THE DEMAND FOR MONEY, INCOME AND EMPLOYMENT

By

VELY M. LEROY

A THESIS

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Michigan State University
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Needless to say, the responsibility for views expressed in the text rests solely with the author.

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ABSTRACT

Money fulfills, among other things, a store of value function. This explains why we speak of the demand for money, i.e. liquidity preference. Actually, people desire to keep a certain proportion of their total resources in the form of cash. In other words, they have a certain preference for holding money, which depends upon a number of factors,e.g. the prices of the things they buy or expect to buy, the rate of interest on various types of securities,tastes and preferences, etc. In order to satisfy this total demand for money, there must exist a specific amount of money in circulation; for,any other quantity, either greater or smaller than the one that is required, will lead to variations in prices, the rate of interest,or still in the volume of employment via changes in the level of aggregate spending. The classical economists spoke of the effect of a change in the quantity of money upon the level of prices; thus the traditional "Quantity Theory of Money" was inherited from them.J. M. Keynes, for his part,treated of the effect of a change in the quantity of money upon the rate of interest, and hence upon the levels of investment, income, and employment.Finally Patinkin,in his book, attempted to bring all these teachings together and to show that the propositions of Keynesian monetary theory are less general than it is usually thought.

Patinkin developed and extended a theme which Haberler

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and Pigou - in a debate with Keynes - and Scitovsky had already presented,namely the effect of falling prices upon the savings function. Patinkin argued the following: as people see the real value of their cash assets rise above the level which they consider as desirable, they will attempt to get rid of the unwanted excess by increasing their expenditures on goods and services; total expenditures will rise until real money balances are restored to their desired level. This is what is meant by the "real balance effect". This new effect "measures the influence on demand of a change in real balances, other things being held constant."

Patinkin rightly accused Keynes of having ignored the "real balance effect". Actually, Keynes failed to take into account the effect of a change in the real value of monetary assets upon the short-run consumption function. However, this may be due to the fact that he spoke in terms of physical assets only,the volume of which is fixed in the short-run. Now,if monetary assets are introduced into the Keynesian model, it will be necessary to record changes occuring in their real value and the resulting effects upon effective demand. Thus in an unemployment situation - and provided that wages and prices are fully flexible - the economic system can generate forces which will bring it back to a full employment equilibrium position. This is made possible by the operation of the "real balance effect". Consequently, given

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wage and price flexibility, Keynes' underemployment equilibrium theory is not a valid theory.

The present dissertation has three aims: first, to provide a survey of classical monetary theory and study Keynes' reaction to that theory; second,to present Patinkin's argument against Keynesian monetary theory in a way which makes it more explicit; and third, to criticize Patinkin and build a model that is based upon the permanent income concept and that relies upon the "Keynes effect" only,thereby making it unnecessary to assume flexible wages and prices.

INTRODUCTION

Money is an invention of man who intended to use it as a means of securing at any time the satisfaction of his wants. Its intrinsic value comes from the important fact that it is anywhere the product of an agreement between those who use it, so that it is widely accepted in payment for goods, or in discharge of other kinds of business obligations. Its main advantage consists in the liquidity which it yields, and there also lies its essential property. Therefore, money fulfils, among other things, two important functions, namely: it is a medium of exchange, and a store of value. Each of these functions has been emphasized to various degrees in the course of history. To-day, however, the store of value function appears to overshadow the medium of exchange function to a considerable extent, at least in academic circles. Thus, we commonly speak of the demand for money, or of liquidity preference, after postulating that people desire to keep a certain proportion of their total resources in the form of cash assets. This will be my central theme.

This theme is not a novel one and could be traced back in the writings of an Italian scholar by the name of Bernardo Davanzatti, in the sixteenth century. My purpose in undertaking this study is to exploit it, and to show how variations in the demand for money can explain fluctuations in the levels of output and employment, and how they also provide forces for the automatic restoration of full employment. In order to achieve this aim, I will introduce the concept of permanent income to which I will relate the demand for money. This study is then intended to offer a possible alternative answer to

the Keynesian underemployment equilibrium theory, although it will lend support, in some cases, the Keynes' theory. As such, it also represents an alternative to Patinkin's "real-balance effect" theory from which it is inspired. My argument will be presented in four parts:

The first part will be devoted to a general survey of early classical monetary theory since the time of John Locke. I will describe the evolution of the Quantity Theory of Money, while paying attention to the amount of emphasis which has been put at times on the medium exchange function of money, and at other times on its store of value function. This first part will also emphasize the need that was felt among Cambridge economists for an integration of value and monetary theory. In this respect, I will follow the evolution of Keynes' views by reviewing the ideas he presented in three of his works, among which the General Theory. This will lead us to consider in what respect Keynes' monetary theory lacks generality, a charge which has been made by Don Patinkin. From there, I will pass to the second part of my study.

The second part introduces Patinkin's argument, the "real-balance effect", but at the micro-economic level. Its main purpose is to present and explain the "real-balance effect", before analyzing this effect at the macro-economic level.

The third part is a restatement of Patinkin's unemployment model, followed by a critical appraisal of this model. This appraisal will take the form of a critical review of the main indictments which have been launched by Patinkin against Keynes' underemployment equilibrium theory. Some of Patinkin's arguments will be given further consideration in two Appendices.

The fourth part presents the concept of permanent income and introduces it into the cash-balances equation to explain fluctuations in the levels of measured income (actual income), output and employment, *via* changes in liquidity preference. It will be followed by a summary and a general conclusion.

The more general conclusions of my argument can be summarized as follows: variations in the demand for money generate forces that cause fluctuations in the levels of income, output and employment; given certain conditions, these forces are also capable of restoring full employment after an unexpected disturbance has arisen. These results are not based upon the assumption of perfect flexibility of wages and prices, which means, therefore, that Patinkin's "real-balance effect" is not a *necessary* condition in order to invalidate Keynes' underemployment equilibrium theory.

CHAPTER I

EARLY "CLASSICAL" MONETARY THEORY: A BRIEF SURVEY.

This chapter is not intended to give a detailed account of the evolution of "classical" monetary theory. Its purpose is simply to review the lines along which that theory has developed since the time of John Locke. In addition, only those developments which appear as the most relevant for my study will be given consideration; at the same time, I will speak of the most important scholars whose names are connected with these developments.

The history of the Quantity Theory of Money, which will be referred to as the quantity theory, is very interesting. Actually, economists are not yet agreed upon what is a "quantity theorist." In my opinion, this is due to the fact that several variants have been developed out of the original statements attributed to those early scholars of whom it is permitted to say that they either perceived or expressed a causal relationship between the quantity of money and prices. In fact, the relationship between the quantity of money, on the one hand, and the level of prices -- or, the value of money -- on the other hand, is a centuries-old concept which can be discovered in the teachings of Confucius and his disciples, Aristotle and the Schoolmen, and the Roman lawyer Julius Paulus. These have been followed by people of more recent times, such as Nicolas Copernicus, Jean Bodin, Antoine de Montchretien, Bernardo Davanzatti, et al.[1]

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1 See W. Wissering: On Chinese currency, coin and paper money, Leiden (1887); Louis Baudin, La monnaie et la formation des prix,

Nevertheless, it appears that John Locke and David Hume must be credited for having given the most meaningful statements about the exclusive dependence of the value of money upon the amount of money in circulation.

Taking the example of an island separate from the commerce of the rest of the world with a given supply of money that cannot be increased, Locke advanced that "Any quantity of that Money (if it were but so much that everybody might have some) would serve to drive any Proportion of Trade, whether more or less, there being Counters enough to reckon by."[2] Thus the quantity of money alone "is enough to regulate its value, without considering any Proportion between its quantity and vent, as in other commodities."[3] As a matter of fact, Locke thought that the 'vent' of or the demand for money was almost constant: "But, because the desire of money is constantly almost everywhere the same, its vent varies very little, but as its greater

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Premiere partie: Les Eléments (part II of Traité d'Economie Politique, Paris, 1947); Traité de la Monnaie de Copernic, published by M.L. Wolowski, Paris 1854, specially p. 53, and p. 33 where one reads "La monnaie doit être rare pour avoir une valeur elevée"; H. Denis, Les récentes théories monétaires en France, Paris, 1938, specially p. XI; Jean Bodin, La Response de Jean Bodin a M. de Malestroit, of H. Hauser's edition (1932); A. de Montchretien, Traite d'Economie Politique, 1615, edited by Funck-Brentano, Paris, 1889, especially p. 257; J.W. Angell, The Theory of International Prices, Harvard Economic Studies, Vol. XXVIII, Cambridge, 1926, p. 20; and A.W. Marget, The Theory of Prices, Vol. II, (New York; Prentice-Hall Inc., 1942), pp. 10-25, especially pp. 13-15, on Davanzatti who "moved within the range of ideas suggested by what would now be called "utility" analysis"; and pp. 18-24 on John Law.

2 J. Locke, The Consequence of the Lowering of Interest, in The Works of John Locke, London and New York (1883), p. 590. Also quoted by E. Roll, A History of Economic Thought, London, 1938, p. 117; and by E.F. Heckscher, Mercantilism, Vol. II, London, 1935, pp. 23, and 225-226.

3 As quoted by E. Roll, op. cit., p. 118.

scarcity enhances its price, and increases the scramble: there being nothing else that does easily supply the want of it: the lessening of its quantity, therefore always increases its price, and makes an equal portion of it exchange for a greater value of any other things."[1] These views have been shared by David Hume, witness his well-known example in which he supposes that everybody in England, by miracle, to get five pounds slipped into his pocket one night. The result, he said, is that nobody would get richer: "We fancy, because an individual would be much richer, were his stock of money doubled, that the same good effect would follow were the money of every one increased."[2]

In spite of the clarity of these statements by Locke and Hume, some doubts have been expressed as to what is the real content of the quantity theory. Hegeland, for instance, maintains that only a misinterpretation of Locke's basic idea, namely that the quantity of money is of no importance whatsoever, must be held responsible for what has been commonly designated thereafter as the quantity theory.[3] According to him, Locke intended only to emphasize that the function of money is "fundamentally that of being a medium of exchange."[4]

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1 J. Locke, op. cit., pp. 584-585. -Thus, the value of money is regulated by the law of supply and demand.

2 D. Hume, Essays and Treatises. A new Edition, 2 vols., London, 1825, vol. I, 315.

3 Hugo Hegeland, The Quantity Theory of Money, Goteberg, 1951, pp.1-2.

4 Hegeland, op. cit., p.2. We find it hard to support the view expressed by Hegeland. As a matter of fact, Locke did say that the value of money was regulated by its quantity. E. Roll tells us that this was his argument against the prevailing mercantilist views that a low rate of interest would raise prices. See E. Roll, op. cit., p. 117; also J. Locke, Some Consequences of Lowering of Interest and Raising the Value of Money (1692), p. 48 and passim. --- Hegeland maintains that Locke's proposition about the question of the amount of money being of no importance whatsoever, "was directed towards the monetary doctrines of mercantilism, according

However, Locke did say more than that, and particularly with respect to the determination of the price level, or the value of money. And Hume adopted his ideas, while stressing the role of money in stimulating activity and trade.[1] Finally, it may be said that, on account of their opposition to the monetary doctrines of the Mercantilists, both Locke and Hume were led to argue more strongly than any of their predecessors has done thus far, that the value of money was purely "fictitious" because it arises from the"agreement and convention of men"; and that it varied inversely with, and in proportion to, the quantity money available -- the demand for money being almost constant. This, therefore, will be my interpretation of the quantity theory, namely: an increase in the quantity of money causes a proportionate increase in prices, or what amounts to the same thing, a proportionate decrease in the value of money.

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to which the quantity of money constituted one of the main sources of the wealth of a nation. Its basic content is that money is primarily a medium of exchange, which, in point of principle, does not add to the amount of riches of a given economy." See H. Hegeland, op. cit., p.1. This is difficult to reconcile, however, with the conclusion which both Locke, and Hume particularly, arrived at concerning a change in the quantity of money upon the level of prices. Cf. Hume's example above. - Also, see E.F. Heckscher, op. cit., pp. 225-226, and A.W. Marget, The Theory of Prices (New York: Prentice-Hall, Inc., 1942), Vol. II, 16-18, for views opposite to Hegeland's.

