused a deterioration in their financial composition, and an unsettled management due to the sudden change in size. This situation resulted in a vicious cycle because it weakened the SSEs' ability to secure funds. The SSEs were being forced out of business until the government rescued them. From the Japanese experience, we may conclude that the government should assist in the SSE's modernization through various schemes, such as advice, guaranteed loans, and tax concessions for environmental improvement for SSEs. Clearly ,this modernization scheme for SSEs should be distinguished from

an excessively biased capital subsidy for SSEs, which only helps to delay the death of inefficient ones.

In the long run, the survival of the SSEs can contribute to strengthening the existence of a free and competitive market. Also, the SSEs can aim at a different market(the low income market) by utilizing product differentiation in quality and package.

5. Complementary Relations with LSEs

In order to survive, the SSEs should adapt themselves to the new environment by diversifying, by utilizing their unique characteristics, and by mutual cooperation; a potential exists for the SSEs in certain industries for complementarity and interaction between LSEs and SSEs. This includes the ancillary production of component parts by the small factories for the large factories(backward linkage), and also by the large for the small(forward linkage). This backward linkage is called subcontracting.

a. Scitovsky's External Economy

Scitovsky(1964) showed that the integration between two industries by using each others'output can create a peculiar external economy through a market mechanism; applying Scitovsky's externality concept to the complementary relationship between the LSEs and the SSEs,we can arrive at the rationale for the important role

of SSEs, in terms of an industrial policy. As the LSEs use the SSEs' output as their inputs, this backward integration creates an external economy; if the LSEs decide to invest more for their expansion and hence demand more inputs(such as small firms' output),this incremental demand can push the factor price higher and lead to higher profits in the SSEs. In turn,these profits can lead to further investment and can cheapen the SSEs' output price, establishing the mechanism of the external economy.

The LSEs and the SSEs can each constrain the other's investment plans; with backward integration, the limited capacity of the SSEs will constrain the demand by the LSEs and, again, the limited capacity of LSEs will constrain supply by the SSEs. This limitation can be removed only by the simultaneous expansion of both LSEs and SSEs. Therefore with vertical integration (backward linkage) ,the role of SSEs becomes important for the LSEs' survival.

b. Subcontracting

Subcontracting is found to be of as much benefit to the smaller units, as it is to the larger ones. The system of contracting to small units enables LSEs to operate at relatively lower costs, since the cost of manufacture by SSEs is often comparatively less because of lower overheads and lower wages. Larger exporters tend to turn

to the foreign suppliers for intermediate inputs, a situation which negatively affects the balance of payments.

Considering the advantages of subcontracting, I think the government should assist the growth of SSEs by permitting, encouraging, and requiring its agencies to purchase from them; large government contractors should be encouraged to subcontract to smaller suppliers; finally the government may indirectly persuade large private industries to give a fair chance to SSEs by subcontracting to small domestic suppliers. A good example of the subcontracting system with LSEs is in Japan. Japanese multi-national LSEs have their own subcontractors, sub-sub contractors, sub-sub-sub contractors etc., which makes a vertical grouping connection with the large parent firms. Japanese parent companies gave excellent technological ,managerial, and financial support to small sub-contractors, improving their efficiency (Watanabe 1978); to encourage subcontracting, the Japanese government provided financial assistance to smaller producers through the parent firms(The Law of Cooperative Association of Medium and Small Enterprises, August 1949).

Subcontracting can be used to further the goals of self-sufficiency in industrialization and decentralization of industrial location in Korea. The Korean government can encourage subcontractors to locate their firms in

secondary cities or rural areas, by providing financial assistance and friendly persuasion through the large parent firms; the managerial and technological guidance from the central or local government and from the large parent firms to small subcontractors is valuable in improving the efficiency of SSEs in Korea.

F. CONCLUSION

So far I have reviewed the problems of the SSEs in Korea and tried to suggest possible solutions for them. The findings about these issues are:

First, the past industrial policies in terms of overvaluation, interest etc. have consistently favored the LSEs. This policy favoring the LSEs reduced the capital cost for the LSEs relative to the SSEs. In 1973, the capital cost for LSEs was 30% cheaper than the capital cost for SSEs. Although this advantage has lessened since 1981, even in 1984 the capital cost for LSEs was 6.5% cheaper.

Second, the SSEs tend to be concentrated around urban areas. The SSEs in urban areas employed about 70% of the total labor force in SSEs in 1984.

Third, Ho's and the SBC method confirmed that the SSEs in small industry became less efficient than the LSEs in such industry during 1968-84. The suggetions are mainly aimed at creating a fair environment based on the

market mechanism where the LSEs and the SSEs can compete on even terms and complement each other in order to survive and co-exist. Therefore the balanced growth and composition of SSEs and LSEs in the overall industrial structure may contribute to fast economic growth, strong growth of employment, and a more equitable income distribution in the economies of other LDCs as well as in Korea.

CHAPTER 7

A REVIEW OF TAIWAN'S SSES

A. INTRODUCTION

In the previous chapter, I found that in the Korean capital market the SSEs were discriminated against; they were concentrated around urban areas (specially Seoul) and were not efficient compared to LSEs in small scale industry. As conditions in Taiwan are similar to those in Korea ,in terms of a high density of population with a poor resource base though the record is better in terms of economic growth and income distribution, it is meaningful for us to compare SSEs in Korea and Taiwan.

First I will review the relative share of SSEs in the industrial structure of Taiwan, then their location and finally the efficiency of SSEs in small scale industry. From these studies, we will be able to get a perspective on the SSEs in Taiwan and derive a course of action for SSEs in Korea and other LDCs.

B. A Comparison of Social Indicators for Korea and Taiwan

Korea and Taiwan are known as NICs (Newly Industrializing Countries) that have achieved a high economic growth as well as an equitable income

distribution,relative to other LDCs. But a careful look at these two countries will reveal the superior record of Taiwan in terms of growth and income distribution.

As Table 7.1-1 shows, during the period 1965-81, Korea achieved a growth rate of GNP of 8.7% , and Taiwan 9.4% . Also, during 1965-76,the GINI index worsened in Korea from .344 to .381. On the other hand, Taiwan recorded an improvement of the GINI index from .322 to .289. This indicates that Taiwan registered a better economic growth and income distribution.

The better income distribution in Taiwan seems to result from various policies including one of land reform. In Taiwan, land reform between 1949-53 reduced tenant rents,and public lands were sold to farmers; land holdings were limited to about 1.7 acres of paddy and 7.2 acres of dry land, and the rest was redistributed to other rural households. This resulted in an effective improvement in income distribution, better management of land and higher productivity. The existence of a large number of small business enterprises also contributed to the equitable income pattern in Taiwan, because these small businesses made the competitive market system work in an efficient fashion.

C. Early Economic Background for Taiwan's SSEs

Table 7.1-1

Average Annual Growth Rates in Real Terms
1965-1981 (%)

	Korea	Taiwan
Population	1.9	2.3
Employment	3.4	3.7
Gross National Product	8.7	9.4
Manufacturing Output	20.6	15.5
Total factor productivity in manufacturing	2.1[a)]	4[b)]
Exports	26.0	18.9
GNP per capita	6.7	6.9
Labor productivity	5.2	5.4
Real wage in manufacture	7.9	7.3

Table 7.1-2

GINI Index of Inequality of Income Distribution

	1965	1970	1976
Korea	.344	.332	.381
Taiwan	.322	.293	.289

Note: a) covers the period of 1966-1975, while b) covers the period of 1952-1980.

Sources: Tibor Scitovsky, 1985 ' Economic Developmet in Taiwan and South Korea; 1965-81' Table1,P216& Table3, P 218 Food Research Institute Studies No.3. For a) & b), Harry Oshima, 1986 'The Transition from an Agricultural to an Industrial Economy in East Asia 'Economic Development & Cultural Change.

Before 1950, Taiwan was a agriculture-oriented economy with relatively equal income distribution. The cultivable area was 25 % of total land, and the tropical weather was warm enough to grow crops all the year around. The major crops were rice and sugar cane.

Since early 1950, the land reform program has made a dramatic change in the agricultural sector. Taiwan's land reform went through three stages; 1) rent reduction in 1949, 2) sale of public land in 1951, 3) a land-to-tiller program in 1953(Koo 1968). This land reform contributed effectively to income redistribution.

During 1950-60, rent reduction and the higher land productivity due to land reform increased rural tenants'income, consumption, and saving. The increased rural income made it possible for the farmers to afford education for their children and demand more agricultural inputs as well as consumer goods. Consequently the migration outwards by well educated young people to seek off-farm employment reduced Ag-unemployment. Also the higher demand for agricultural inputs and consumer goods made possible the development of industries with backward and forward linkages to agricultural sector. Therefore the land reform program in the agricultural sector contributed to promoting the industrial sector indirectly.

The opportunity cost of the land reform program turned out to be minimal, because there was no competition

for skilled labor between the Ag and industrial sectors, and the demand for land input for industrial projects was not high during that period(Koo 1968).

During the early 1950s , the migrants from main land China began to establish many small businesses in the non-Ag sector. Taiwan's government took over LSEs from the Japanese so that the revenues created from these public enterprises went to the treasury. At the same time, all efforts for industrial development focused on the recovery of the then-existing infrastructure, the Ag-based industries, and the import-substituting industries.

Since early 1950s, Taiwan's high interest rate policy has accelerated saving and capital accumulations by curbing hyperinflation, and resulted in keeping the deposit & loan interest rate close to the equilibrium rate, so as to maximize the return on the investment. Also the high loan interest rate played a role of limiting the profits of the enterprises, which slowed down the growth of the firm size(Scitovsky 1985).

D. Taiwan's Industrial Policy

A review of Taiwan's industrial policy in terms of the factor market and the output market.