1 As Marget put it, Locke must be credited for having tackled the problem of the velocity of circulation of money. For, he supposed that the 'vent' of or the demand for money was almost constant; this meant in fact that the ratio T/V was constant, where T stands for the volume of transactions and V for velocity. That ratio may be considered here as summarizing the forces which determine the demand for money. See A.W. Marget, op. cit., vol. II, 17, n.39.

II

The relationship of causality between the amount of money and the level of prices, which has been stressed, if not formally introduced, by Locke and Hume, was taken up thereafter by the "classical" economists. Nevertheless, a cleavage developed between the doctrine inherited from the past and the theory that has been advanced by Adam Smith and his followers. The break with the doctrine which was inherited was related to the basic factors which determine the value of money. Moreover, the role of money, as a "medium of exchange", received too much attention, in the hands of Smith and his disciples, at the expense of that other important function, i.e. that of a "store of value."[1] Because of this, it might be useful to look into A. Smith's bitter reaction to the Mercantilists for an explanation of the intensification of the belief that an increase in the quantity of money causes proportionate prices increases.[2]

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1 The "store of value" function of money had already been stressed by no less a writer than Aristotle. See E. Roll, op. cit., p. 25ff. Aristotle recognized that "money is serviceable with a view to future exchanges", but also that its value, like that of other things, is subject to change.

2 A. Smith is generally considered to have been unfair to the Mercantilists. A. Gray tells us: "Untill recently, the Mercantilists have suffered from the cloud cast over them by A. Smith... The rather harsh traditional judgment rests on two misinterpretations: firstly that the balance of trade theory represented substantially the whole of their aims and doctrines, whereas in fact this was but one aspect of a larger and more comprehensive policy; secondly, that they were guilty of the folly of Croesus in thinking that wealth consisted in gold and silver instead of the things that gold and silver could bring." See A. Gray, The Development of Economic Doctrine, London, 1931, pp. 78-79; see also J.A. Schumpeter, History of Economic Analysis, New-York, 1954, p. 344; E. Roll, op. cit., p. 62; and J.M. Keynes, The General Theory, pp. 335, 348.

While many Mercantilists held a pure Midas-like view of money, others, like T. Mun, did not. In fact, Mun wrote :"... for although Treasure is said to be the Sinews of the war, yet this is so because it doth provide, unite and move the power of men, victuals, and munition where and when the cause doth require; but if these things be wanting in due time, what shall we then do with our money."[1] In short, it may be said that the most outstanding Mercantilists did not fall into the error of identifying Treasure with wealth. In addition, they were also aware of the relationship between the quantity of money and prices. Thus Gerard Malynes wrote in 1601: "plenty of money makes all things dear, and scarcity of money makes all things good cheap";[2] and T. Mun: "... it is a common saying that plenty or scarcity of money makes all things dear or cheap."[3]

J. Viner blamed A. Smith for identifying every Mercantilist with a man to whom money meant wealth. In his opinion, Smith "did exaggerate the extent of the dependence of the mercantilist case on the absolute identification of money and wealth, inasmuch as he failed to make clear that there were some mercantilists who were never guilty of such identification and few mercantilists who were never guiltless of it."[4] Actually, it is possible that, in his endeavour to combat the mercantilist philosophy, A. Smith overstated the case and could

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1 As quoted by E.F. Hecksher, op. cit., Vol. II, p. 212.

2 G. Malynes, A Treatise of the Canker, 1601, T-E.D. III 387.

3 T. Mun, England's Treasure, 1644 -- written about 1630 -- pp. 24, 28; also see J. Viner, Studies in the Theory of International Trade, London, 1937, p. 59.

4 J. Viner, op. cit., p. 19.

not have helped grounding more firmly later students of monetary theory in the belief that a proportionate change in prices accompanies every variation in the quantity of money. At the same time, the "store of value" function of money was thrown into oblivion, whereas its "medium of exchange" function was put in the forefront. Actually, one can hardly find, in Smith's work, a statement which proves beyond reasonable doubts that the author believed in a sort of causal relationship between the amount of money and the level of prices. But, this is due to the fact that A. Smith held a different theory of value which, in his opinion, had its application even in the case of money.[1]

Smith thought the value of the money-metals to be governed by the "quantity of labour" which they enable a person to purchase or command. Thus the considerable increase in prices during the sixteenth century, or the "lowering" of the value of money, was due not to an influx of precious metals as a consequence of the discovery of abundant mines in America -- as traditional monetary theories would have us believe -- but rather to the lower labour cost now incurred in marketing these metals: "As it costs less labour to bring these metals from the mine to the market, so when they were brought thither they

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1 Actually, A. Smith's works contain three theories of value: there is the labour theory, the labour and other costs theory, and the supply and demand theory; in addition to this, Smith distinguishes between what he called the "natural" or intrinsic value of a commodity, the determination of which rests upon the cost of production theory, and what he considered as the "market" value of that commodity, which is found by applying the demand and supply theory. In the end, however, labour, and not money, is the measure of value. See E. Cannan, A Review of Economic Theory, London, 1930, chapter VII, especially pp. 164-172; and A. Smith, Wealth of Nations, Book I, Chapter V and Book II, Chapter II (pp. 32 and 313 of the Modern Library Edition, to which all page citations refer unless otherwise indicated).

could purchase or command less labour."[1] The labour value of the money-metals, or their "natural price", by contrast with their market value, or their "market price", is the relevant variable, since, according to Smith, this "natural price" would represent "the lowest possible price ... for which it is possible to bring ... [the money metals] to market for any considerable time together."[2]

In spite of this, Smith was what is commonly referred to as a "quantity theorist", although it sounds paradoxical to advance at the same time that there is no direct evidence of his having thought in terms of a causal relationship between the amount of money and the level of prices.[3] Nevertheless, his treatement of money, which he

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1 A. Smith, op. cit., p. 32. - Smith's suggested explanation is in sharp contrast with the one offered by J. Bodin who thought that "the chief and almost the sole cause of the increase (in prices) was the great import of the precious metals." J. Bodin, op. cit., see also H. Hegeland, op. cit., p. 16.

2 A. Smith, op. cit., Book I, Chap. XI, part III (201, 213); also A. Marget, op. cit., Vol. II, 28ff.

3 In the opinion of Irving Fisher, A. Smith accepted the quantity theory. See I. Fisher, The Purchasing Power of Money, New-York, 1911, p. 14, n.1. On the other hand, H. Hegeland expressed some doubts on Smith's acceptance of the theory, op. cit., p. 47, n.3. The reader could also consylt A.W. Marget, op. cit., Vol. II, 27-30. --For our part, we believe that A. Smith agreed with the propositions of the quantity theory. The impression to the contrary may be due solely to the fact that he had a different theory of value, at any rate different from the one which thus far was thought to regulate the value of all things both in the short run and in the long run. In the end, his theory and others come all to the same thing. Thus if an influx of the precious metals could be attributed to the fact that labour, in other countries, was more productive, whereas its productivity in producing commodities stayed the same in the recipient country, it would follow that a larger quantity of those precious metals would have to be given up in exchange for an unchanged amount of commodities. This amounts to say that the money-metals have lost value, or that the price level is now higher, and in proportion to the increase in the production of the money-metals -- this is in perfect harmony with the quantity theory. However, Smith cannot be said to have really launched the quantity theory. Ricardo rather deserves that credit.

considered as fulfilling practically the sole function of a "medium of exchange", paved the way for more rigorous formulations of the quantity theory among his followers, starting with J.B. Say and D. Ricardo.

III

A.W. Marget wrote: "It is a commonplace, in doctrinal histories concerned with the development of "classical" economic theory, to regard Adam Smith as the common ancestor of two separate branches of "classical doctrine, the one stemming from Ricardo, and the other, less compactly organized but nevertheless continuous in its influence, stemming from J.B. Say."[1] Let us then verify this truth by analyzing briefly the treatement which the quantity theory received in the hands of Say and Ricardo.

Although J.B. Say agreed with Smith upon the nature of money -- that is, its being mainly a "medium of exchange" -- and upon the fact that the value of money, like the value of all other things, was regulated by the "general laws of value", he nevertheless meant something different when he spoke of "demand and supply", due to the amount of emphasis he placed upon "utility" as the factor lying behind "demand". This, therefore, overshadowed the "cost of production", a factor to which Smith and Ricardo attributed so much weight in explaining how value is determined. On account of that, Say appears as an anticipator or a protagonist of the application of "utility analysis" to the demand for money. As Marget put it:

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1 A.W. Marget, op. cit., Vol. II, 30.

"... it is particularly worth pointing out that Say's utterances upon this head [the application of "utility analysis" to the demand for money] have at least as much claim to be regarded as an "anticipation" of the relevant propositions of modern monetary theory as his utterances with respect to utility in general have to be regarded as an"anticipation" of the relevant propositions of "modern" value theory."[1]

Actually, Say is not the first to have introduced the concept of "utility" as a factor of importance, among others, upon which rests the "demand" for every commodity, including money. Bernardo Davanzatti, Ferdinando Galiani and John Law, for instance, count among the earliest anticipators of the application of "utility analysis" to the demand for money which they considered as a commodity the value of which was determined like that of any other commodity, that is by supply and demand.[2] Thus one can feel the development of a new approach to the theory of money and prices, which received support from Say and thus accounted in part for the emergence of two separate branches of "classical" economics after A. Smith: the one stemming from Say, and the other from Ricardo whose exposition of the quantity theory will now be considered.

David Ricardo is, in the opinion of Irving Fisher, the one who must be credited for launching the quantity theory. It is a fact that, although many people of all times were agreed upon a

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1 A.W. Marget, op. cit., Vol. II, 31-32.

2 See A.W. Marget, op. cit., Vol. II, 13-15, 18-24, 30-32; and A.E. Monroe, Early Economic Thought (Cambridge: Harvard University Press, 1930), pp. 279-307, about F. Galiani.

causal relationship between the amount of money and the level of prices, it is nevertheless difficult, at least in some cases, to find in their writings any clear-cut and unequivocal statements about this relationship. But in the case of David Ricardo, there is no place left for any doubt about his firm adherence to the quantity theory. For, said Ricardo: "If the bank were restricted from paying their notes in specie, and all the coins had been exported, any excess of their notes would depreciate to the value of the circulating medium in proportion to the excess...If 20 millions had been the circulation of England before the restriction, and 4 millions were added to it, the 24 millions would be of no more value than the 20 millions were before, provided commodities had remained the same, and there had been no corresponding exportations of coins."[1] However, when there comes the question of knowing how the value of money is determined, we cease to find as much clarity in Ricardo's thinking. E. Cannan, for instance, remarked that Ricardo did not apply his "general" Theory of value to the determination of the value of money.[2] If this were true, it would indicate a difference of attitude between A. Smith and Ricardo, since the former believed the value of any commodity, including money, to be normally determined by the quantity of labour embodied in it, whereas Ricardo would have the value of all

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1 Italics are mine. See D. Ricardo, The High Price of Bullion (in the works of David Ricardo, edited by J.R. McCulloch, London, 1846), p. 285. Underlining this statement is the assumption made by Locke, namely that the 'vent' of or the demand for money is constant. See page 7 above, note 1.