1. Factor Market

a. Capital Market

In Taiwan the capital market is less distorted; Table 7.1-3 shows that the Korean capital market conditions favored LSEs against SSEs clearly, while the Taiwanese capital market did not have any such bias. In 1978 the capital cost for Korean LSEs was 25.7 % less than that of SSEs, in terms of overvaluation, interest and taxes. On the other hand, the relative capital cost for Taiwan's LSEs was 0.4 % less than that of SSEs. Therefore Table 7.1-3 proved clearly that Taiwan's capital market is less discriminating(more neutral) against SSEs than the Korean market. Although some distortions in Taiwan's capital market still exist, the degree of distortion is much less.

b. Labor Market

The studies(Myers 1986, H0 1980) agreed that Taiwan's labor market was relatively distortion- free and highly competitive and open. The rationale for this statement lies in the facts that unions are weak and disorganized,while the 'minimum wage' is not generally enforced . During the last two decades labor productivity has more than kept pace with the increasing real wage.

But the real wage gap between the LSEs and the SSEs still exists, though this is smaller than in Korea;

Table 7.1-3

Policy-induced Capital Cost Distortion in Large and Small Scale Enterprises (Korea and Taiwan)

(Expressed as the percent difference in large firms' cost to small firms)

Percentage Difference in Capital Cost owing to:

Year	Nation	Trade regime (overvaluation)	Interest	Taxes	Total Capital
1976	Korea	-2.1	-30.4	+10	-22.5
	Taiwan	-4.6	-16.27	+22	+ 1.13
1977	Korea	-5.3	-28.5	+10	-23.8
	Taiwan	-2.5	-17.05	+22	+ 2.45
1978	Korea	-7.7	-28	+10	-25.7
	Taiwan	-5.9	-16.5	+22	- 0.4
1979	Korea	-15	-33	+10	-38
	Taiwan	-10.5	-16.99	+22	- 5.49
1980	Korea	-1.6	-32.5	+10	-21.1
	Taiwan	-5.1	-17.31	+22	- 0.41
1981	Korea	-2.2	-23	+10	-15.2
	Taiwan	-4.3	-18.18	+22	- 0.48
1982	Korea	-7.5	-21.7	+10	-19.2
	Taiwan	-3.5	-19.64	+22	- 1.14
1983	Korea	-5.8	-15.5	+10	-11.3
	Taiwan	-4.0	-18.26	+22	- 0.26
1984	Korea	-0.1	-16.4	+10	- 6.5
	Taiwan	-5.9	-17.92	+22	- 1.82

Source: The Korean data are from Table 6.2 in Ch.6.

Notes: The calculation for Korean data is shown in Appendix A.
The calculation for Taiwan data is shown in Appendix B.

in 1971 the annual average wage paid by LSEs with 500+ workers was about 60 % higher than that paid by SSEs with 1-9 workers(HO 1980). The main reason for wage gap between LSEs and SSEs was the difference in quality, training and skills of the work force.

2. Product Market

a. Export/Import Policy

In the early 1960s, the government chose an export oriented policy in order to dispose of the surplus local products and to explore the foreign market. Since then, Taiwan's government has adopted a more realistic foreign exchange rate; liberalized import controls and generally reduced the factor and product market distortions. At the same time, it offered tax rebates, and five year tax holidays for newly established enterprise.

In the early phase of the export promotion policy, SSEs were not much affected because they produced for the domestic market. But as this gave an advantage to economies of scale, the size of firm assumed importance; SSEs in Taiwan realized that they were in competition with many new LSEs for the same unskilled workers. These factors in the export oriented policy made conditions less favorable for SSEs. But because the government policy has been less discriminating, the SSEs in Taiwan have played a

much larger role in industrial development as well as exports.

b. Agricultural Policy

To improve living standards in the rural areas, the Taiwanese government relied on land reforms (1949-53), improving the infrastructure and raising the ag-output; to raise Ag-output and income, government agencies(the Joint Commission on Rural Reconstruction and the Taiwan Provincial Department of Agriculture and Forest) increased the supply of fertilizer,improved irrigation facilities, provided better seeds, undertook pest control and developed high-yielding crop varieties.

The increase in rural incomes also led to a strong demand for non-food consumer goods and services, and for material and equipment inputs in Ag production; the attempt to develop a new export-oriented food processing industry in the rural area was successful.

This adaptive Ag sector combined with a more outward -looking strategy contributed to the strong growth of new Agro-industries, which have been a major source of employment and non-farming income in rural Taiwan.

The improving infrastructure (transportation system, roads, etc) and the small land area helped to extend industrial growth from the major urban centers to smaller towns and the surrounding country side.

c. Capital Formation Policy

In the 1950s, US aid played a significant role in financing Taiwan's economic growth and national defence. But as economic conditions improved in the 1960s, other foreign loans and investment replaced US aid. To attract foreign investment, in 1959-60 the Taiwan government amended the investment law, providing tax concessions (five year income tax holidays), allowing repatriation of profits and interest two years after completion of investment, and giving extensive protection against expropriation.

But the bulk of investment was financed by high domestic savings; thus household saving supplied from 36 % - 47% of total capital formation in 1977, levelling off to 36 % in 1981. The average savings propensity of households was high, ranging from 11 % to 24 % during 1965-1981. The policy that enabled this high rate of savings was one of insuring a positive real rate of return on savings deposits and a stable price level and offering attractive tax incentives.

With the aid of high domestic savings, Taiwan successfully financed its growth without relying heavily on foreign capital. This is in contrast with the Korean case. At the end of 1984, the Korean external debt was 43 billion $ or 53 % of its GNP, but the Taiwan debt was

under 12 billion $ or 21 % of its GNP. Between 1960 and 1983, Taiwan saved, in gross terms, 25% of its GNP while Korea saved 17 % (Myers 1986).

d. Industrial Strategy and Innovations

Levy(1987b) characterized the Korean industrial strategy as an 'Assembly Strategy' which requires substantial initial investments and may absorb substantial initial loss; this strategy can help to acquire complex technology, specially the process technology permitting productivity gain. On the other hand, Levy saw Taiwan's industrial strategy as a 'Bootstrap Strategy' which requires small size at entry, and allows low cost of failure under high uncertainty; this strategy can focus on products with short life cycles, can help to acquire technology facilitating the design of new products & can be more supportive of innovation. As a result, the entry barrier to Korean SSEs limited the advance of innovation and development of technology to a few LSEs, but the easy entry for Taiwan's SSEs made it possible for innovation and development of technology to be driven evenly by many SSEs.

E. SSEs in Taiwan's Industry

1. Small Scale Dominating Industrial Structure

The development and prosperity of Taiwan's SSEs can be attributed to many factors, including a cultural preference for economic independence through owning business concerns. As Scitovsky(1986) pointed out, the migrants from the mainland, as well as from abroad, brought in their own capital ,and commenced establishing their own enterprises in the manufacturing and service sector; a high domestic saving rate made it easy to fund new business establishments, and a large field of small sized enterprises offered better conditions for new comers entering the market. Political stability and the greater stock of human capital of high quality combined to provide an favorable environment for the development of SSEs(Levy 1987c).

Levy(1987b) regarded the emergence of Korean large conglomerates as an efficient institutional response to greater underdevelopment of the nation & a host of associated market failures; the lack of subcontracting opportunity and the fact that few indigeneous traders willing to explore the export market for SSEs' products seemed to make the initial investment cost and the size at entry substantially larger. On the other hand, Levy found that Taiwan had a favorable environment for SSEs, where the market functioned more efficiently and SSEs did not face an entry barrier; the easy entry to subcontracting and the presence of Taiwanese traders willing to explore

the export market for SSEs' products seemed to make it easy for SSEs to start production at a small scale with a little investment and specialized market information.

Taiwan's policies did not favor one industrial sector against another. Consequently, aggressive small scale entrepreneurs and a neutral government policy ensured easy access to funds and prosperity for the SSEs. Government policies nurtured private enterprises which were market-oriented and had a comparative advantage, using abundant resources efficiently and only gradually switched to the use of more scarce resources like capital goods.

These conformed to the criteria of efficiency as noted by Myer(1986), who argued that if the markets are highly competitive and allocate resources efficiently, then technical diffusion, productivity gain and employment opportunity occurs in all sectors. So there is no case for a discriminatory policy .

As the Levy(1986) study shows, some of Taiwan's policies such as cross-subsidization of domestic sales in export and import competing industries did negatively affect SSEs but the extent of intervention by the Taiwan government was less extensive than in Korea. As a result, the position of SSEs in Taiwan is better.

Table 7.2 shows that in manufacturing , SSEs with below 100 workers are significant in terms of employment.

Table 7.2

The Relative Position of SSEs in Manufacturing
Taiwan

	workers	% of total
(1966)		
Total employment	589,660	100
Small scale enterprise	251,879	43
1-4workers	23,447	4
5-49workers	177,256	30
50-99workers	51,176	9
Large scale enterprise		
100+ workers	337,781	57
(1971)		
Total employment	1,201,539	100
Small scale enterprise	427,988	36
1-4workers	31,360	3
5-49workers	285,843	24
50-99workers	110,785	9
Large scale enterprise		
100+workers	773,551	64
(1981)		
Total employment	2,178,191	100
Small scale enterprise	957,591	43.97
1-4 workers	112,649	5.17
5-49 workers	571,168	26.23
50-99 workers	273,774	12.57
Large scale enterprise		
100+ workers	1,220,600	56.03

Source:1966 & 1971 data are based on Ho's World Bank Staff Working Paper , No.384,'Small Scale Enterprises in Korea and Taiwan' P5.
1981 data are based on 'The Report of 1981 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' Volume 3.

In 1981, Taiwan's SSEs with below 100 workers employed 43.97% of the total labor force in the manufacturing industry. In 1966 it was 43%. On the other hand, Korean SSEs in 1984 employed 34% of the manufacturing labor force. Taiwan's SSEs are significant enough to employ a considerable section of labor in the manufacturing industry, particularly , the SSEs with 5-49 workers. They dominate in terms of employment among the SSEs (1981, 26.23%).