2 Professor Cannan wrote: "... it seems impossible to avoid the impression that he Ricardo did in fact keep his theories of the value of currency so to speak in a different side of his head from that occupied by his general theory of value." See E. Cannan, A Review of Economic Theory, London, 1930, p. 182. Also see A.W. Marget, op. cit., Vol. II, 32ff.; and D. Ricardo, op. cit., the Appendix.

commodities other than money determined by the quantity of labour contained in them. Actually, the above quoted statement, in which he describes the quantity theory, can hardly be said to depict any aspect at all of a "labour theory" of value. Yet elsewhere, Ricardo chides those who "after having requested their readers to consider money and bullion merely as commodities subject to the same general principles[s] of supply and demand..."proceed "to forget this recommendation themselves, "and to consider money as something peculiar, the value of which is not determined in the same way as that of other commodities."[1] He finally degended himself against the criticisms of Malthus, about his inconsistencies, by restricting the validity of the "labour" or the "cost of production" theory of value to only those commodities that were such "as can be increased in quantity by the exertion of human industry and on the production of which competition operates without restraint." This excluded money, since the latter was considered by Ricardo as a "monopolised" commodity.[2]

Thus it seems safe to conclude that, according to Ricardo, the value of money was rather determined by the supply of it and the demand for it, that is by "its quantity and vent"; hence the picture of a flow of money chasing a given flow of goods, as it is suggested in his exemplification of the quantity theory.

In short, two main tendencies have developed out of the

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1 See A.W. Marget, op. cit., Vol. II, 32-33; and Ricardo, loc. cit.

2 See D. Ricardo, Principles, 1st. ed., p. 3; E. Cannan, op. cit., p. 182; and A. Marget, op. cit., Vol. II, 32ff. for a criticism of Cannan's remarks and a suggested interpretation of Ricardo's distinction between money and other commodities concerning the manner in which value is determined.

teachings of Smith regarding the quantity theory: the one lays emphasis on the "utility" aspect of money, hence upon the demand for money as a commodity; whereas the other stresses the supply side, based upon the cost of production, and assumes that the 'vent' of or the demand for money is more or less constant, but always in relation to a given quantity of commodities. It now remains to consider also two important scholars among all those who subscribed to either one of these views, namely J.S. Mill and N. Senior. I will underline mainly what I consider, for the purpose at hand, as the most important difference between Mill and Senior, concerning the manner in which they handled the quantity theory.

One often hears that J.S. Mill "perfected and adapted the theory of the Ricardian economics." But what matters most at present is the fact that Mill, in studying the quantity theory received from Ricardo and his predecessors, laid much emphasis upon the consequences of what is referred to, to-day, as "the mutual impact of the relevant flow of money and the relevant flow of goods."[1] This amounted to carrying one step further the rudimentary analysis started earlier by Locke and which was taken up later on by Ricardo. Thus, after identifying the demand for money with the value of the goods offered for sale, -- since "every seller of goods is a buyer of money, and the goods he brings with him constitute his demand" -- and the supply of money with "all the money in circulation at the time", Mill concluded: "So that the value of money, other things being the same, varies inversely with its quantity; every increase of quantity lowering the

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1 J.S. Mill, Principles, Book III, Chap. VIII, sec. 2 (p. 491ff. of the Ashley edition).

value, and every diminution raising it, in a ratio exactly equivalent."[1] It is therefore the law of supply and demand which regulates the value of money, like that of any other commodities. But, following Smith, Mill thought this to hold only temporarily, for on the average, it is rather the "cost of production" which determines value.[2]

While Nassau Senior also accepted the quantity theory, and, in addition, offered substantially the same explanation of the determination of the value of money as the one that was given by A. Smith and J.S. Mill, he did not mean the same thing as Mill, for instance, when he spoke of the "demand" for money. The difference between their respective concepts of "demand" might be said to consist in a matter of emphasis, inasmuch Senior paid attention primarily to the purposes of holding money, whereas Mill was rather preoccupied with the money "demand for goods". It is in this sense that one can say that Senior was a protagonist of what has been called "the holding theory of money", or in other words, the "cash-balances" theory; whereas Mill favoured an approach that portrays the interraction between the flow of money and the flow of goods. This is not to say, however, that Mill did not give the least evidence of an understanding of the forces leading to the holding of money altogether.[3]

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1 J.S. Mill, Principles, Book III, Chap. VII, sec. 2 (p. 16 of the sixth edition, London, 1865). Mill thought this phenomenon to be a property peculiar to money. See also chapter IX on the importance of the cost of production as the ultimate determinant of the value of money.

2 Ibid., Chap. VII, sec. 3 (p. 488 of the Ashley edition) and chapter IX.

3 See, for instance, his "Preliminary Remarks", ibid., Book III (p. 6 of the sixth edition, London, 1865), where he says: "The greatest part of the utility of wealth, beyond a very moderate

But he, unlike Senior, did not stress "utility" and did not insist upon referring "the problem of the demand for money back to a study of the actions of economizing individuals."

What has been said thus far, and which has ended in a comparison between Mill and Senior, purported to put in evidence the almost parallel development of two basic approaches to the theory of money and prices, both of them being an application of the principle of supply and demand, while each one emphasizes a different property of money: the "medium of exchange" function in one case, and the "store of value" function within the framework of utility analysis in the other case. At this stage of our study, J.S. Mill stands as the most articulate representant of the school that uses the first approach, whereas Senior deserves similar ateention as a representant of the other school, namely the one that emphasizes the "store of value" function of money. However, it may be said that the latter school, even at the time Senior wrote, was not comparable in strength and popularity with the first one which represented "arch-classical" economics. One had to wait until Leon Walras and Alfred Marshall to witness a reversal of that trend.

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quantity is not the indulgences it procures, but the reserved power which its possessor holds in his hands of attaining purpose generally"; -Here, one feels the influence of both Smith and Say, with that of the former being by far the stronger, as the later parts of Mill's Principles reveal. --Also see A.W. Marget, op. cit., Vol. II, 39-47, and p. 46, n. 122; and the references cited therein; and N. Senior, Three Lectures on the Value of Money (1840), pp. 8ff., 30, 33ff., 49, 55ff.

IV

Not everybody in England, or elsewhere, were ready to accept Locke's and Hume's proposition that an increase in the quantity of money raises prices in the same proportion. Among the first outspoken critics of that theory, one can name Richard Cantillon, James Steuart, Thomas Tooke, and J.L. Laughlin.[1] The idea that a proportionate change in prices follows any change in the quantity of money qas unacceptable to them, although for different reasons. Thus, after an investigation of the price development in England since 1797, Thomas Tooke concluded: "The whole tenor of the facts and reasonings adduced has been to establish the conclusion that the great alterations of prices originated, and mainly proceeded, from alterations in circumstances distinctly affecting the commodities, and not in the quantity of money, in relation to its function."[2] Nevertheless, the theory managed to survive, aided by the many refinements that were brought into it as its protagonists had to defend it against the criticisms which were directed against it. As a result, it has been restated by several scholars, particularly by M. Friedman

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1 Richard Cantillon, Essai sur la Valeur du Commerce en general, 1755, pp. 235, 239; James Steuart, An Inquiry into the Principles of Political Economy, 1796, (first published in 1767), Vol. II, 187; Vol. III, 6; Thomas Tooke, A History of Prices, 6 volumes, London, 1838-57, Vol. II, 350; Vol. V, 344, and Vol. VI, 232-233; J.L. Laughlin, "The Quantity Theory of Money", in the Journal of Political Economy, 1924, p. 276. See also H. Hegeland, op. cit., p. 39ff., p. 42ff., pp. 60ff. and 77ff.

2 T. Tooke, An Inquiry into the Currency Principle, London, 1844, pp. 74-75; See also Hegeland, op. cit., p. 60ff. for an illuminating discussion on Tooke's position.

who certainly is the most brilliant contemporary student of monetary theory. As a matter of fact, Friedman's restatement of the theory is so sophisticated that the latter, as it was transmitted to us by Locke and Hume and then taught by the "classical" economists, is, indeed hardly recognizable in his writings.[1]

Among the other scholars, of whom it may be said that they felt it necessary to reformulate the quantity theory, even before Friedman, let us consider the most representative members of two different schools: Irving Fisher whose name is connected with the 'transactions-velocity' approach; and Alfred Marshall and his students of the Cambridge school which is associated with the 'cash-balances' approach.

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1 See Studies in the Quantity Theory of Money, ed. by M. Friedman, especially p. 3ff.; also M. Friedman, "The Demand for Money: Some Theoretical and Empirical Results", in the Journal of Political Economy, LXVII (1959).
We should also mention the names of Philipp Cagan, Richard Selden, Eugene Lerner, who contributed to the publication of the Studies in the Quantity Theory of Money.

CHAPTER II

IRVING FISHER'S TRANSACTIONS - VELOCITY APPROACH

The ideas which had been stressed by J.S. Mill, namely the concept of the flow of money and the flow of goods, have received further treatment in the hands of I. Fisher. This chapter will serve to establish this fact, while it will also serve to describe an approach which stresses the "medium of exchange" function of money in contrast to the "cash-balances" approach upon which my study is based.

The equation Fisher used to express the transactions-velocity approach is the following:

$$MV = \Sigma pQ = PT$$

which becomes: $MV + M'V' = \Sigma pQ = PT$, to include bank deposits and their velocity of circulation.[1] M is the stock of currency, V its velocity of circulation, M' bank deposits, V' their velocity of circulation, pQ the sum of all transactions, which can also be writen as PT, where P is the price level (relative to some base date) and T an index of the physical volume of transactions.

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1 Fisher, The Purchasing Power of Money, New-York, 1911, pp. 26ff., 48. -- Fisher acknowledges that Simon Newcomb and Edwin Kemmerer had already made an algebraic statement of the equation of exchange. It seems, however, that Henry Lloyd was the first to formulate such an equation, but that he did not include a term for the velocity of circulation. See I. Fisher, op. cit., p. 25, n.2; S. Newcomb, Principles of Political Economy, New York (Harper), 1885, p. 346; E. Kemmerer, Money and Credit Instruments in their Relation to General Prices, New-York (Holt), 1907, p. 13; and H. Hegeland, op. cit., p. 86ff. on Lloyd and other writers. Also see A.W. Marget, op. cit., Vol. I, chapter II, part I, for a survey of older formulae.

This equation is a truism, since "the total value of goods sold must equal the amount of money exchanged"; every article bought by one person indicates a corresponding sale by another person. As a matter of fact, this nature of the "equation of exchange" has never been flatly denied by Fisher himself who, nevertheless, criticized the objectors of the quantity theory on the following ground: "While the equation of exchange is, if we choose, a mere "truism", based on the equivalence, in all purchases, of the money or checks expanded, on the one hand, and what they buy, on the other, yet in view of supplementary knowledge as to the relation of M to M', and the non-relation of M to V, V', and the Q's, this equation is the means of demonstrating the fact that normally the p's vary directly as M, that is demonstrating the quantity theory."[1] Thus a restatement of the theory reads as follows: "It [the quantity theory] is true in the sense that one of the normal effects of an increase in the quantity of money is an exactly proportional increase in the general level of prices."[2] This conclusion rests, of course, upon a number of premises, among which the most fundamental ones are: that changes in M or M' do not affect either the V's, or the Q's or T, and that P is incapable to influencing either the M's, the V's, or T.[3] Furthermore, it was only at the end of a "transition period" that a change in M was believed to have a proportional effect on prices.

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1 I.Fisher, op. cit., p. 157.

2 I. Fisher, Ibid., p. 157

3 See I. Fisher, ibid., Chap. VIII, especially p. 158; and A.G. Hart, Money, Debt, and Economic Activity, (New-York: Prentice-Hall, Inc., 1953), Chap. X, p. 159.

For, during transition periods the relation between M and M', on the one hand, and P, on the other hand, is by no means rigid; hence one must consider the temporary effects during the period of transition separately from the permanent or ultimate effects, for the transition period may be characterized either by rising prices or by falling prices, whereas a given change in M must ultimately give rise to a proportional change in prices.[1] Nothing, therefore, interferes with the truth of the quantity theory, and "the proposition that prices vary with money holds true only as between two imaginary periods for each of which prices are stationary or are moving alike upward or downward and at the same rate."[2]

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1 I. Fisher, op. cit., Chap. IV, and p. 161.

2 See I. Fisher, ibid., p. 159. - The equation of exchange is a truism. But, it must not be confused with the quantity theory. On this point, see J.A. Schumpeter, History of Economic Analysis, 1954, pp. 1096, 1102; A.W. Marget, op. cit., Vol. II, 91-92; and A.G. Hart, op. cit., p. 159.
In a recently published book, D.J. Botha remarked that "Fisher's quantity theorem, which is based on his equation of exchange, is an equilibrium condition, i.e. an equality in the lagged expost sense. In order to determine the causal relationship between the factors in the quantity theorem it is necessary to find an ex-ante interpretation of the factors determining the size of the stream of money and the stream of goods. The size of those factors is determined by the disposition of the individual...This is how and where liquidity preference enters into the problem." D.J. Botha, A Study in the Theory of Monetary Equilibrium, (Leiden: H.E. Stenfert Kroese N.V., 1959), p. 9. These views had been expressed by Fisher in the following passage: "While, therefore, the equation of exchange, of itself, asserts no causal relations between quantity of money and price level, any more than it asserts a causal relation between any other factors, yet, when we take into account conditions known quite apart from that equation, viz., that a change in M produces a proportional change in M', and no changes in V, V', or the Q's, there is no possible escape from the conclusion that a change in the quantity of money (M) must normally cause a proportional change in the price level (the p's)." I. Fisher, op. cit., pp. 156-57; and in connection with possible changes in Q and V, ibid., Chapters V, VI, VII and VIII.

After taking into account the premises laid down by Fisher as well as the allowances he made for periods of transition, one cannot escape the conclusion that Fisher's equation of exchange was not intended to prove the validity of the quantity theory, nor to illustrate it, independently from any considerations whatsoever of the nature of the relationships which exist between its six variables. Furthermore, it is not difficult to recognize in Fisher's approach to the quantity theory the concept of "flow of money and flow of goods" already contained in the writings of Locke, but much better worked out in J.S. Mill's Principles.[1] In other words, it can be said that Fisher went along the line followed by Mill. Nevertheless, since he was writing after A. Marshall, he could not help being influenced by the ideas of the Cambridge school, witness his explanation of the nature of the velocity of circulation of money: "Velocity of circulation is the average rate of "turnover", and depends on countless individual rates of turnover. These, as we have seen, depend on individual habits. Each person regulates his turnover to suit his convenience. A given rate of turnover for any person implies a given time of turnover -- that is, an average length of time a dollar remains in his hands. He adjusts this time of turnover by adjusting his average quantity of pocket money, or till money, to suit his expenditures. He will try to avoid carrying too little lest, on

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1 As a matter of fact, Fisher refers the reader to Mill's Principles, when he recalls that, while the quantity theory has only recently been given mathematical expression, it has long been understood "as a relationship among the several factors: amount of money, rapidity of circulation, and amount of trade." Op. cit., pp. 25-26, n.2. Also see J.S. Mill, op. cit., Book III, Chapter VIII.

occasion, he be unduly embarrassed; and on the other hand to avoid encumbrance, waste of interest, and risk of robbery, he will avoid carrying too much."[1] After reading this passage, one cannot avoid the impression that Fisher resembles a 'cash-balance' theorist at the microeconomic level, while at the macroeconomic level, he rather goes along with J.S. Mill, on account of the fact that he preferred the "flow of money and the flow of goods" approach to the quantity theory.

Fisher's attempts to safequard the validity of the quantity theory -- which he took pains to defend because, in his opinion, "it seems nothing less than a scandal in Economic Science that there should be any ground for dispute on so fundamental proposition" --were worthwhile. There had prevailed a general tendency, which also denotes an impairing weakness with many economists, not to look for the inner message of whatever a "quantity theorist" may have uttered. It is a fact, however, that it was only recently that new important variables have been introduced into the theory of money and prices, particularly the rate of interest.[2] And it is probably because of the increasing importance of those new dimensions, which changes in the institutional set-up of our society force us to take into account, that the "equation of exchange" as well as the whole "transactions-velocity" approach to the quantity theory becomes more

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1 I. Fisher, op. cit., p. 152; also see his Elementary Principles of Economics, (New-York: The Macmillan Co., 1934), pp. 242-43.

2 Notice, however, that as long ago as 1917, Pigou stated that the demand for money was a function of, among other things, the rate of interest. See A.C. Pigou, "The Value of Money" reprinted in the American Economic Association, Readings in Monetary Theory, ed. by F.A. Lutz and L.W. Mints, 1951, pp. 162-183.

and more ill adapted. Don Patinkin denounced the failure of that equation in the following words: "Specifically, the familiar MV=PT can be looked upon as determining the equilibrium price level, P, as the resultant of forces represented by the aggregate demand for goods, MV, on the one hand, and their aggregate supply, T, on the other. This equation, however, does little to exploit the full potentialities of the theme: it restricts monetary theory to the case of an aggregate demand function for goods which, to outward appearances, is independent of the rate of interest and directly proportionate to the quantity of money. This is misleading as it is unrealistic..."[1]

It seems also worth pointing out that the repudiation of the principle of Supply and Demand, as the regulator of the value of money, is attendant in Fisher's approach to the quantity theory of money. Thus, one of the reasons why Fisher undertook to establish the validity of the quantity theory of money was "the fallacious idea that the price level cannot be determined by other factors in the equation of exchange because it is already determined by other causes, usually alluded to as "supply and demand"."[2] However, one must be careful in interpreting the concepts of supply and demand to which Fisher referred in the passage just quoted. Demand, here, is not to be identified with the demand for goods represented by MV and supply with the supply of goods, expressed by T; for these are the forces which, according to the equation of exchange, determine the

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1 Don Patinkin, Money, Interest and Prices (Row, Paterson and Co., 1957) p. 1.

2 I. Fisher, The Purchasing Power of Money, p. 174; also see A.W. Marget, op. cit., Vol. II, 99-110.

level of prices. What Fisher probably meant was the demand for money, and the supply of money, which were emphasized by the "cash-balances" approach to the quantity theory of money. This other approach stresses the demand for money "to hold" and can be traced back as far as in the writings of Davanzatti, Galiani, Law, Say and Senior, as it has been established in the previous chapter. Consequently, Fisher's attacks indicated the continuation of two opposing tendancies: the one which puts in evidence the "medium of exchange" function of money -- a view which Fisher shared along with Smith, Ricardo and their followers; the other which centers attention around the "store of value" function of money and has been advocated by the Cambridge School. It is to the latter that we now turn our attention.

CHAPTER III

THE CAMBRIDGE SCHOOL

The Cambridge School is the name given to that group of economists, at Cambridge, who sponsored and developed the "cash-balances" approach to the quantity theory of money. It will be the task of this chapter to present the most important representants of that school, among whom figure A. Marshall, A.C. Pigou, R.G. Hawtrey, D.H. Robertson, and J.M. Keynes.

I

Alfred Marshall is commonly regarded as the founder of the Cambridge School which "laid emphasis not on changes in the quantity of money in circulation, but on changes in the value of the total amount of money that people want to keep in the form of cash balances, i.e., coins, banknotes, and demand deposits, as being of primary importance in the fluctuations of the price level." [1] This new approach actually represents an attempt to break away from the traditional barren interpretation of the relationships between the amount money in circulation and the level of prices, by laying emphasis not so much upon the "medium of exchange" function of money as upon its "store of value" function. For money is a "link between the present and the future", and this had been too often forgotten by older quantity theorists.

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1 See H. Hegeland, op. cit., p. 97.

As early as 1887, that is much prior to the actual publication of the book in which he exposed the cash-balances approach,[1] A. Marshall was pointing out the inadequacies of the traditional approach to the study of the relationships between money and prices.[2] It was on the occasion of hearings on the question of the Indian Currency, conducted by an especial committee in 1898, that he offered his views and thus laid down the foundation stones of the Cambridge School. Said he on that occasion: "The fact is that in every state of society there is some fraction of their income which people find it worthwhile to keep in the form of currency; it may be a fifth, or a tenth, or a twentieth. A large command of resources in the form of currency renders their business easy and smooth, and puts them at an advantage in bargaining; but, on the other hand, it locks up in a barren form resources that might yield an income of gratification if invested, say, in extra furniture; or a money income, if invested in extra machinery or cattle... Whatever the state of society, there is a certain volume of their resources which people of different classes taken one with another care to keep in the form of currency; and, if everything else remains the same, then there is a direct relation between the volume of currency and the level of prices, that, if one is increased by 10%, the other also will be increased by 10%. Of course, the less the proportion of their resources which people care to keep in the form of currency, the lower will be the aggregate value of the currency, that is, the higher will prices be with a given

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1 A. Marshall, Money, Credit and Commerce, London, first published in 1923.

2 A. Marshall, Official Papers, question 11, 759, p. 268.

volume of currency."[1] The proportion of their total resources people choose to keep in the form of currency has been coined the "Marshallian K", and was first embodied into a formula by Pigou in his famous 1917 article.[2]

Designating the total resources, expressed in terms of wheat, that are enjoyed by the community (other than its bankers) by R; the proportion of these resources people choose to keep in the form of titles to legal tender by k; the number of units of legal tender by M, and the value, or price, per unit of these titles by P, expressed in terms of wheat, Pigou wrote:

$$P = \frac{kR}{M}$$

which expresses the demand for titles to legal tender.[3] Therefore,

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1 A. Marshall, Official Papers, question 11, 759, p. 268.

2 A.C. Pigou, "The Value of Money", reprinted in the American Economic Association Readings in Monetary Theory, Philadelphia, 1951, pp. 162-183. This article was first published in the Quaterly Journal of Economics, 1917-1918, pp. 38-65. - Léon Walras' encaisse desirée conveys the same sort of idea as the "Marshallian K". Walras expressed it by the equation: QU x P'U Ha, in which QU is the quantity of money, P'U the price of the services yielded by money, and Ha the encaisse desiree. Then P'U would rise (fall) if QU was greater (less) than $\frac{Ha}{P'U}$; that is, "Le prix du service de la monnaie s'établit par hausse ou par baisse suivant que l'encaisse desirée est supérieure ou inférieure a la quantité de monnaie." See L. Walras, Eléments d'Economie Politique, Lausanne, 1900, p. 311; also his Théorie de la Monnaie, published in 1886. In his Abrégé des Eléments d'Economie Politique, Walras said explicitly that "Toute augmentation ou diminution dans la quantité de la marchandise monnaie a pour effet une augmentation ou une diminution sensiblement proportionnelle dans les prix." For an enlightening discussion of Walras' theory of money, see Don Patinkin, op. cit., Note C, pp. 386-412.

3 See A.C. Pigou, loc. cit., p. 165ff. Pigou developed his equation to account for bank deposits and bank reserves. Once this is done the equation reads: $P = \frac{R}{M}[c + h(1-c)]$, where c is the proportion of his titles to legal tender that the representative man chooses

the quantity of wheat value kept in the form of titles to legal tender is given by "the proportion of his resources that the average man chooses to keep in that form." And this proportion depends upon three uses of legal tender: the production of convenience and security; the production of commodities inasmuch as money could be invested to yield some real income instead of being kept idle; and lastly direct consumption, since there is always the possibility of consuming immediately all of one's resources instead of investing them at all. We thus have three main rical uses of money, of which the first two are the most relevant for the application of the Law of Diminishing Marginal Utility. Pigou then remarked that the satisfaction yielded "by successive units of resources devoted to future production in the case money is invested diminishes as the number of units so devoted is increased." And, applying the same kind of reasoning to the case in which money is desired as a means of providing security, he concluded: "It follows that, other things being equal, the variable k will be larger the less attractive is the production use and the more attractive is the rival use of resources."[1]

While the attractiveness of the production use of money is a function of the "expected fruitfulness of industrial activity", the "money use" depends upon more complex factors among which: the convenience resulting from holding money in order to carry ordinary

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to keep in the form of actual legal tender (including coins), so that (1-c) is the proportion he keeps in the form of bank balances and bank notes; and h indicates bank reserves expressed a a proportion of the notes and balances held by their customers. Ibid., p. 166.