If SSEs account for half or more of the industry's labor force, SSEs (those with fewer than 100 workers) may be said to be predominant in an industry. An industry where SSEs predominate is called a small scale industry (Ho 1980).

Following this classification, Table 7.3-1 shows that in 1976 the SSEs with 1-99 workers accounted for half or more of the country's employment in 67 out of 134 four digit manufacturing industries; the SSEs employed 70% of the workers and produced 60% of the value-added in these 67 small scale industries. As for their relative importance in overall manufacturing, SSEs in small scale industries employed 22.4 % of all manufacturing workers and produced 13.7% of the total manufacturing value added in 1976. SSEs in 67 industries, where small plants do not predominate, employed 16% of all manufacturing labor and produced 9.2% of the total value added in the

Table 7.3-1

Share of Small Enterprises with 1-99 workers in Employment by Four-digit Industries, Taiwan. 1976

	# of workers(000)			share of employment(%)		
% of workers in small est.	# of est.	small est.	large est.	all est.	small est.	large est.	all est.
75-100	28	192	39	231	10.1	2.0	12.1
50-74	39	234	142	376	12.3	7.5	19.8
25-49	38	190	339	529	10.0	17.8	27.8
0 -24	29	115	654	769	6.0	34.3	40.3
Total	134	731	1,174	1,905	38.4	61.6	100.0

Table 7.3-2

Share of Small Enterprises with 1-99 Workers in Value Added by Four-digit Industries, Taiwan. 1976

		Value Added (NT $ million)			share of manufacturing value added(%)		
% of workers in small est.	# of est.	small est.	large est.	all est.	small est.	large est.	all est.
75-100	28	11,865	3,413	15,278	6.1	1.8	7.9
50-74	39	14,661	14,204	28,865	7.6	7.3	14.9
25-49	38	11,144	32,570	43,714	5.8	16.9	22.7
0 -24	29	6,587	98,866	105,453	3.4	51.1	54.5
Total	134	44,257	149,053	193,310	22.9	77.1	100.0

Note: Employee is based on data of persons engaged as of Dec.31,1976, and value added is based on data of annual gross value added.

Source: The calculation is based on data in ' The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China, Volume 3, book 1'

manufacturing industry.

Table 7.4 shows indirectly through the number of enterprises that in the other industries apart from the manufacturing sector SSEs with 1-4 workers employed a majority of the work force: in the electricity, gas and water sectors there are 40 % of the total numbers employed; in the construction sector, 38.2%; and especially, in whole sale or retail sale trade, 87.7%. Therefore, we may conclude indirectly that in Taiwan the SSEs are absorbing a significant portion of the labor force in the across-the-aboard industries including the manufacturing and the service industries.

2. Decentralization of SSEs

In Taiwan, the rural areas have not been excluded from the benefits of economic development ,because rural households can add to their incomes from non-farming activities. The variety of non-farming activities in Taiwan's rural areas is impressive. With good infrastructure like roads and transportation, farmers can commute to the cities to seek part time employment; the rural locations of SSEs give the opportunity to farmers to engage in non-farming activities. In the early phase of development, the government stressed the production of consumer goods using products from the agricultural sector as inputs; this resulted in the development of

Table 7.4

Number of Enterprises in Selected Non-manufacturing Industries, by Size

Taiwan - 1981

Industry	Total	1-4	5-9	10-19	20-49	50-99	100-499	500+
Electricity gas&water	40	16	1	2	2	6	9	4
(%)	(100)	(40)	(2.5)	(5)	(5)	(15)	(22.5)	(10)
Mining	944	210	232	203	162	57	67	13
(%)	(100)	(22.2)	(24.6)	(21.5)	(17.2)	(6)	(7.1)	(1.4)
Construction	12,541	4,792	2,787	2,083	1,635	593	515	136
(%)	(100)	(38.2)	(22.2)	(16.6)	(13.1)	(4.7)	(4.1)	(1.1)
Trade	315,382	276,679	26,032	8,455	3,276	620	290	30
(%)	(100)	(87.7)	(8.3)	(2.7)	(1.0)	(0.2)	(0.1)	(0)
Other Industry	92,944	74,264	9,265	4,637	3,347	874	449	108
(%)	(100)	(79.9)	(10)	(5)	(3.6)	(0.9)	(0.5)	(0.1)

Source: 'The Report on 1981 Industrial and Commercial Census Taiwan-Fukien Area, the Republic of China,' Volume 1 General Report published by Directorate-general of Budget, Accounting and Statistics, Executive Yuan. June, 1983.

food processing industries. a rising income from non-farming activities made farmers less dependent on agriculture as their sole source of income.

Table 7.5 shows that in 1981 rural employment in manufacturing took a considerable portion(43%) of the total manufacturing labor force. In 1966, the rural employment in manufacturing was 32 %. This data confirms the continuous increase in rural manufacturing employment through non-farming activities. This table assumes that urban areas in Taiwan cover Taipei, Kaohsiung, Taipei Hsien, Keelung, Taichung and Tainan(Ho 1980).

In Table 7.6 the majority of enterprises regardless of size including the large and the small scale are located around rural areas; the number of very small establishments with 1-4 workers located in the rural areas was 61 % in 1981. In across-the-board industries, a rural location is also very common.

Table 7.7 shows that in 1981 the number of mining establishments located in the rural areas was 67%; manufacturing ,57%; electricity,70% etc. This data implies that many SSEs are located in the rural areas of Taiwan.

Further Table 7.8 shows the manufacturing locations in more detail; a majority of the food , wood and minerals industries, are located in rural areas. 82 % of food based industries, 78 % of wood based industries, and 71 % of mineral based industries are to be found in rural areas.

Table 7.5

Employment of Manufacturing,distributed by Location

Taiwan (unit:000)

Year	Total	Urban	Rural
1966	590	402	188
(%)	(100)	(68)	(32)
1971	1,202	613	589
(%)	(100)	(51)	(49)
1976	1,906	1,114	792
(%)	(100)	(58)	(42)
1981	2,196	1,255	941
(%)	(100)	(57)	(43)

Note: Urban areas cover'Taipei,Keelung,Taichung,Tainan, Kaohsiung and Taipei prefecture'.

Table 7.6

Number of Establishments in Manufacturing,distributed by Location Taiwan - 1981

Location	Total	1-4	5-99	100+
Urban	40,827	17,892	21,350	1,585
(%)	43	39	47	40
Rural	53,719	27,519	23,786	2,414
(%)	57	61	53	60

Sources: 1966,1971 data are based on Ho's World Bank Staff Working Paper No.384 'Small Scale Enterprises in Korea and Taiwan' P 21 Table 2.7.

1976 data are based on 'The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' Volume 3 Book 1.

1981 data are based on 'The Report of 1981 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' volume 3.

Table 7.7

Number of Enterprises Units of Industry and Commerce by Locality and Industry Taiwan - 1981

Industry	Total	Urban	Rural
Mining	944	311	633
(%)	(100)	(33)	(67)
Manufacturing	91,562	39,543	52,019
(%)	(100)	(43)	(57)
Electricity gas & water	40	12	28
(%)	(100)	(30)	(70)
Construction	12,541	6,832	5,709
(%)	(100)	(54)	(46)
Wholesale trade retail trade	315,382	152,456	162,926
(%)	(100)	(48)	(52)
Other Industry	92,944	44,762	48,182
(%)	(100)	(48)	(52)

Table 7.8

Number of Enterprises Units of Manufacturing by Locality Taiwan - 1981

Manufacturing	Total	Urban	Rural
Food,beverage,tobacco	8,748	1,620(18%)	7,128(82%)
Textile, leather	9,996	5,041(50%)	4,955(50%)
Wood, its product	8,662	1,986(22%)	6,676(78%)
Paper, publishing	6,426	4,061(63%)	2,365(37%)
Chemical products	11,294	4,894(43%)	6,400(57%)
Non-metal mineral	3,716	1,114(29%)	2,602(71%)
Basic metals	2,007	1,057(48%)	950(48%)
Metal products	36,497	17,756(48%)	18,741(52%)
Other manufacture	4,216	2,014(47%)	2,202(53%)

Note: Urban areas cover 'Taipei, Kaohsiung,Taipei Hsien, Keelung, Taichung and Tainan'

Source:'The Report on 1981 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China'.

Table 7.9 shows in further detail the aspects of these three rural based industries; in the food industry ,70% of the total number of food processing enterprises, 93% of the oil pressing and milling enterprises, and 79% of the condiment producing enterprises are located in rural areas. In the wood industry, 79% of the total number of wood and bamboo processing enterprises and 74% of non-metal furniture producing enterprises are located in rural areas. In the non-metallic mineral industry, 84% of glass product enterprises and 85% of cement enterprises are located in rural areas.

This strong trend towards rural location of manufacturing industries in Taiwan is in contrast with the situation in Korea, where the majority of the LSEs and SSEs are located in urban areas. This pattern in Taiwan suggests that expansion of Korean SSEs and those of other LDCs in rural areas may improve rural incomes. Considering the local conditions, the non-farming activities based on a linkage with LSEs and the agricultural sector could be ideally developed in SSEs in the rural areas.

F. Efficiency of SSEs

1. Characteristics of SSEs in Taiwan

The Taiwanese policy of reliance on the market

Table 7.9

Number of Major Enterprises of Manufacturing in Rural Area

Taiwan - 1981

Industry	Total	Urban	Rural
Food,beverage,tobacco	8,748	1,620(18%)	7,128(82%)
Food manufacture	8,605	1,570(18%)	7,035(82%)
food processing	1,827	551(30%)	1,276(70%)
oil pressing & mill industry	4,091	318(7%)	3,773(93%)
sugar factory & refineries	36	14(38%)	22(62%)
tea manufacture	213	72(33%)	141(67%)
condiments	370	81(21%)	289(79%)
other food	2,068	534(25%)	1,534(75%)
Beverage& Tobacco	143	50(34%)	93(66%)
Wood & wood product	8,662	1,986(22%)	6,676(78%)
Wood & bamboo	6,389	1,389(21%)	5,000(79%)
Non-metal furniture	2,273	597(26%)	1,676(74%)
Non-metallic mineral	3,716	1,114(29%)	2,602(71%)
Pottery, China	735	426(57%)	309(43%)
Glass & its product	510	83(16%)	427(84%)
Cement & Oment	870	133(15%)	737(85%)
Other non-metallic mineral	1,601	472(29%)	1,129(71%)

Note: Urban areas cover 'Taipei, Kaohsiung, Taipei Hsien, Keelung, Taichung and Tainan'.

Source: 'The Report on 1981 Industrial and Commercial Census Taiwan-Fukien Area, The Republic of China' Volume 1 General Report published by Directorate-general of Budget, Accounting and Statistics, Executive Yuan June, 1983.

system has improved the efficiency of SSEs; to see this in greater detail, we need to review the SSEs in terms of partial efficiency. First let us observe the change in the manufacturing sector.

Table 7.10 shows the change in the manufacturing sector over time in terms of employment; the fast expansion of heavy industries, chemicals and metals is especially notable. The metal products industry increased its share of employment from 19% in 1966 to 32% in 1981 , within the total manufacturing labor force, and the chemical products industry also increased employment by 18.1% during the period 1966-71 and by 24% during 1976-81.

On the other hand, the light industries, food and textiles suffered a decline or slowing down in share of employment; the food industry figure decreased from 21% in 1966 to 7 % in 1981 within the total manufacturing employment; this trend is similar to that in Korea. Heavy or capital intensive industry is expanding faster than the simple light industry, with capital deepening taking place.

2. Partial Efficiency Measurement of SSEs

Table 7.11 shows that regardless of the size of the SSEs, heavy industry took a significant portion of the employment and the value added; in 1976, a VSSE with 1-4 workers in the metal product industry employed 39% of the

Table 7.10

Employment in Manufacturing by Industry

Taiwan (unit: 000 persons)

Industry	1966	1971	Net increase (1966-71)	1976	1981	Net increase (1976-81)
Total Mfg.	566	1,170	604	1,908	2,197	289
% of total Mfg.	100	100	100	100	100	100
Food,beverage	21.2	10.9	1.3	8	7	-4
Textile,leat.	20.6	26.4	31.8	25	22	4
Wood, paper	11.6	11.1	10.7	10	9	5
Product of chemical	14.3	16.2	18.1	16	17	24
Non-metal mineral	8.1	5.3	2.7	4	5	6
Basic metal	3.1	2.6	2.1	3	3	6
Metal product	19.0	22.9	26.7	30	32	51
Other Mfg.	2.2	4.4	6.5	4	5	8

Sources: 1966 and 1971 data are based on Ho's World Bank Staff Working Paper, No.384 'Small Scale Enterprises in Korea and Taiwan' P 28.

1976 data are based on 'The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' Volume3,book1.

1981 data are based on 'The Report of 1981 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' Volume 3.

Table 7.11

Small Scale Manufacturing : Employment and Value Added distributed by Industry -Taiwan

Industry	Est. with 1-4workers		Est. with 5-49workers		Est. with 50-99workers	
(1971)	employ.	V.A. (NT$ mil.)	employ.	V.A. (NT$ mil.)	employ.	V.A. (NT$ mil.)
Manufacturing	31,360	725	285,843	5,840	110,785	2,359
% distribution	100	100	100	100	100	100
Food,beverage	56	58	11	10	7	2
Textile,leather	3	3	12	11	20	18
Wood,its product	8	9	9	10	7	7
Paper, print	3	3	8	8	4	5
Product of chemical	7	6	15	14	18	25
Non-metal mineral	3	3	10	9	10	8
Basic metal, Metal prod.&equip.	17	15	29	32	27	29
Other Mfg.	4	2	4	4	5	6
(1976)						
Manufacturing	78,702	4,828	4446,973	26,299	209,702	13,138
% distribution	100	100	100	100	100	100
Food,beverage	22	24	6	7	6	8
Textile,leather	6	5	14	13	21	19
Wood, its product	10	10	10	9	8	6
Paper, print	6	5	7	7	4	5
Product of chemical	10	9	16	17	18	18
Non-metal mineral	3	4	7	7	7	7
Basic metal	1	1	3	3	4	4
Metal prod.&equip.	39	39	33	33	28	28
Other Mfg.	3	3	4	4	4	5

Sources: 1971 data are based on Ho's World Bank Working Paper No.384.'Small scale Enterprise in Korea and Taiwan' 1976 data are based on 'The report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' Volume 3, book 1.

total labor force, produced 39% of the value added; an SSE with 5-49 workers in the same industry employed 33% of the labor and produced 33 % of the value added; an SSE with 50-99 workers in the metal product industry employed 28% of labor and produced 28% of value added.

But light industries such as food, did not experience much of a change in terms of number of workers employed. In the 1-4 workers category, the food industry in 1971 employed 17,561 workers and produced 420 million NT$ of value added, but in 1976 employed 17,314 workers and increased the production to 1,158 million NT$ of value added. From this data we can conjecture that food industry has become a more capital-intensive industry. This can be confirmed in Table 7.12; in 1976 the capital/labor ratio of SSEs in the food industry was 474,000 NT$/worker. This ratio is high, compared to the figure in the other industries except for the basic metal industry(529,000 NT$/worker).

SSEs in the metal products industry have a relatively low capital/labor ratio(205,000 NT$/worker) and produced an insignificant 27.6% of the value added; but in 1976 the SSEs in the basic metal industry had the highest capital/labor ratio(529,000 NT$/worker) and produced 98.3% of the value added. From these above data, the Taiwan case study has established that SSEs can not necessarily be categorized as being labor-intensive; Capital/labor ratios

Table 7.12

Output/Capital and Capital/Labor ratios in Small Establishments(1-99workers) of Major Industry Groups. Taiwan - 1976

	% of V.A. in small est.	% emp. in small est.	Value added per unit of assets in small est.	Assets per worker(000NT$) in small est.
1) Food,beverage tobacco	11.2	37.6	.14	474
2) Textile,leat.	17.7	23.7	.19	281
3) Wood,its prod.	49.3	59.2	.24	227
4) Paper,its product publishing & printing	40.7	59.8	.26	241
5) Products of chemical	17.8	36.4	.18	348
6) Non-metallic mineral	25.3	59.8	.25	227
7) Basic metals	98.3	43.8	.12	529
8) Metal products machine&equip.	27.6	41.6	.29	205
9) Other Mfg.	36.9	36.9	.29	178

Note: Small establishments employ 1-99 workers, value added is based on data of annual gross value added, assets are based on data of value of assets in operation as of Dec. 31, 1976, employee is based on data of persons engaged as of Dec. 31, 1976.

Source: The calculation is based on data in 'The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' Volume 3, book1.

vary, depending on the nature of the industry irrespective of size.

Table 7.13 shows in more detail, the capital/labor ratio in the manufacturing industry. In Table 12, I found SSEs in the basic metal industry have a high capital/labor ratio(529,000 NT$/worker). Within the basic metal industry ,SSEs of the ship scrapping industry have an impressively high capital/labor ratio (1,446,000 NT$/worker); a relatively high capital/labor ratio was also found in the SSEs in the food industry (474,000 NT$/worker); within the food industry, SSEs of the flour mill industry have a high capital/labor ratio(1,306,000 NT$/worker).

G. The Total Factor Productivity of SSEs in Taiwan

In the previous chapter, the SSEs in the Korean small scale industry proved inefficient, compared to LSEs. Scitovsky(1986) pointed out that the high interest rate policy and free market forces made a significant contribution to the prosperity of SSEs in Taiwan. For a comparative study, we need to review the efficiency of SSEs. Once again , using Ho's(1980) total factor productivity measurement and the Benefit and Cost ratio, I arrive at a more objective assessment.

1. Ho's Method

Table 7.13

Output/Capital and Capital/Labor ratios for Industries in which Small Enterprises Predominate, Taiwan, 1976

4-digit small scale industry	Value Added per unit of asset (all est.)	Value Added per unit of asset (small est. 1-99workers)	Assets (000NT$) per employee (all est.)	Assets (000NT$) per employee (small est. 1-99workers)
1) Food,beverage,tobacco				
dehydrated food	.17	.16	209.79	248.04
pickled food	.22	.25	176.15	185.05
bakery& cofectionery	.21	.20	392.75	252.34
edible oil fats	.08	.70	1,475.06	819.12
flour mills	.10	.08	1,611.23	1,306.21
husking of rice	.18	.18	393.56	393.56
tea processing	.11	.15	361.00	262.69
other flavoring product	.18	.15	409.79	387.28
misc.food preparation	.24	.18	348.91	331.46
2) Textile, leather				
spinning of silk	.26	.22	260.71	274.85
rope,cable & rugs	.28	.28	193.32	177.27
other textile	.13	.22	483.50	226.14
3) Wood products				
sawmill & planning mill	.17	.17	353.03	353.35
timber drying	.30	.27	301.23	314.76
wooden container	.36	.34	147.09	156.24
bamboo products	.51	.45	91.00	99.26
other wooden products	.34	.37	160.01	150.55
wooden furniture	.33	.32	183.15	178.67
4) Paper & paper products				
paper container	.24	.30	341.07	191.67
other paper	.23	.18	372.81	333.70
publishing	.19	.21	313.99	311.88
printing	.25	.30	309.06	210.26
book binding	.31	.30	149.77	167.45
engraving & etching	.31	.28	181.74	181.74
5) Products of chemicals				
other chemical material	.18	.16	364.58	409.64
paint & lacquer	.17	.18	634.49	557.21
medicine & drugs	.23	.18	472.45	381.48
agricultural insecticide	.11	.05	815.11	885.35
other chemical product	.23	.20	594.23	438.33
industrial rubber prod.	.31	.28	245.94	245.72
other rubber product	.29	.29	234.47	188.30
plastic bags	.22	.23	228.89	217.66
plastic articles	.24	.31	273.22	181.11
other plastic products	.27	.27	215.27	234.74

Table 7.13(cont'd.)