1 A.C. Pigou, ibid., pp. 167-168.

transactions, which may be called the business convenience; and prices expectations, for "any expectation that general prices are going to fall increases people's desire to hold titles to legal tender; and any expectation that they are going to rise has the contrary effect."[1]

After these considerations, it seems appropriate to demonstrate the relation in which the equation $P = \frac{kR}{T}$ stands to the "equation of exchange" $MV = PT$.

By solving for P in the equation of exchange, we obtain $P = \frac{MV}{T}$, or $\pi = \frac{MV}{T}$ after Pigou substituted π for P in the latter case. And, since Pigou's P, in his "cash-balances" equation, is "the price of money in terms of things", whereas in the equation of exchange P is "the price of things in terms of money", it follows that $P = \frac{1}{\pi}$. This implies the following equality, $\frac{kR}{M} = \frac{T}{MV}$ or $kV = \frac{T}{R}$. Hence $k = \frac{1}{V}$, that is, k is the reciprocal of V; the assumptions, here, are that in given conditions of production and trade, the ratio $\frac{T}{R}$ may be taken as a constant, hence the product kV is also constant.[2] The relation between k and V has been clearly explained by A. Marshall in the following example:

> If a person, whether in the course of trade or for his own use, buys for currency goods and services of the value of ten thousand pounds of wheat during a year, and if he retains on the average purchasing power in the form of currency to the value of one hundred pounds, then so far as he is concerned, currency will circulate one hundred times in the year. If he keeps twice as much purchasing power,

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1 See A.C. Pigou, loc. cit., p. 168ff.

2 See A.C. Pigou, ibid., p. 173ff.

> that is, to the value of two hundred pounds of wheat, then currency will, so far as he is concerned, circulate fifty times in the year, that is, only half as rapidly. Thus generally, ceteris paribus, any increase in the ready purchasing power that people choose to keep will diminish proportinately rapidity of circulation, and vice-versa."[1]

In fact, the "cash-balances" approach to the quantity theory does not enter into conflict with the "transactions-velocity" approach, nor does it deviate from the theory inherited from the past, which relates changes in the price level to changes in the quantity of money in circulation.[2] Nevertheless, as Pigou put it, "it is a somewhat more effective engine of analysis"; thus by bringing us into relation with elements of volition, it enables us to allow for the play of psychological factors instead of gathering the impression of a mechanized world of rigid relationships between the quantity of money and the level of prices. In short, it may be said that the interest which the "cash-balances" approach presents, lies wholly in the factor k, the value of which is the result of the interplay of a number of forces which may be known and studied.[3]

II

Besides A. Marshall and A.C. Pigou, three other scholars of great repute are commonly considered as members of the Cambridge

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1 As quoted by Pigou, ibid., pp. 173-174. Compare Marshall's explanation to Fisher's illustration of the concept of velocity of circulation of money and of its main determinants. See p. 24 of the present work.

2 See A.C. Pigou, ibid., p. 174.

3 One of its main advantages lies in the fact that it permits the application of the principle of Diminishing Utility to the theory of money, and the use of "indifference curves" analysis.

School. They are: R.G. Hawtrey, D.H. Robertson and J.M. Keynes. A general review of their main contributions is in order so that we may be in a better position to analyze later developments in the field of monetary theory.

While Hawtrey made use of the "cash-balances" equation, he was not, strictly speaking, a "cash-balances" theorist. In fact, he attempted to combine, in a most interesting manner, this approach and the one which were developed at first by John Stuart Mill and which laid emphasis upon the concept of a "moneyed demand."[1]

Distinguishing between what "a person has available to spend on his own needs", or the consumer's income, on the one hand, and what "he actually spends,"that is the consumer's outlays, on the other, Hawtrey termed the difference the "unspent margin." In other words, if we compare total income to total outlays for the community as a whole, the "unspent margin" corresponds to "the excess of the purchasing power people have acquired over what they have spent." Thus, for the community as a whole, this excess corresponds to the supply of the means of payments designated by M. As to the demand for these means, it is determined by the motives which induce people to hold cash, namely:

1) to bridge the gap between receipts and disbursements;

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1 See A.W. Marget, op. cit., Vol. II, 119-124. Marget groups Hawtrey, Wicksell and Schumpeter, with the sponsors of "an"income approach" who made explicit use of the concept of a "moneyed demand", or, as it is called in Hawtrey's later works, "general" demand." Ibid., p. 120. He also shows how Hawtrey combined the "cash-balances" approach and the "income approach". See also the references cited therein. - On Wicksell and Schumpeter, and concerning the whole "income approach", see A.W. Marget, op. cit., Vol. II, 92-98, 110-119, and Vol. I, Chap. XII.

2) to meet unforseen contingencies;

3) to invest at future dates.

Hence the demand for money may be expressed by the following equation:

$$M = K\ P\ Y$$

in which M represents the stock of money, Y total wealth, P the price level expressed in terms of money (this P is the reciprocal of Pigou's P), and K the proportion of total wealth people choose to keep in the form of money.[1] It follows that "whatever the number of money units composing the "unspent margin", there is some appropriate price level at which the demand for money thus computed in terms of wealth would be exactly met, and the "unspent margin" would just be equal to total cash holdings required."[2] In other words, a position of equilibrium is being defined as one at which the supply of money is just equal to the quantity of money people desire to hold; and provided that this condition is satisfied, no change will occur in the price level which, otherwise, would vary and thus serve to bring equality between the real value of the "unspent margin", $\frac{M}{P}$, and the amount of wealth people choose to keep in the form of money, KY. Thus the value of money is governed by the supply of and the demand for money to hold.

There is no doubt that Hawtrey's presentation of the manner in which changes in the quantity of money were thought to affect prices represents an improvement upon what had been said so far by Marshall and Pigou. The main reason is that he made a

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1 R.G. Hawtrey, Currency and Credit, London, 1919, pp. 39ff.

2 R.G. Hawtrey, ibid., p. 33.

definite attempt to integrate the main features of the "flow of goods" or the "transactions-velocity" approach, respectively advocated by J. S. Mill and I. Fisher, and the new Cambridge approach which looks upon money not only as a "medium of exchange" but also, and particularly, as a "store of value."[1]

D.H. Robertson's formulation of the "cash-balances" approach added fuel to the movement toward the "assimilation" of the approaches which we have just mentioned, with the difference that Robertson made use of the concepts already developed by earlier classical writers, and in particular by J.S. Mill. Thus to him, the "daily" demand for goods is the same thing as the "daily" supply of money, just as the "daily" supply of goods reflects the "daily" demand for money -- an interpretation which we already found in Mill's Principles.[2] Hence the daily demand for money (goods) and the daily supply of goods (money) are two sides of the same coin; so that, if M stands for the stock of money, H for its real value, K for its period of circulation in terms of finite but indivisible atoms of time called days, T for the volume of output per circulation period, and P for the price level, the following equation obtains:

$$\frac{M}{K} = P\,\frac{T}{K}$$ which relates the demand for money to the supply of money.

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1 We have already noted the similarity between the "flow of goods" and the "flow of money" approach advocated by J.S. Mill, and the "transactions-velocity" approach used by Fisher. See page 24 of the present work, and note 1 on that page. Also see A.W. Marget, op. cit., Vol. II, 120, paragraph (a).

2 See D.H. Robertson, Banking Policy and the Price Level, New-York, 1949, (first published in 1926), p. 59ff. The reader can also review what has been said about Mill on pages 16ff. above.

Then, $P = \frac{M}{T}$; and $H = \frac{M}{P} \cdot T$. If P=1, H=M=T. In other words, "the daily streams of money just purchases the daily stream of output."[1] As to the relation in which the Robertsonian equation stands to the "equation of exchange", it may be illustrated in terms of the relationship which exists between the desire to hold money and the velocity of circulation of money: "if people want to keep ready to their hand a large pool of command over goods and services, money will be kept hanging about and its velocity of circulation will be small. If for any reason the intensity of their desire to keep such a pool diminishes, they will begin to spend their money faster, and its velocity of circulation will <u>increase</u>. Therefore, "the proportion of their annual real income over which people wish to keep command in the form of money is the income velocity of circulation of money per annum turned upside down."[2] This comparison is seentially similar to the one which had been offered by A. Marshall

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1 See D.H. Robertson, op. cit., p. 50. Robertson exploited the potentialities of the "cash-balances" equation by distinguishing various kinds of saving, of which the most relevant, here, are: Automatic Lacking, and Induced Lacking. The latter is intimately connected with the "cash-balances" equation and the idea this equation is intended to convey; it occurs when, the real value of people's stock of money having been reduced after, say, an increase in prices, these people "hold money off the market, and refrain from consuming the full value of their current output, in order to bring the real value of their money stocks up again to what they regard as an appropriate [or the desired] level." <u>Ibid</u>., p. 49, and chapter V. -This process of adjustment is the one which Hawtrey made allusion to in his statement quoted on page 35 above. The reader can also consult D.H. Robertson's <u>Money</u>, New-York, 1949, especially pp. 18, 30, 34.

2 Italics are mine. D.H. Robertson, <u>Banking Policy and the Price Level</u>, 1949, p. 40.

and reproduced by Pigou as the latter linked his "cash-balances" equation to Fisher's "equation of exchange".[1]

The other Cambridge scholar who felt and acknowledged the necessity of pushing further the study of theory of money and prices, is J.M. Keynes. We now have the opportunity to follow the evolution of his ideas on this subject.

At the time he wrote his Monetary Reform,[2] that is around 1923, Keynes was an adherent to the quantity theory along the Cambridge tradition. Thus writing n for the quantity of money in circulation (currency notes or other forms of cash in circulation with the public), p for the price of "each consumption unit (i.e., p is the index number of the cost of living), and k for the number of consumption units the public require to hold in the form of money, he formulated the following equation:

$$n = p\,k$$

and concluded: "So long as k remains unchanged, n and p rise and fall together; hence, the greater or the fewer the number of currency notes, the higher or the lower is the price level in the same proportion."[3]

Following Pigou, Keynes also allowed for bank balances held by the public; thus designating by k' the number of consumption units held in the form of balances at banks, and by r the proportion

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1 See page 32 above.

2 J.M. Keynes, A Tract on Monetary Reform, London, 1932. The first edition dates back to 1923.

3 Ibid., pp. 76-77.

of these balances the banks keep in cash, Keynes rewrote:

$$n = p(k + rk')$$

The conclusion reached formerly still holds, provided that not only k, but also k' and r are assumed constant.[1]

However, Keynes did not conceal a certain uneasiness about the quantity theory. He seems to have been particularly displeased with the assumption which is inherent in all expositions of the theory, namely that a "mere change in the quantity of the currency cannot affect k, r, and k', -- that is to say, in mathematical parlance, that n is an independent variable in relation to these quantities."[2] He admitted the likeliness of such a relation in actual life, but only in the long run, and then remarked that "the long run is a misleading guide to current affairs"; for actually, "in the long run we are all dead."[3]

As a matter of fact, he pointed out that, in actual experience, a variation in the quantity of money is liable to affect both k and k', and r. And to substantiate his argument, he cites the experience of the banks before the first world war, regarding their policy towards their gold reserves, and also the practices of

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1 J.M. Keynes, A Tract on Monetary Reform, London, 1932, pp. 77-78. On page 78, Keynes said in a footnote: "My exposition follows the general lines of Prof. Pigou (Quarterly Journal of Economics, Nov. 1917) and of Dr. Marshall (Money, Credit and Commerce, I, iv.), rather than the perhaps more familiar analysis of Prof. Irving Fisher." Then comparing the two approaches he said: "It comes to the same thing in the end and it is easy to pass from the above formula n pk to Prof. Fisher's MV PT ; but the above method the "cash-balances" approach seems less artificial than Prof. Fisher's and nearer to the observed facts."