4-digit small scale industry	Value added per unit of assets per employee (all est.)	(small est.)	Assets(000NT$) (all est.)	(small est.)
6) Non-metallic products				
glass & glass prod.	.24	.33	451.13	191.33
cement products	.25	.03	384.01	7,091.05
cons.clav.products	.22	.23	232.12	205.85
abrasive material	.21	.21	357.82	357.82
marble products	.30	.31	239.63	233.34
misc. mineral	.27	.24	310.94	260.05
7) Basic metal				
Iron & steel found.	.14	.12	560.39	498.42
ship scrapping	.04	.04	1,273.43	1,446.38
copper refining	.17	.17	324.36	389.02
other non-ferrous	.23	.24	337.36	358.08
8) Metal product, machine and equipment				
metallic hand tools	.34	.32	206.75	192.35
metallic mould & dies	.30	.35	228.01	186.94
metallic cons.material	.29	.29	184.41	191.06
aluminum products	.13	.24	577.75	239.69
copper products	.26	.35	271.15	185.35
metallic surface fin.	.35	.39	166.68	151.85
other metal product	.28	.32	235.57	195.34
prime mover	.27	.28	292.49	229.63
farm machine	.09	.28	416.09	226.54
metals & mat. process.	.25	.28	310.18	232.30
textile machine	.21	.27	351.01	246.84
food&chem.eng.machine	.19	.31	537.56	210.42
mine & cons. machine	.17	.27	480.01	219.29
misc. industrial mach.	.30	.29	235.85	238.02
other machine	.27	.31	261.79	197.38
railway rolling stocks	.46	.46	56.46	56.46
bicycle	.20	.18	300.05	318.59
other trans. equipment	.27	.29	170.91	213.49
scientific controlling	.42	.36	237.87	311.96
medical apparatus	.25	.25	211.06	211.06
other precision machine	.22	.22	327.38	327.38
9) Other manufacture				
jewellery	.38	.30	158.91	173.61
ice making	.13	.13	484.10	500.96

Note: Value added is based on data of annual gross value added, assets are based on data of Value of assets in operation as of Dec. 31,1976, employee is based on data of persons engaged as of Dec. 31, 1976.
Source: The calculation is based on data in 'The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' volume 3 book 1.

For convenience we assume two factors in production namely capital and labor and apply this measurement to Taiwan's 4-digit manufacturing small scale industry where the SSEs have over 50% of employment. Following Ho's technique, I assume a 20% shadow price of capital and no distortion in the labor market. Then the total factor productivity of j th category - A(j) becomes

$$\left(\frac{\text{Value added(j)}}{(.2)K(j)}\right)^{\frac{(.2)K(j)}{(.2)K(j)+W(j)}} * \left(\frac{\text{Value added(j)}}{W(j)}\right)^{\frac{W(j)}{(.2)K(j)+W(j)}}$$

where K(j) is assets in operation of j th category and W(j) is the wage bill of j th category and the Value added(j) is the net value added of j th category of the given industry.

Table 7.14 shows A(j) of the small scale industries in 1976; the total factor productivity of the dehydrated food industry in the 1-4 workers category is 1.09; this result in Table 7.15 shows that in a large number of small scale industries, the SSEs have the highest total factor productivity. In 1976, the total factor productivity was highest in 46 SSEs with 1-99 workers but the total factor productivity was highest in 21 LSEs with over 100 workers.

This result for Taiwan contrasts with the Korean situation. In the Korean case, SSEs have the highest total factor productivity in a fewer number of small scale industries in 1984 than LSEs. In 1976 Taiwan SSEs in

Table 7.14

Total Factor Productivity of Establishments for Industries in which Small Establishments predominate, by Type of Industry & by Size of Establishments(Worker),Taiwan, 1976: A(j)

4-digit Industry	1-4	5-9	10-19	20-49	50-99	100-299	300-499	500+
1) Food,beverage,tobacco								
dehydrated food	1.09	1.04	.68	.94	.68	.90		
pickled food	1.11	1.36	1.75	1.28	1.16	.92	.54	
bakery&confect.	1.23	1.16	1.05	.84	.97	1.55	1.09	1.02
edible oil fat	.93	.63	.18	.001	1.82	.38		
flour mill	1.12	.94	.56	.33	.35	.31		.69
husking of rice	1.11	1.01	1.16	.43	1.24			
tea processing	.65	1.03	1.10	1.31	.09	.09	1.03	
other flavor.pro.	.92	1.09	.62	.19	.87	.84	1.51	
mis.food prepar.	1.11	1.02	.69	1.03	.98	2.68		
2) Textile, leather								
spinning of silk	1.42	.55	1.52	.9	1.20	1.47		
rope,cable& rugs	1.15	1.45	.98	.11	1.29	1.08	1.34	1.30
other textile	.83	1.26	1.18	.87	1.15	.99	1.04	.27
3) Wood & wood product								
saw&plan. mill	.84	.96	.97	1.07	.67	1.23	2.22	.52
timber drying	.70	2.17	.99	.70	1.29	1.62		
wooden contain.	1.23	1.36	1.37	1.53	1.44	1.50		
bamboo products	1.38	1.52	1.64	1.59	1.64	1.68	1.17	
other wooden	1.34	1.51	1.59	1.48	1.37	1.28	.66	.84
wooden furniture	1.32	1.42	1.35	1.66	1.19	1.41	1.33	1.28
4) Paper& its products								
paper container	1.19	1.34	1.39	1.47	1.01	.94	.53	1.22
other paper	1.17	1.39	1.22	1.08	.62	1.52	1.55	
publishing	.85	1.22	1.08	1.05	1.38	.60		
printing	1.15	1.33	1.40	1.41	1.29	1.04	.73	.93
book binding	1.16	1.41	1.43	1.36		1.58		
engrave&etching	1.11	1.41	1.29	1.53	1.05			
5) Products of chemicals								
other chemical	.85	.44	.86	1.03	.86	.59	1.25	
paint& lacquer	1.02	1.01	.87	1.07	.82	.81	.67	
medicine&drugs	.59	.88	.87	1.02	.95	1.56	1.63	1.17
ag.insecticide	.79	.71	.70	.63	.10	.96	.75	.70
chemical products	.34	.80	.96	1.11	1.13	1.44	1.68	.85
industrial rubber	2.00	1.16	1.54	1.27	.62	1.73	1.14	
other rubber	1.17	1.19	1.15	1.26	1.23	1.16	4.32	1.51
plastic bag	1.17	1.07	1.13	1.33	.74	.86	1.15	
plastic articles	1.33	1.33	1.23	1.28	1.35	.83	1.25	.51
other plastics	1.18	1.34	1.36	1.22	1.17	1.23	1.29	1.28
6) Non-metallic products								
glass & its prod.	1.41	1.66	1.43	1.38	1.15	.89	.03	.90
cement products	1.16	1.23	1.33	.92	1.40	1.21	1.74	1.78
con. clav.	1.05	.97	.98	1.21	.92	.96	1.56	.72
abrasive mater.	.85	1.10	1.12	.60	1.53			
marble products	1.57	1.53	1.38	1.34	.83	1.11		
mis.minerals	.88	1.12	.98	1.27	1.01	1.21	2.10	

Table 7.14(cont'd.)

4-digit Industry	1-4	5-9	10-19	20-49	50-99	100-299	300-499	500+
7) Basic metal								
Iron&steel found.	1.16	1.36	.88	.47	.51	.70	.92	1.02
ship scrapping	.03	.02	.08	.07	.25	.26	.73	
copper refine	1.51	.89	.73	.83	.95	1.01		
other non-ferr.	1.38	1.26	.72	1.34	1.18	.56		
8) Metal products, machine and equipment								
metal,handtools	1.43	1.35	1.33	1.28	1.35	1.41		1.39
metallic mould	1.48	1.53	1.42	1.36	1.09	1.33	.18	
metal.con.mat.	1.41	1.48	1.47	1.19	1.07	1.00	1.36	1.47
aluminum prod.	1.32	1.21	1.28	1.18	.87	1.37		.37
copper products	1.35	1.40	1.41	1.42	1.54	.81		
metallic surface	1.48	1.48	1.48	1.38	1.58	.57		
other metal prod.	1.41	1.42	1.46	1.29	1.51	1.11	.95	1.13
prime mover manu.	1.06	1.40	1.07	1.42	.92	1.31	1.10	
farm machine	1.31	1.76	.99	1.34	1.18	.28	.68	
metal&mat.proc.	1.39	1.43	1.31	1.19	1.18	1.11	1.13	.94
textile machine	.33	1.28	1.49	1.33	.95	.22	1.25	
food&chem.mat.	1.23	1.33	1.34	1.32	1.24	1.36	1.04	.76
mine&cons.machine	1.39	1.09	1.40	1.41	.89	.53	1.36	
misc.ind.machine	1.29	1.32	1.25	1.09	1.36	1.46	1.45	
other machine	1.29	1.41	1.19	1.36	1.21	1.42	1.63	.91
railway rolling		1.70		.98				
bicycle	1.36	.23	2.03	1.27	.98	1.12	1.60	
other trans.equip.	1.51	1.39	1.14	1.67	1.03	1.58	.83	.15
scie.controlling	1.31	1.31	1.42	1.83	1.90	1.61	1.79	
medical appara.	1.16	1.42	1.05	.98	1.59			
other preci.mach.	1.56	.83	1.31	.78	1.09			
9) Ohther manufacture								
jewellery	2.08	1.60	1.36	.96	1.22	1.58		
ice making	.64	.71	.64	.61	.96	1.13		

Note: A(total factor productivity in given industry) measurement was obtained by $(V.A./.2K)^{a_1} * (V.A/W)^{a_2}$ where V.A. is net value added, K is operating assets value, W is wage bill. We asume shadow price of capital is 20% and there is no distortion in labor market. And a_1 is capital factor share which is .2K/(.2K+W) and a_2 is labor factor share which is W/(.2K + W). A(j) is total factor productivity in j-th size category of given industry. This measurement can be obtained by same process, by using data of j-th category.
Source: The calculation is based on data in 'The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' volume 3 book 1.