2 Ibid., p. 80. See what I. Fisher had to say on this question in The Purchasing Power of Money, Chapter VIII.

3 Ibid., p. 80.

hoarding in agricultural countries.[1]

To Keynes, the quantity theory, as it was usually presented, was a highly simplified version of a much more general theory which would take into account all the intricate relationships between money and prices. This seemingly extreme simplification of facts became a matter of dissatisfaction for him, and, six years after the publication of his Monetary Reform, he published a Treatise on Money.[2] in which he laid charges against the old Cambridge theory on the ground that, for it, the whole theory of money is adequately described as an attempt to apply the supply-and-demand tool to the analysis of the purchasing power of money, in a degree which would permit it to be completely unconcerned with the role of money in any analysis of output. "The Fundamental Problem of Monetary Theory", said he in the Treatise, "is not merely to establish identities or statistical equations relating (e.g.) the turnover of monetary instruments to the turnover of things traded for money. The real task of such a theory is to treat the problem dynamically, analysing the different elements involved, in such a manner as to exhibit the causal process by which the price-level is determined, and the method of transition from one position of equilibrium to another."[3] To accomplish this aim, the traditional forms of the Quantity Theory were

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1 J.M. Keynes, op. cit., p. 80ff. See page 83ff., where he demonstrates that his misgivings are well-founded. -For a clear exposition of the assumptions about the factors which are emphasized in the quantity theory, see I. Fisher, The Purchasing Power of Money, chap. VIII.

2 J.M. Keynes, A Treatise on Money, London, 1958, first published in 1930, (which will be referred to as Treatise).

3 Ibid., Vol. I, Chap. X, p. 133. (Italics are mine).

not convenient, since "they do not, any of them, have the advantage of separating out those factors through which, in a modern economic system, the causal process actually operates during a period of change."[1]

In lieu of the traditional equations, which were intended to explain how the value of money was determined, Keynes proposed two other fundamental equations:

$$(1) \quad P = \frac{E}{O} + \frac{I' - S}{R} \cdot \text{ or } \quad P = W_e + \frac{Q}{R}$$

$$(2) \quad \Pi = W_e + \frac{I - S}{O} \cdot \text{ or } \quad \Pi = W_e + \frac{Q}{O}$$

P stands for the price level of consumption goods; Π for the price level of output as a whole; W_e for the rate of earnings per unit of output, and it is equal to $\frac{1}{\varepsilon} W$ (where W is the rate of earnings per unit of human effort and ε the coefficient of efficiency (W_e is also designated as the rate of efficiency earnings); E for total money-income minus wind-fall profits or losses -- that is, the "earnings of the community in a unit of time"; I' for the part of that income which has been earned by the production of investment goods; I for the value (as distinguished from I', the cost of production) of the increment of new investment goods; S for the amount of Savings, that is, that part of money income not expanded on consumption goods; O for the total output of goods; R for the volume of liquid Consumption-goods and services "flowing on the market and purchased by

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1 J.M. Keynes, Treatise, Vol. I, Chap. X, p. 133.

consumers"; Q_1 for the amount of wind-fall profit on the production and sale of consumption-goods (defined as I' - S); and Q for total wind-fall profit (defined as the sum of the profit earned in the production of investment-goods, I - I', plus the profit earned in the production of consumption-goods, I' - S; hence, Q = (I - I') + (I' - S), that is, Q = I - S.[1]

Equation (1) tells us that the price level of consumption-goods is equal to the rate of earnings per unit of output, $w_1 \left(\frac{E}{O}\right)$, plus the rate of profit per unit of consumption goods, $\frac{Q_1}{R}$.

Equation (2) expresses the price level of output, as a whole, as the sum of the rate of earnings per unit of output, w_0, and the rate of profit per unit of total output, $\frac{Q}{O}$.

It follows that the stability of the price level, or the value of money, involves two conditions: first, that the rate of earnings remain constant; and second, that profit be equal to zero: that is, the cost of new investment should be equal to the volume of current savings in the case of consumption-goods (Cf. equation (1)), and the value of the increment of new investment-goods should be equal to the volume of current savings in the case of total output as a whole (Cf. equation (2)). Provided that these conditions are satisfied, that is, when I=I'=S, we can rewrite our equations as follows:

$$\pi = P = \frac{M_0 V_0}{O}$$

after substituting M_0V_0 for E, since E is equal to total Income-deposits, M_0, times their velocity of circulation, V_0. This can be

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1 J.M. Keynes, Treatise, Vol. I, Chap. X, pp. 135-139.

rewriten as:

$$P \cdot O \equiv M_1 V_1$$

which resembles Professor Fisher's $PT \equiv MV$, except that O stands for current output whereas T designates the volume of transactions, and that $M_1 V_1$ represents income-deposits times their velocity of circulation, whereas MV are the cash deposits (income-deposits plus business-deposits) times their velocity of circulation.[1]

Keynes acknowledged that his fundamental equations are "mere indentities; truisms which tell nothing in themselves."[2] Thus, on that score, they do not represent an improvement upon any of the other versions of the quantity theory. Yet they contain another property which, according to Keynes, lied in the fact that they permit us "to analyse and arrange out material in what will turn out to be a useful way for tracing cause and effect, when we have vitalised them by the introduction of extraneous facts from the actual world."[3] As a matter of fact, the lack of "dynamics" was the main charge which Keynes laid against the older "quantity equations". In the Preface of the first volume of the Treatise, he defined the object of his undertaking in the following words: "My main object has been to find a method which is useful in describing, not merely the characteristics of static equilibrium, but also those of disequilibrium, and to dis-

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1 J.M. Keynes, op. cit., I, 149-150; on the distinction between income-, business-, and savings-deposits, see chap. III, pp. 34-40. Concerning the differences between the variables measured in the "equation of exchange" and in the "cash-balances" equation, respectively, see chap. XIV, especially p. 237ff., about the price level that is measured in each one of these two equations.

2 Ibid., I, p. 138.

3 Ibid., I, p. 138.

cover the dynamical laws governing the passage of a monetary system from one position of equilibrium to another."[1] This, in fact, constitutes the gist of Volume I of Keynes' Treatise. Actually, however, his reaction against the "static" character of the older "quantity equations", reflected no more nor less than the continuation of that movement, which we have been observing thus far, toward the integration of the assimilation of the various concepts which have been differently emphasized in various approaches to the quantity theory. Such a movement, as we have seen, started with R.G. Hawtrey's attempts to integrate the approach which had been advocated by J.S. Mill and the one inherited from A. Marshall and A.C. Pigou.[2]

Keynes' criticisms against the older "quantity equations" have been dealt with by A.W. Marget who, at the same time, lodged the strongest protests against the pseudo "dynamical" nature of the Keynesian fundamental equations. In particular, Marget accused Keynes of having based his arguments, against the older "quantity equations", upon "fundamental misconceptions as to the nature and purpose" of the quantity equations. One of these misconceptions has been the identification of the quantity theory with a "quantity equation", which led Keynes to regard the older "quantity equations"

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1 J.M. Keynes, op. cit., I, the Preface, p.v.

2 See page 34 ff. above. Sir Dennis H. Robertson's Banking Policy and the Price Level, in particular, represents attempts not only to integrate the main approaches to the quantity theory, but also to introduce dynamics into the theory of money and prices; thus Chapters II, III, IV, V and the Appendix to Chapter V, contain a great deal of elements of a "dynamical" character.

as "statical" in character.[1]

Marget's criticisms may have been somewhat exagerate. But he may not deserve, after all, to be blamed for it, at least not entirely, because of the chaos in which the material of the Treatise has been presented. As a matter of fact, Keynes himself acknowledged this fact in his Preface by saying: "As I read through the page proofs of this book I am acutely conscious of its defects... The ideas with which I have finished up are widely different from those with which I began... I feel like someone who has been forcing his way through a confused jungle. Now that I have emerged from it, I see that I might have taken a more direct route and that many problems and perplexities which beset me during the journey had not precisely the significance which I supposed at the time."[2] Thus the Treatise is "a collection of material rather than a finished work." Actually not long after -- that is, in December 1935 -- Keynes, to

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1 See A.W. Marget, op. cit., Vol. I, chapter II, III, IV, and V. That Keynes believed that the older "quantity equations" were "statical" in character, but that his "fundamental equations" were rather "dynamical" can be found in the following passage: "This Treatise, in contrast to most older work on monetary theory, is intended to be a contribution to this new phase of economic science namely, "an advance to an understanding of an economic system which is not in static equilibrium," J.M. Keynes, Treatise, Vol. II, p. 407; also Vol. I, chap. X, p. 133ff. See also A.H. Hansen, "A Fundamental Error in Keynes' Treatise on Money", in the American Economic Review, 1930; Hansen and Trout, "Investment and Savings in Business Cycle Theory", Economica, 1933; and F.A. von Hayek, "Reflections on the Pure Theory of Money of Mr. Keynes", I and II, Economica, 1931 and 1932. See also D.H. Robertson, "A Note on the Theory of Money", reprinted in the American Economic Association Readings in Monetary Theory, (ed. by F.A. Lutz and L.W. Mints, 1951), pp. 156-161.

2 J.M. Keynes, Treatise, Vol. I, the Preface, pp. v-vi.

use J.A. Schumpeter's expressions, "buckled on his new armor, unsheated his sword and took the field again, boldly claiming that he was going to lead economists out of errors of 150 years' standing into the promised land of truth."

He had thus begun to write the General Theory.

SUMMARY

At this stage, it might be appropriate to sum up the main developments which we have been reviewing in the last three chapters. Having defined the quantity theory as implying that variations in the amount of money in circulation bring about, *ceteris paribus*, proportionate changes in prices, I then proceeded to show how this sort of relationship, between money and prices, became accepted and popularized by the early "classical" economists, from A. Smith to J.S. Mill and N. Senior. However, there have been, since the time of Locke and Davanzatti *et al.*, two basic tendencies: the one which stressed the "medium of exchange" function of money, whereas the other emphasized its "store of value" function; the first line of approach was followed mainly by Smith, Ricardo and Mill; while the second line were adopted by Say and Senior. At the end of this first period, we noticed two approaches to the quantity theory: the one represented by Mill who used the concepts of "flow of money" and "flow of goods" and paid attention to the "medium of exchange" function of money; the other represented by Senior who, with others, paved the way for the "cash-balances" approach and put stress upon the "store of value" function of money. These two basic approaches gained adherents: the *first* among I. Fisher and followers of his "transactions-velocity" approach; the *second* in the Cambridge School, *e.g.* Marshall, Pigou, Hawtrey, Robertson, and Keynes, whose "cash-balances" approach was inspired from the teachings of writers such as Davanzatti, Galiani, Law, Say, and Senior. Within the Cambridge group, however, one must distinguish between the "old" group, represented by Marshall and

Pigou, and the new one personified by Hawtrey, Robertson and Keynes, inasmuch as these younger economists made attempts to integrate the theory of money and prices and the theory of output. This was particularly true and obvious in the case of Keynes who, after having adhered to the Cambridge tradition, broke with it and wrote the Treatise in which he laid charges against the older "quantity equations" on the ground that they were "statical" in character. In their stead, Keynes proposed two other fundamental equations which show the price level of output as a whole as the sum of the rate of earnings plus the rate of profit per unit of total output, and the price level of consumption-goods as the sum of the rate of earnings plus the rate of profit per unit of output of these goods. However, the revolution, although it were started by the Treatise, failed to be fully accomplished most probably because of the chaos in which Keynes had presented his ideas in the book. Thus Keynes had to start all over again, which he did by writing the General Theory. It is to the latter that we now turn our attention in order to follow later developments in the field of monetary and value theory.

CHAPTER IV

THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY

I

Keynes' General Theory represents, to some extent, a continuing evlution of certain fundamental ideas which he had expressed both in the tangled web of his Treatise and even earlier in his Monetary Reform.[1] There is little doubt, however, that the economic climate, from which Keynes' General Theory emerged, also exerted considerable influence upon the general tone and nature of this work.[2] But, on the whole, the latter work emerges mainly out of the Treatise- which Keynes himself acknowledged in the folowing passage:

> "... what in my own mind is a natural evolution in a line of thought I have been pursuing for several years, may sometimes strike the reader as a confusing change of view...; but the general relationship between the two books can be briefly expressed as follows. When I began to write my Treatise on Money I was still moving along the traditional lines of regarding the influence of money as something so to speak separate from the general theory

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1 In fact, we have observed, in the course of the present study, how Keynes gradually became disatisfied with the "old" cash-balances approach, and in particular with the assumption that changes in the quantity of money do not affect either output or the proportion of their resources people want to keep in the form of cash balances. Keynes had shown his misgivings about such a simplification in his Monetary Reform. See p. 38 ff. of this study.