Table 7.15

Number of Industries where Total Factor Productivity (Capital shadow priced at 20%) is greatest in the Size Category indicated

Taiwan - 1976

Industry	1-4	5-9	10-19	20-49	50-99	100-299	300-499	500+
Food	1	0	1	1	2	3	1	0
Textile	0	2	1	0	0	0	0	0
Wood	0	1	1	2	0	1	1	0
Paper	0	0	0	3	1	1	1	0
Chemical	1	0	1	2	1	1	4	0
Mineral	1	1	0	0	1	0	3	0
Basic metal	2	1	0	0	0	0	1	0
Metal prod.	2	5	2	3	5	3	1	0
Other manu.	1	0	0	0	0	1	0	0
Total	8	10	6	11	10	10	12	0

Note: The surveyed industries are small scale industries where small scale enterprises have over 50% of employment.

Source: 'The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' volume 3, book 1, published by the committe on industrial and commercial censuses of Taiwan-Fukien district of the Republic of China, Executive Yuan.

small scale industries were more efficient than the LSEs in small scale industries. From this data we may conjecture that the Taiwanese SSEs with 1-99 workers tend to generate a large amount of employment efficiently because SSEs were more efficient than LSEs in many small scale industries.

The rationale in comparing Korean data in 1984 with 1976 Taiwan data is that Taiwan was about six years ahead of Korea in terms of per capita income; Korean per capita income in 1981(US$ 1,697) was about the same as Taiwan's per capita income in 1975(Scitovsky 1986).

2. Social Benefit - Cost Analysis

To complement Ho's measurement for a total factor productivity, I perform a Benefit - Cost ratio analysis. In the Benefit and Cost ratio measurement, I assume two factors , capital and labor. I apply this measurement to 4-digit manufacturing small scale industries where SSEs have over 50 % of employment. Following Ho, I assume a 20% shadow price of capital and no distortion in the labor market. Technically Benefit and Cost ratio of the j th size category in a given industry becomes Value added(j)/(.2)K(j)+W(j) where K(j) is assets in operation of j th size category and W(j) is the wage bill of j th size category and value added(j) is the net value added of j th size category.

Table 7.16 shows Benefit and Cost ratio of 4-digit small scale industries based on size category; the Benefit and Cost ratio of dehydrated food industry in 1-4 workers sized category is .56.

As a result, Table 7.17 shows that the majority of industries have the highest TFP in SSEs of the small scale industries. These results confirmed those by Ho's measurement. In 1976, the Social Benefit and Cost ratio was highest in 43 SSEs with 1-99 workers, but the SBC ratio was highest in 24 LSEs with over 100 workers. From these two sets of efficiency measurements, we may conclude that SSEs in the small scale industry in Taiwan are more efficient compared to LSEs in small scale industries.

On the other hand, Ho(1980, see Table D12 p141) showed in the relative efficiency in terms of TFP that in 1971, SSEs in 21 out of 40 small scale industries were more efficient than LSEs. In 1971, Taiwan's SSEs and LSEs were fairly efficient in the small scale industries.

Therefore, over time Taiwan's SSEs improved their efficiency in small scale industries, and the number of small scale industries also increased . I can conjecture that the more neutral market condition in Taiwan contributed to the continuous improvement of the SSE's efficiency in the small scale industry, by providing an equitable investment climate for both LSEs and SSEs. The efficient SSE in Taiwan's small scale industry shows

Table 7.16

Benefit-Cost ratio of Establishments for Industries in which Small Establishments predominate with over 50% of Employment by Type of Industry and by Size of Establishment(worker)

Taiwan - 1976

4-digit	1-4	5-9	10-19	20-49	50-99	100-299	300-499	500+
1) Food,beverage, tobacco								
dehydrat.food	.56	.54	.42	.48	.34	.46		
pickled food	.61	.69	.89	.66	.59	.50	.27	
bakery&cofect.	.63	.59	.53	.44	.50	.80	.61	.57
edible oil fat.	51	.36	.12	-0.001	.93	.29		
flour mills	.58	.50	.35	.23	.26	.24		.43
husk of rice	.59	.54	.62	.25	.63			
tea process	.38	.53	.57	.65	.07	.08	.51	
other flavor.	.48	.56	.33	.11	.45	.44	.77	
mis.food pre...	57	.53	.37	.54	.55	1.38		
2) Textile, leather								
spin of silk	.82	.32	.77	.46	.62	.75		
rope,cable,rug.	59	.73	.50	.06	.66	.54	.71	.66
other textile	.44	.63	.60	.44	.58	.50	.53	.17
3) Wood products								
saw&plan.mill	.45	.51	.51	.55	.35	.62	1.11	.27
timber drying	.38	1.09	.50	.37	.65	.82		
wooden contain.	63	.69	.69	.79	.80	.77		
bamboo product.	69	.77	.84	.83	.87	1.08	.88	
other wooden	.68	.76	.82	.76	.70	.65	.38	.44
wooden furni.	.67	.71	.68	.84	.61	.74	.69	.65
4) Paper & paper products								
paper contain..	61	.67	.70	.75	.51	.49	.29	.62
other paper	.59	.70	.62	.55	.36	.77	.83	
publishing	.47	.63	.55	.54	.71	.33		
printing	.59	.67	.707	.709	.66	.52	.39	.51
book binding	.59	.72	.74	.69		.80		
engrave&etch.	.57	.71	.66	.94	.53			
5) Products of chemicals								
other chem.	.46	.30	.45	.53	.46	.30	.65	
paint&lacquer	.559	.53	.45	.552	.45	.47	.34	
medicine&drug	.34	.46	.46	.52	.49	.80	.84	.63
ag.insecticide.	43	.37	.39	.35	-.06	.54	.48	.82
chemical prod..	21	.42	.50	.58	.59	.82	.90	.48
indust.rubber	1.00	.59	.78	.64	.32	.92	.58	
other rubber	.59	.60	.58	.64	.63	.60	2.32	.81
plastic bag	.60	.55	.57	.67	.38	.43	.58	
plastic arti.	.67	.67	.62	.65	.69	.43	.67	.26
other plastic	.60	.67	.69	.61	.59	.61	.65	.65
6) Non-metallic products								
glass&its pro..	71	.85	.73	.71	.58	.48	.02	.50
cement produ.	.59	.63	.67	.47	.72	.62	.88	.90
cons.clav.	.54	.51	.50	.62	.47	.49	.79	.39
abrasive mat.	.44	.55	.57	.33	.77			
marble prod.	.79	.78	.70	.68	.43	.56		
misc.minerals	.46	.57	.51	.64	.51	.61	1.1	

Table 7.16(cont'd.)

4-digit Industry	1-4	5-9	10-19	20-49	50-99	100-299	300-499	500+
7) Basic metal								
iron&steel foun.	.59	.69	.44	.30	.28	.39	.46	.53
ship scrapping	.03	.02	.05	.05	.14	-0.18	.24	
copper refining	.78	.46	.37	.44	.53	.52		
other non-ferr.	.69	.64	.39	.68	.59	.29		
8) Metal products,machine,&equipment								
metal. handtools	.71	.68	.67	.65	.68	.71		.72
metallic mould	.75	.80	.74	.70	.54	.67	.11	
metal.cons.mat.	.71	.75	.74	.61	.53	.51	.72	.80
aluminum prod.	.66	.62	.64	.60	.45	.70		.25
copper products	.68	.71	.71	.72	.80	.45		
metallic surface	.75	.75	.76	.71	.87	.30		
other metal prod.	.71	.72	.74	.65	.76	.56	.50	.58
prime mover manu.	.54	.706	.54	.708	.49	.67	.56	
farm machine	.66	.64	.50	.68	.60	.16	-0.40	
metal&mat.process.	.70	.72	.66	.60	.59	.56	.57	.50
textile machine	.22	.65	.76	.67	.49	.19	.66	
food&chem.machine.	.62	.67	.68	.67	.63	.69	.53	.43
mine&cons.machine.	.69	.55	.712	.710	.45	.28	.69	
misc.ind.machine	.65	.66	.63	.55	.73	.81	.73	
other machine	.65	.71	.65	.69	.61	.72	.83	.46
railway rolling		.92		.52				
bicycle	.69	.16	1.02	.64	.49	.56	.80	
other trans.equi.	.76	.71	.57	.84	.52	.81	.43	-.08
scientific cont.	.66	.66	.72	.95	.96	.97	1.17	
medical apparatus.	.59	.72	.54	.50	.82			
other precis.mach.	.79	.45	.68	.42	.59			
9) Other manufacture								
jewellery	1.05	.82	.69	.49	.63	.90		
icemaking	.36	.38	.35	.33	.49	.58		

Note: Small establishments(those with 5-99workers) are considered to predominate in an industry if they account for half or more of the industry's employment. The benefit-cost ratio is a way of measuring total factor productivity and is the ratio of the net value added to the input cost in given size group of industry. The input cost is assumed to be r*K + W, where r is shadow price of capital(here 20%), K is operating assets and W is wage bill. Here we assume no distortion in labor market. The operating current asset value which I use for K is far larger than capital services which the capital contributes to production. This tends to exaggerate the capital cost. As a result, the SBC ratio tends to be underestimated.

Source: The calculation is based on data in 'The Report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' volume 3,book 1.