2 As to the impact of the years of the Great Depression upon his thinking, see A.P. Lerner, "The General Theory", and P. Sweezy, "The General Theory", in the New Economics, ed. by S.E. Harris, New-York, 1948, chapters XI and X respectively. Sweezy remarked that "the opportunity to which Keynes responded was essentially as crisis in traditional economics, a crisis which was both accentuated and laid bare by the Great Depression." Ibid., p. 106.

> of supply and demand. When I finished it, I had made some progress towards pushing monetary theory back to becoming a theory of output as a whole... But the dynamic development, as distinct from the instantaneous picture, was left incomplete and extremely confused. This book the General Theory on the other hand, has evolved into what is primarily a study of the forces which determine changes in the scale of output and employment as a whole; and, whilst it is found that money enters into the economic scheme in an essential and peculiar manner, technical monetary detail falls into the background. A monetary economy, we shall find, is essentially one in which changing views about the future are capable of influencing the quantity of employment and not only its direction. But our method of analysing the economic behaviour of the present under the influence of changing ideas about the future is one which depends on the interaction of supply and demand, and is in this way linked up with our fundamental theory of value. We are thus led to a more general theory, which includes the classical theory with which we are familiar, as a special case."[1]

In fact, the preceding statement of purposes and intents is essentially similar to the one which is found in the Preface of his Treatise: "My object", said Keynes, "has been to find a method which is useful in describing, not merely the characteristics of static equilibrium, but also those of disequilibrium, and to discover the dynamical laws governing the passage of a monetary system from one position of equilibrium to another."[2] Thus it is not at all surprising to notice that certain features of the General Theory, such as Liquidity Preference and the Marginal Efficiency of Capital, had already been treated in the Treatise.[3] On the other

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1 Italics are mine. See J.M. Keynes, The General Theory of Employment, Interest and Money, 1956 ed., the Preface, pp. vi-vii.

2 Italics are mine. See J.M. Keynes, Treatise, Vol. I, the Preface, p. v.

3 J.M. Keynes, Treatise, Vol. I, chapters III, XIV on the question of the liquidity preference, and pp. 140-146; Vol. II, pp. 159-161

hand, other features of the General Theory represent both the introduction of novel tools of analysis, such as the Consumption Function, or appropriate and significant redefinitions of terms as in the case of "income".[1] John Lintner has suggested that two steps mark the transition from the Treatise to the General Theory, to wit:

> The first step was the abandonment of the rather artificial and non-operational definition of income, which marked the Treatise, for the more straightforward and significant definition of income of the General Theory developed against the background of studies of national income analysis. The second step was the formulation of the consumption function.[2]

As a matter of fact, there exists no complete agreement on what should be considered as the main contribution of the General Theory. All kinds of opinions have been expressed on this question: the consumption function, the theory of interest, the concept of underemployment equilibrium, the introduction of expectations, the relation of wage-rates to effective demand, the reliance on changes in the rate of interest rather than on wage-rates to increase effective demand -- all these features have been singled out by various people as Keynes' greatest contribution to economics.[3] On the other

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concerning the behaviour of the entrepreneurs with respect to investment; pp. 43-48 on the factors determining true velocities, or liquidity preference, and chapter XXVII on the fluctuations in the rate of investment.

1 See J.M. Keynes, General Theory, Book III, chapters VIII-X, and Book II, chap. VI.

2 J. Lintner, "The Theory of Money and Prices", in the New Economics, p. 526 ff.

3 See the New Economics, ed. by S.E. Harris (New-York: Alfred A.

hand, the General Theory has been subject to all sorts of criticisms, although it is generally agreed that the book has succeeded in implanting a new direction and outlook, and in providing a new and better framework within which the analysis of the fluctuations in the level of effective demand can be conducted. But, one question must be dealt with here, a question which has provoked the minds of economists from the very beginning of the long controversy on Keynesian Economics: this is the question of dealing with the "generality" of the General Theory within the framework of monetary and value theory. This question now appears to have been definitely answered. Thus in the Introduction of his book, Don Patinkin summarizes some of the more general conclusions of his argument in the following words: "The propositions of the quantity theory of money hold under conditions much less restrictive than those usually considered as necessary by its advocates and, a fortiori, its critics. Conversely, the propositions of Keynesian monetary theory are much

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Knoff, 1948): A. Hansen, "The General Theory", chap. XII; R.F. Harrod, "Keynes, the Economist", Chap. VIII; G. Haberler, "The General Theory", chap. XIV; S.E. Harris, "Ten Years after: What remains of the General Theory?", chap. V; A.P. Lerner, "The General Theory", chap. XI; J.M. Keynes, The General Theory", chap. XV; also see A.H. Hansen, Mr Keynes on Underemployment Equilibrium", Journal of Political Economy, October 1936, p. 686, and his A Guide to Keynes (McGraw-Hill Book Co. Inc., 1953); J.R. Hicks, "A Rehabilitation of "Classical" Economics", Economic Journal, June 1957, in which Hicks said that "some of the innovations of the General Theory are innovations of method which opened the way to new results, or provide better ways of reaching old results"; The reader can also consult the American Economic Review, XXXVIII (May 1948), on "A Consideration of Economic and Monetary Theories of J.M. Keynes" (articles by Lorie Tarshis, "An Exposition of Keynesian Economics", and J.H. Williams, "An Appraisal of Keynesian Economics", followed by a Discussion by L.V. Chandler, C. Warburton, and M.W. Reder), pp. 261-298. Also see pages 299-339 on other features of Keynesian Economics; and A. Smithies, "Reflections on the Work and Influence of John Maynard Keynes", Quarterly Journal of Economics, LXV (1951), pp. 578-601.

less general than the General Theory and later expositions would lead us to believe. But this in no way diminishes the relevance of Keynesian unemployment theory for the formulation of a practicable full-employment policy."[1]

The reader will recall that Keynes was already expressing his misgivings about the "classical" theory of money and prices -- that is, the traditional quantity theory of money -- at the time he was an adherent of the quantity theory of money. He was particularly disturbed by the fact that this theory did not take into account the effect of a change in the money supply on output or on people's desire to hold cash. His Treatise, as we have seen earlier, had, among other things, the object of correcting the shortcomings of traditional monetary theory, by attempting to integrate monetary and value theory. Lastly, I have pointed out, at the beginning of this chapter, that Keynes' General Theory in turn evolved from his Treatise, the fundamental preoccupation being the integration of monetary and value theory; the following passage from the General Theory may be quoted as a further evidence of this fact:

> So long as economists are concerned with what is called the Theory of Value, they have been accustomed to teach that prices are governed by the conditions of supply and demand; and, in particular, changes in marginal cost and the elasticity of short-period supply have played a prominent part. But when they pass in volume II, or more often in a separate treatise, to the Theory of Money and Prices, we hear no more of these homely but intelligible concepts and move into a world where prices are governed by the quantity of money, by its income-velocity, by the velocity of circulation relatively to the volume of transactions, by hoarding, by forced saving, by inflation and deflation et hoc genus omne; and little or no attempt is made to

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1 Don Patinkin, Money, Interest, and Prices (Row, Peterson and Co., 1957), p. 3.

> relate these vaguer phrases to our former notions of the elasticities of supply and demand... We have all of us become use to finding ourselves sometimes on the one side of the moon and sometimes on the other, without knowing what route or journey connects them, related, apparently, after the fashion of our waking and our dreaming lives.
>
> One of the objects of the foregoing chapters [these are chapters 1-20 of the General Theory] has been to escape from this double life and to bring the theory of prices as a whole back to close contact with the theory of value.[1]

Whether Keynes escaped or not from this double life, of which he accused economists to whom he referred in the above passage, is not the proper object of our study. In other words, we are not concerned with the problem of integrating monetary and value theory. Essentially speaking, our study basically deals with the lack of generality which has been charged by Patinkin against the propositions of Keynesian monetary theory. Nevertheless, before restating this charge, it might be useful to mention one aspect of Keynes' General Theory, namely the one that is connected with the Theory of Prices which he presented in Chapter XXI.[2]

II

The chapter on the Theory of Prices in the General Theory appears to serve two main purposes, to wit:

In the first place, it attracts attention once more upon the lack of connection between traditional monetary theory, based

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1 The General Theory, pp. 292-93.

2 General Theory, Chapter XXI, The Theory of Prices.

upon the Quantity Theory of Money, and the theory of value; in the second place, it establishes a comparison between the theory that Keynes developed in the preceding chapters of his book, and the traditional Quantity Theory of Money, the latter being interpreted according to both the income-velocity approach and the cash-balances approach.[1] For the present, I am particularly interested in the manner Keynes connected his theory with the latter approach.

According to Keynes, a change in the quantity of money would have the following effects:

> The primary effect of a change in the quantity of money on the quantity of effective demand is through its influence on the rate of interest. If this were the only reaction, the quantitative effect could be derived from the three elements --(a) the schedule of liquidity preference which tells us by how much the rate of interest will have to fall in order that the new money may be absorbed by willing holders, (b) the schedule of marginal efficiencies which tells us by how much a given fall in the rate of interest will increase investment, and (c) the investment multiplier which tells us by how much a given increase in investment will increase effective demand as a whole.[2]

But factors (a), (b) and (c) are themselves partly dependent on other complicating factors viz. the renumeration of workers relatively to their efficiency, the elasticity of supply,

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1 See the General Theory, Chap. XXI; sections I to V deal essentially with the complexities of the relationship between monetary and value theory, while section VI represents an attempt to restate the Quantity Theory of Money along the line suggested by the transactions-velocity approach, and section VII an attempt to link the Liquidity Preference Function with the "cash-balances" approach concerning the long-run. -For a criticism of Keynes on the question of integrating monetary and value theory, see A.W. Marget, op. cit., Vol. II, Chap. I.

2 Ibid., p. 298.

the behavior of the wage-unit before full employment is reached, and the degree of rigidity of the rates of renumeration of different factors of production.[1] Thus, following a change in the quantity of money, the ensuing variation in the price level will be the result of the combined influence of all these factors. Designating the quantity of money by M, and its income-velocity by V, we can write,

$$MV = D$$

where D is the effective demand, that is "the income the expectation of which has set production moving -- D corresponds to gross, and not to net income. Thus income velocity is defined, here, in a different sense inasmuch as it is the ratio between "expected income" and the quantity of money, and not between actually realized income and the quantity of money.[2] If V is constant, prices will change in the same proportion as the quantity of money provided "output no longer shows any response to a further increase in effective demand -- that is, the elasticity of output with respect to an increase in effective demand must be equal to zero. If V is not constant, then we must measure the response of effective demand to a change in the quantity of money, that is, the elasticity of effective demand with respect to a change in the quantity of money. Thus, we have $\frac{D\partial p}{p\partial D}$ which represents the elasticity of prices in response to changes in effective demand; and $\frac{M\partial D}{D\partial M}$ which represents the elasticity of effective demand in response to changes in the quantity of money. This gives us:

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1 See the General Theory., p. 298 ff.

2 Ibid., p. 299, second paragraph, and pp. 303, 304ff.

$$\frac{M\delta p}{p\delta M} \quad \frac{D\delta p}{p\delta D} \cdot \frac{M\delta D}{D\delta M}$$

that is, the elasticity of prices in response to a change in the quantity of money.[1] Then, Keynes concluded that "since this last expression gives us the proportionate change in prices in response to a change in the quantity of money, it can be regarded as a generalised statement of the Quantity Theory of Money."[2] He added, however, that this type of manipulations "involve just as much tacit assumption as to what variables are taken as independent (partial differentials being ignored throughout) as does ordinary discourse... Perhaps the best purpose served by writing them down is to exhibit the extreme complexity of the relationship between prices and the quantity of money, when we attempt to express it in a formal manner."[3]

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1 See the General Theory, pp. 304-5, 303, and 282ff.