Table 7.17

Number of Industries where Benefit -Cost Ratio(Capital Shadow priced at 20%) is greatest in the Size Category indicated

Taiwan - 1976

Industry	1-4	5-9	10-19	20-49	50-99	100-299	300-499	500+
Food	2	0	1	1	2	2	1	0
Textile	1	2	0	0	0	0	0	0
Wood	0	1	1	1	1	1	1	0
Paper	0	0	0	3	1	1	1	0
Chemicals	2	0	1	1	1	0	4	1
Mineral	1	1	0	0	1	0	2	1
Basic metal	2	1	0	0	0	0	1	0
metal prod.	1	3	3	3	4	3	2	2
other manu.	1	0	0	0	0	1	0	0
Total	10	8	6	9	10	8	12	4

Note:The surveyed industries are small scale industries where small scale enterprises have over 50% of employment.

Source: 'The report of 1976 Industrial and Commercial Censuses of Taiwan-Fukien District of the Republic of China,' volume 3, book 1, published by the committe on industrial and commercial censuses of Taiwan-Fukien district of the Republic of China, Executive Yuan.

bright future for more competitive market , a strong growth in employment and improvements in the income distribution.

It is possible to hypothesize that the Korean large scale oriented industrial structure can provide an advantage in the development of technology-intensive industries, compared to Taiwan; highly technology-intensive industries involving long lead time, high fixed cost and uncertain outcomes require massive capital investment. But Levy(1987a) found that the small size at entry of the firms did not result in poorer performance at least by Taiwanese computer-related industries as compared to their Korean counterparts.

Also the role of public enterprises in Taiwan and Korea is not an important part of my analysis, because public enterprises are relatively insignificant in Korea. But this would certainly qualify any judgement we can make in comparing Korea and Taiwan because it introduces a variable not covered in my model or in the rest of analysis. In respect of the quality of the work force I believe Taiwan and Korea are similar. But public sector management of LSEs in Taiwan certainly introduces the possibility of recurring deficits.

H. CONCLUSION

From the above study we can derive the following

findings;

First, Taiwanese SSEs are significant in the overall industrial structure. In 1981, the SSEs with 1-99 workers employed 44 % of total manufacturing employment.

Second, Taiwanese SSEs are also decentralized in location. In 1981, 47% of SSEs were rural-based.

Third, Taiwanese SSEs are efficient in small scale industries. Ho's and the SBC ratio methods confirmed that Taiwan's SSEs in small scale industry became more efficient than LSEs in small scale industry by 1976. This result contrasts with the Korean case in 1984.

From the previous chapter, we know that Korean SSEs are not a significant force in the overall industrial structure; they are urban based; and inefficient in small scale industry, compared to LSEs. Considering these comparative characteristics and the better record of growth and income distribution in Taiwan, policies to improve their situation are suggested for Korean SSEs and those of other LDCs.

CHAPTER 8

CONCLUSION

A. GENERAL SUMMARY

I started with raising the questions of why and how the large scale industrial structure in Korea was shaped by its economic policy. The findings on the issue are that considering the competitive edge based on economies of scale in industry, for the world export market, the government chose a policy favoring the LSEs. This large scale oriented policy in terms of low interest rates and overvaluation of the Won resulted in reducing the capital cost of LSEs relative to SSEs. This discriminatory policy created a distortion in the capital market. As Korean SSEs were unfairly treated in allocation of capital, their status declined in terms of employment and value added.

Then I tried to compare the current state of Korean and Taiwanese SSEs. Korean SSEs are largely urban-based and inefficient compared to LSEs in small scale industries. On the other hand, Taiwan's SSEs have been strong in the overall industrial structure. Taiwanese SSEs are decentralized in location and efficient compared to LSEs in small scale industries. These contrasting results are due to the different policy priorities of the

governments of the two countries; the Korean policy favored the LSE against the SSE, and manufacturing industry against the agricultural sector, while Taiwan's policy emphasized the progressive balance between the LSE and the SSE, & between manufacturing industry and the agricultural sector. From these comparisons we can envisage what would be a better policy for SSEs in Korea and other LDCs; no discrimination between LSEs and SSEs,the decentralization of SSEs, and an improvement in the infrastructure and information services.

B. SUMMARY OF EACH CHAPTER

In Chapter Two, I began with reviewing the literature by Lewis & Harris-Todaro. Lewis & H-T models were the basic dual rural-urban migration models. Although these models have contributed to the explanation of the interaction between urban and rural sectors, they were weak in their explanation of the small scale sectors such as the informal activities in urban area or non-farming activities in rural area.

I continued to review the informal sector as small scale activities in the urban area. With over-urbanization in LDCs,the informal sector contributes to employment creation. To prevent further migration, there should be a potential for employment generation through rural non-

farming activities.

Then I reviewed the controversial future of rural non-farming activities in LDCs through the economic development literature. First Hymer-Resnick's model adopted a pessimistic view about the future of non-farming activities; but Liedholm-Chuta's empirical study proved that is not the case, at least in Sierra Leone for several reasons.

Finally I reviewed the SSEs. The definition of SSEs is ambiguous in terms of size such as a cut-off point of 50-100 workers. The relationship between SSEs and LSEs and between SSEs and the agricultural sector has become important in LDCs. The wage gap between the LSEs and SSEs continues to exist because of labor market imperfections and differences in the quality of the work force. SSEs exist in a fragmented capital market in LDCs.

As a partial efficiency measure, the capital/labor ratio is often used. In many cases, SSEs in LDCs proved labor intensive. The Benefit-Cost or production frontier methods are used as comprehensive efficiency measurements for SSEs in LDCs. In many cases the SSEs in LDCs turned out to be more efficient.

In Chapter Three, I developed the three sector (ULS,USS and Rural) labor market and PPFs models, which are based on three goods and two factors. The analysis of the three sector model shows that a policy favoring the

LSEs such as a tariff and capital subsidy on the ULS sector leads to an expansion of the ULS sector but contraction of the USS and rural sectors in terms of employment and output.

A policy favoring the SSEs such as a tariff and capital subsidy on the USS sector leads to expansion of the USS sector but reduction of the ULS and Rural sector in terms of employment and output.

Also, a minimum wage policy in the ULS sector leads to contraction of the ULS and expansion of the USS and Rural sectors in terms of employment and output.

Finally in the case of homogeneous products of the ULS and USS sectors, the large scale boosting policy such as tariff on the ULS(as well as USS) sector product leads to expansion of the ULS & USS sectors and reduction of the rural sector in terms of employment and output.

In Chapter Four, I reviewed the theoretical three sector model based on Korean time series data (1966-84) about industrial structure change. According to the comparative static analysis with a capital inflow in ULS sector, the employment of the ULS sector was supposed to improve. Empirically it was so. Employment in rural areas was supposed to decline. Empirically it was so. Employment in the USS sector was supposed to decline. But empirically it was not so, because we ignored the investment activities by the USS sector in our model. The

real wage in the three sectors was supposed to increase in the model. Empirically it was so, but contrary to the prediction, the difference in real wage between the three sectors persisted because of productivity differences and a different pace of expansion in the three sectors.

The most distinctive characteristic of the Korean industrial structure change was that the ULS sector expanded faster than the USS sector during the years 1966-84. As a result the position of SSEs in the overall manufacturing structure worsened. This result proved that the capital allocation clearly favored the LSE against the SSE.

In Chapter Five, I reviewed the specific industrial, regional, and dynamic prospects; efficient size,and capital intensity of Korean SSEs.

First, with economic development the role of very small scale enterprises(1-4workers) in Korea is declining.

Second, as industrialization proceeds, the SSE is emerging as a big player in the capital-intensive and heavy industries such as chemical and metal machinery industries.

Third, SSEs are heavily located in the urban area.

Fourth, during the last few decades, the SSEs have been losing in the share of manufacturing employment.

Fifth, the survivor criterion shows that during 1979-84, both SSEs and LSEs were fairly efficient.

Sixth, with infrastructural improvements, the locational influence in SSE's competitiveness became less important.

Seventh,depending on the specific industries, the SSEs in manufacturing industries tend to have various ranges of capital intensity. Within the overall picture of the manufacturing industrty, the SSEs still tend to be labor intensive.

In Chapter Six, I reviewed the problems of Korean SSEs and tried to suggest possible policy measures to alleviate them.

Firstly, past industrial policies in terms of overvaluation,interest etc. have consistently favored LSEs. This policies reduced the capital cost for LSEs relative to SSEs.

Second, the location of SSEs tend to be urban-based.

Third, Ho's and SBC methods confirmed that Korean SSEs in small scale industry have become less efficient than LSEs in small scale industry. The main suggestions are aimed at creating a fair environment based on the market mechanisms where LSEs and SSEs can compete on fair terms and complement each other in order to survive and co-exist.

In Chapter Seven, I reviewed Taiwan's SSEs. First, Taiwan's SSEs are still significant in the country's overall industrial structure, with help from less

discriminatory policies. Second, Taiwan's SSEs are also decentralized in location. Ho's and the SBC ratio methods confirmed that Taiwan's SSEs in small scale industry became more efficient than LSEs in small scale industry. Considering these comparative characteristics and better records of growth and income distribution in Taiwan, Korean SSEs as well as other LDCs' SSEs should diagnose their weakness and determine their future direction for themselves.

C. THE MAJOR LESSONS FROM THE STUDY

The thesis found that the Korean policy of promoting LSEs indeed discriminated against SSEs, favoring LSEs in terms of low interest rates ,overvaluation of exchange rates,taxes, etc. during the last two decades. This agressive government intervention resulted in creating a distortion in the capital market. But because of the effects of economies of scale and efficient managements, the capital market distortions favoring LSEs partly contributed to improving the social efficiency of the LSEs in the small scale industry.

This result is not inconsistent with Neo-classical ideas, because the Neo-classical economists ruled out the effects of economies of scale and selective managements in the market system. The favorable condition for capital

funding in LSEs contributed to accelerating the improvement in efficiency in LSEs at the expense of employment creation by SSEs.

On the other hand, the Taiwan's government allowed a freer market mechanism with less government intervention. As a result, the less distorted market contributed to the more efficient resource allocation,compared to the Korean case. This was reflected in the consistent improvement of the TFP of Taiwan' SSEs in small scale industry. The more neutral condition for capital funding in both LSEs and SSEs contributed to continuous improvements in SSE's efficiency in the small scale industry. The Taiwan's case proved that Neo-classical ideas are still valid.

This comparative study confirmed the importance of a market mechanism in achieving the optimal resource allocation and improving the efficiency of SSEs. Even if the intentions are good, the government interventions tend to distort and worsen the imperfect market in LDCs.

Therefore government should try to provide a more fair environment for both LSEs and SSEs in terms of trade regime and credit allocatiion etc. At the same time, the study suggests that the role of government should be directed toward eliminating the market imperfection, particularly through providing market information in a selective manner.

Finally this study confirmed that the neoclassical

axiom such as "Get the price right" and " Let the market do it" can still play an important role in economic development in Korea as well as other LDCs.

At the same time, it is important to keep in mind that Korean intervention in capital markets had two offsetting characteristics: a) capital was directed towards profitable markets; and b) subsidies were not of an indefinite duration. These aspects of the discretionary lending system in Korea were dealt with in various studies(Kwack Sung Yeung 1986, Scitovsky 1985). This sets the Korean economic regime on a different footing from Taiwan, or import substitution regimes such as that of India, and closer to Japan. The details of these aspects of Korean policy and implementation are obviously important and have been noted in the discussion, particularly chapters 6 and 7. The general implications of such a regime must be taken account of in any consideration of policy reform.

APPENDIX A

KOREAN CAPITAL MARKET DISTORTION

Appendix A :

Korean Capital Market Distortion

Table 6.2 shows how the distortion in the capital market affects on the capital cost of the LSEs and SSEs. The distortions in the capital market are largely due to trade regime, interest rate and taxes. The quantative calculation about these distortions are followed;

1) Trade regime: The tariff rate, overvaluation of 'won' or licensing system in trade regime can make distortions in the capital market. In Korean case, the tariff rates or licensing system seem not to be serious factors of distortions. It is important to see how the overvaluation of 'won' affects the LSEs and SSEs in terms of the capital cost. Usually, the government tends to allow the LSEs to import the capital goods more easily at the low official rate than the SSEs. Therefore the degree of overvaluation can show that the capital cost of the LSEs is cheaper than that of the SSEs.

The Official Exchange Rate(A) and the Black Market Exchange Rate(B) (exchange unit; won/$)

	'76	'77	'78	'79	'80	'81
A:	484	484	484	484	659.90	700.50
B:	494.25	510	521.41	556.83	671	716.5
(A-B)/A*100(%):	-2.1	-5.3	-7.7	-15	-1.6	-2.2

	'82	'83	'84
A:	748.8	795.5	827.4
B:	805.25	841.75	828.38
(A-B)/A*100(%):	-7.5	-5.8	-0.1

Source:' World Currency Yearbook 1985' edited by Philip.P Cowitt, 1986. International Currency Analysis INC.

Note: The black market exchange rate is calculated as the average monthly rate.

The data shows that the Korean currency 'won' was overvalued over time. Indirectly, it implies that the capital cost of the LSEs is cheaper than that of the SSEs in terms of overvaluation.

2) Interest rate: The formal and informal interest can make a distortion in capital market. Usually, the SSEs rely on funds from a private capital market with an informal interest, while the LSEs rely on funds from regular banking institution with a formal interest. So we need to see the formal interest and informal interest in order to calculate the capital cost of the LSEs and the SSEs.

Interest Rate on Official Market(A) and Black Market(B)

	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84
A:	15.2	17.8	16.5	18.5	18.5	22.5	18	13	13	10.6
B:	49.5	48.2	45	46.5	51.5	55	41	34.7	28.5	27
A-B:	-34.3	-30.4	-28.5	-2	-33	-32.5	-23	-21.7	-15.5	-16.4

	'85	'86
A:	10.7	10.7
B:	26.2	25
A-B:	-15.5	-14.3

Source: For official interest,Economic Statistics Yearbook,various issues the Bank of Korea

For black interest,'A study of the underground economy in Korea: Theoretical Approaches, Empirical Evidence and Policy Implication' by Chae Gwang,April 1987.

Note:The official interest is based on the discounts on bills.

The data shows that the formal interest is lower than the informal interest. Indirectly, it implies that the capital cost of the LSEs is cheaper than that of the SSEs in terms of interest rate.

3) Tax: The tax rate can make a distortion in the capital market. According to the corporate tax law, the corporate tax rate on SSEs is 20% on below 50 million won

profits, but the tax rate on the LSEs is 30% on above 50 million won profits and 10 million won, which is is 50 million* 20%. So the approximate tax rate differences favoring SSEs became that 30% -20% = +10%. This shows that tax rate on LSEs is higher than tax rate on SSEs. Indirectly, it implies that the capital cost of the SSEs is cheaper than that of the LSEs in terms of tax.

Finally we can combine the above three differences from distortions in order to calculate the capital costs of the LSEs relative to the capital cost of the SSEs.

Total percentage difference in LSEs' cost relative to SSEs

	'76	'77	'78	'79	'80	'81	'82
1)(A-B)/A*100(%):	-2.1	-5.3	-7.7	-15	-1.6	-2.2	-7.5
2)A-B:	-30.4	-28.5	-28	-33	-32.5	-23	-21.7
3)A-B:	+10	+10	+10	+10	+10	+10	+10
Total:	-22.5	-23.8	-25.7	-38	-21.1	-15.2	-19.2

	'83	'84
1)(A-B)/A*100(%):	-5.8	-0.1
2)A-B:	-15.5	-16.4
3)A-B:	+10	+10
Total:	-11.3	-6.5

APPENDIX B

TAIWAN'S CAPITAL MARKET DISTORTION

APPENDIX B :

Taiwan's Capital Market Distortion

Table 7.1-3 in Ch.7 shows how the distortion in the capital market affects on the capital cost of the LSEs and the SSEs in Taiwan and Korea. The distortions in the capital market are largely due to trade regime, interest rate and taxes. The quantitative calculation for Taiwan's capital market distortions are followed:

1) Trade regime: The tariff rate, overvaluation or licensing system in trade regime can make distortions in the capital market. In Taiwan case, the tariff rate or licensing system seem not to be serious factors of distortions. It is important to see how the overvaluation of 'NT $' affects the LSEs and the SSEs in terms of the capital cost. Usually, the government tends to allow the LSEs to import the capital goods more easily at a low official rate than the SSEs. The degree of overvaluation can show that the capital cost of the LSEs is cheaper than that of the SSEs.

The Official Exchange Rate (A) and the Black Market Exchange Rate (B) (exchange unit; NT $/ $)

	'76	'77	'78	'79	'80	'81
A:	38	38	36	36.03	36.01	37.84
B:	39.77	38.96	38.15	39.82	37.86	39.49
(A-B)/A*100(%):	-4.6	-2.5	-5.9	-10.5	-5.1	-4.3

	'82	'83	'84
A:	39.91	40.27	39.47
B:	41.33	41.9	41.82
(A-B)/A*100(%):	-3.5	-4.0	-5.9

Source: 'World Currency Yearbook 1985' edited by Philip.P Cowitt, 1986. International Currency Analysis INC.

Note: The black market exchange rate is calculated as average monthly rate.

The data shows that Taiwan's currency 'NT $' was overvalued over time. Indirectly, it implies that the capital cost for the LSEs was cheaper than that for the SSEs in terms of overvaluation.

2) Interest rate: The formal and informal interest can make a distortion in capital market. Usually, the SSEs rely on funds from a private capital market with an informal interest, while the LSEs rely on funds from a regular banking institution with a formal interest. So we need to see the formal interest and informal interest in order to calculate the capital cost of the LSEs and the SSEs.

Interest Rate on Official Market(A) and Black Market(B)

	'76	'77	'78	'79	'80	'81	'82
A:	10.5	9.25	9.25	12	13.5	13	9
B:	26.77	26.30	25.75	28.99	30.81	31.18	28.64
A-B:	-16.27	-17.05	-16.5	-16.99	-17.31	-18.18	-19.64

	'83	'84
A:	8.5	8
B:	26.76	25.92
A-B:	-18.26	-17.92

Source: Domestic economic index report, 1986 Taiwan.

The data shows that the formal interest is lower than the informal interest. Indirectly it implies that the capital cost of the LSEs is cheaper than that of the SSEs.

3) Tax: The tax rate can make a distortion in the capital market. Firms'income tax rates are ranging from 22 to 25 % (The Statue for Encouragement of Investment 1960). But SSEs with below 50,000 NT$ exempt from income tax. The tax rate on profit-seeking income rises from 15 % on NT$ 50,001-100,000 to 25 % on NT$ 100,001-500,000 and 35% on the excess over NT$ 500,000 , which make average 25 % as overall tax rate.(Source: CJ Platt., 1982,'Tax System of Africa, Asia and the Middle East')

So the approximate tax rate differences favoring SSEs became 22%. This shows that tax rate on the LSEs is

higher than that on the SSEs. Indirectly, it implies that the capital cost of the SSEs is cheaper than that of the LSEs in terms of tax.

Finally we can combine the above three differences from distortions in order to calculate the capital costs of the LSEs relative to the capital cost of the SSEs.

Total percent difference in LSEs' cost relative to SSEs

	'76	'77	'78	'79	'80
1)(A-B)/A*100(%):	-4.6	-2.5	-5.9	-10.5	-5.1
2) A-B:	-16.27	-17.05	-16.5	-16.99	-17.31
3) A-B:	+22	+22	+22	+22	+22
1+2+3)Total:	+1.13	+2.45	-0.4	-5.49	-0.41
	'81	'82	'83	'84	
1)(A-B)/A*100(%):	-4.3	-3.5	-4.0	-5.9	
1) A-B:	-18.18	-19.64	-18.26	-17.92	
2) A-B:	+22	+22	+22	+22	
1+2+3)Total:	-0.48	-1.14	-0.26	-1.82	

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