2 Ibid., p. 305

3 Ibid., p. 305. - The elasticity of prices in response to a change in effective demand is defined as: $1 - e_a \cdot e_o (1 - e_w)$, in which e_a and e_o stand respectively for the elasticities of employment and output in response to a change in effective demand in terms of wage-units -- both represent "the physical factors which determine the rate of decreasing returns as more employment is applied to the existing equipment"; e_w for the elasticity of money-wages in response to changes in effective demand in terms of money -- it stands for "the labour factors (or, more strictly, the factors entering into prime-cost) which determine the extent to which money-wages are raised as employment increases." If we designate the elasticity of prices in response to changes in effective demand measured in terms of money by e_p, and the elasticity of effective demand in response to changes in the quantity of money by e_d, then the product $\frac{D\delta p}{p\delta D} \cdot \frac{M\delta D}{D\delta M}$, that is, $e_p \cdot e_d$, can be rewritten as $e_d \cdot 1 - e_a \cdot e_o (1 - e_w)$ or $e_d - (1 - e_w) e_d \cdot e_a \cdot e_o$ ($e_p \cdot 1 - e_a \cdot e_o (1 - e_w)$). Thus, the elasticity of prices in response to changes in the quantity of money ($\frac{M\delta p}{p\delta M}$) is equal to: $e_d - (1 - e_w) e_d \cdot e_a \cdot e_o$.
See the General Theory, p. 305, and chap. XX, especially pp. 282-286.

Worthy of special attention, here, is the term $\frac{M}{D}\frac{\partial D}{\partial M}(e_d)$ which expresses the elasticity of effective demand in response to a change in the quantity of money. This term stands for "the liquidity factors which determine the demand for money in each situation."[1] This is readily seen once we decompose the formula into $\frac{M}{D}$ and $\frac{D}{M}$; $\frac{M}{D}$ is the reciprocal of the income-velocity of money (as defined above). In other words the ratio $\frac{M}{D}$ gives the value of the factor "K", that is, the proportion of the effective demand (D) people desire to keep in the form of money. Thus, we can write M=KD which is similar to the "cash-balances" equation M=KYP, in which P is the price level and Y real income. But, since the effective demand corresponds to "the income the expectation of which has set production moving", then the question arises as to what relationship exists between that level of income and the quantity of money required to satisfy liquidity preference. Therefore, liquidity preference may be regarded as the key factor through which a change in the quantity of money is liable to affect both effective demand and prices.[2] For,

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In fact, Keynes always took care in connecting his new propositions or formulae about the theory of money and prices with the traditional quantity theory of money. See, for instance, his Treatise, (1958 ed.), Vol. I, Chap. X, p. 149ff. - The reader may also consult A.W. Marget, op. cit., Vols. I, and II, passim, for several criticisms of Keynes.

1 See the General Theory, p. 305.

2 On this point, a few words must be added. In speaking of the income-velocity of money -- defined as the ratio of effective demand to the quantity of money -- Keynes said: "But the "income-velocity of money", is, in itself, merely a name which explains nothing. There is no reason to expect that it will be constant. For it depends.. on many complex and variable factors. The rise of this term obscures, I think, the real character of the causation, and has led to nothing but confusion." (General Theory, p. 299). -Fortunately, however, the "cash-balances" approach to the quantity

according to whether the actual quantity of money is on the whole greater or smaller than the amount people desire to keep as a proportion of total expected income, some adjustments will take place in the system so that actual cash balances (M) become equal to desired cash balances. According to Keynes, it is through variations in the rate of interest that all necessary adjustments will take place. Thus, with respect to the long-run, he said:

> There may be, for example, some fairly stable proportion of the national income more than which people will not readily keep in the shape of idle balances for long periods together, provided the rate of interest exceeds a certain psychological minimum; so that if the quantity of money beyond what is required in the active circulation is in excess of this proportion of the national income, there will be a tendency sooner or later for the rate of interest to fall to the neighbourhood of this minimum. The falling rate of interest will then, cet. par., increase effective demand... The opposite tendencies will set in if the quantity of surplus money is an abnormally low proportion of national income.[1]

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theory of money provided us with a better and a more workable concept, namely the factor "K" which indicates not the actual amount of money people hold against their resources or their income, but rather the amount desired of such balances. It is in this sense that we have been using "K" above. This fact gives the cash-balances approach a real advantage, because this approach brings us at once into relation with volition --"an ultimate cause of demand". See, for instance, A.C. Pigou, "The Value of Money", reprinted in the American Economic Association Readings in Monetary Theory, pp. 162-183.

1 J.M. Keynes, General Theory, pp. 306-7. - Let it be recalled, here, that Keynes established a distinction between what he called the income-motive, the business-motive, the precautinary-motive, and finally the speculative-motive for holding money. The first three motives were thought to depend mainly on the general activity of the economic system and on the level of money income; whereas the speculative-motive was considered as responsive to changes in the rate of interest, "i.e., there is a continuous curve relating the demand for money to satisfy the speculative motive and changes in the rate of interest as given by changes in the prices of bonds and debts of various maturities." The

In the event of an excess of idle balances over the amount people choose to keep as a proportion of their income, the rate of interest will then fall until that excess is absorbed by willing holders; the fall in the rate of interest will in turn lead to an increase in effective demand. It is, therefore, through the fall in the rate of interest that an increase in the quantity of money will, cet. par., affect total spending. But, if the rate of interest already was at this "psychological minimum", then additional increases in the quantity of money would not succeed in bringing it down further; hence, once this point is reached, no further increase in effective demand can be achieved merely by manipulating the quantity of money. This is the case where liquidity preference becomes infinite.[1]

The proposition that a change in the quantity of money will affect effective demand only through a variation in the rate of interest has been criticized by Don Patinkin on the ground that it lacks generality.[2] Patinkin argues that this proposition neglects the more direct effect of an increase in the effective quantity of money, over and above what people care to hold as a proportion of

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speculative-motive is connected, therefore, with the amount of money held over and above what is required in the active circulation. Thus, the rate of interest may vary as a result of changes either in the supply of money available to satisfy the speculative motive, or of changes in expectations that affect the liquidity function itself, or in both the supply of money and the liquidity function. See the General Theory, Chap. XV, especially p. 196ff.

1 Ibid., p. 309, and Chap. XV, especially p. 207.

2 See Don Patinkin, op. cit., pp. 3, 463ff., and passim.

their income, upon the level aggregate spending.[1] More precisely, Patinkin accuses Keynes of having failed to take into account the "real balance effect", that is, "the influence on demand of a change in real balances, other things being constant."[2] Now, to take this effect into consideration means that the Keynesian underemployment equilibrium theory must be reconsidered. We will start first by explaining what is the "real balance effect" and the manner in which it operates at the microeconomic level.

Before closing this chapter, however, we want to stress the fact that the passage from all that has been said thus far to the analysis of another concept does not mean that we lose sight of the problem of integrating monetary and value theory. On the contrary, the developments that we are now about to consider represent a continuing endeavour to show how the two theories are connected.

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1 By the effective quantity of money, we mean the quantity of money measured in terms of the chosen unit of account, viz., in terms of wage-units or in real terms (the quantity of money divided by the price level of commodities). Thus a fall in the wage-unit or in the price level has the effect of increasing the effective quantity of money in circulation, and vice versa.

2 See Don Patinkin, Money, p. 237, and Note K, pp. 463-65.

CHAPTER V

THE REAL BALANCE EFFECT

The first formulation of the essence of what Patinkin called the "real balance effect" can be traced back to the polemics between Keynes and the "Classical" economists on the question of the automaticity of the econimic system in wiping out unemployment (produced by some unexpected disturbance) and in continually tending to restore full employment equilibrium. To the classical argument, which made of the rate of interest the other variable (besides real income) upon which savings and investment depend, and whose variations would serve as an automatic mechanism insuring full employment, Keynes replied that it could happen that the rate of interest which would equate full employment savings and investment corresponds to a negative rate. But, the rate of interest, as such, can never be negative in an economy where there are negligible costs of storing money. Furthermore, the intersection of the full employment savings function with the full employment investment function at a negative rate of interest implies that the amount people would save at all positive rates would be larger than the amount they would invest. This is obvious, for the amount saved varies directly with the rate of interest; whereas the higher the rate of interest, the lower the amount which is invested. Thus, after the point of equality between savings and investment, at a negative rate of interest, the volume of savings done at all higher rates will be greater than the volume of investment people are willing to undertake, other things being

equal. Therefore, the level of income associated with these savings and investment functions cannot be maintained and will necessarily fall until desired savings and investments are brought into equality at a positive rate of interest. Answering those charges, Haberler and Pigou introduced another variable, namely the real value of cash balances held by the individuals in the economy. Thus if M_i is the amount of money (assumed to remain constant) in the economy, p the price level, r the rate of interest, Y real income, and S savings, Pigou's savings function would be as follows:

$$S = F\ (r, Y, \frac{M_i}{p}) \qquad 1$$

Then Pigou argued that "if people would refuse to save anything at negative and zero rates of interest, then the desired savings schedule would intersect the desired investment schedule at a positive rate of interest regardless of the level of income... The willingness to save even without receiving interest, or even at a cost, must imply that savings are not made solely for the sake of future income (i.e., interest) but also for "the desire for possession as such, conformity to tradition or custom and so on." But the extent to which an individual wishes to save out of current income for reasons other than the desire of future income is inversely related

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1 See Don Patinkin, "Price Flexibility and Full Employment", reprinted in the American Economic Association Readings in Monetary Theory (ed. by F.A. Lutz and L.W. Mints, 1951), pp. 252-283, especially pp. 253-60; and A.C. Pigou, "The Classical Stationary State", Economic Journal, LIII (1943), pp. 343-51, and his "Economic Progress in a Stable Environment", reprinted in Readings in Monetary Theory (referred to above), pp. 241-51; G. Haberler, Prosperity and Depression (3d ed; Geneva: League of Nations, 1941), pp. 242, 389, 403, 291-503; also see T. Scitovsky, "Capital Accumulation, Employment and Price Rigidity", Review of Economic Studies, VII (1940-41), pp. 68-88.

to the real value of his cash balances. If this is sufficiently large, all his secondary desires for saving will be fully satisfied. At this point the only reason he will continue to save out of current income is the primary one of anticipated future interest payments. In other words, if the real value of cash balances is sufficiently large, the savings function becomes zero at a positive rate of interest, regardless of the income level."[1] It therefore follows that "by increasing the real value of cash balances, the full employment savings curve shifts to the right until it is in such a position that no savings are desired except at positive rates of interest... Thus by changing the real value of cash balances, desired full employment savings and investment can always be equated at a positive rate of interest."[2]

Since then, Patinkin has developed and extended the implications of changes in the real value of people's cash balances; the basis of his argument may be found in the following expected reaction: as people see the real value of their cash balances rise above the level they consider as desirable, they will attempt to get rid of the unwanted excess by increasing their expenditures on goods and services; this process will continue until real money balances are restored to their desired level. This is what is meant by the "real balance effect". "As its name implies, this new effect measures the influence on demand of a change in real balances, other things

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1 See Don Patinkin, "Price Flexibility and Full Employment", pp. 258-259.

2 Italics are mine. Don Patinkin, ibid., pp. 259-260.

being held constant."[1]

The "real-balance effect" has been decomposed into two distinct effects, namely the "Pigou effect", that is, the effect of falling prices or rising real value of cash balances upon the savings schedule or the consumption function, and the "Keynes effect", that is, the effect of falling prices upon the demand for money.[2] The reader will recognize the first effect, of course, in the familiar answer of Haberler and Pigou to the charges laid by Keynes against the automaticity of the economic system in curing unemployment. As to the second effect, however, a word of explanation must be added here.

Actually, Keynes, of course, did not fail to perceive the relationship between the value of money and the demand for money to hold, witness this following statement: "We can theoretically produce the same effects on the rate of interest by reducing wages, whilst leaving the quantity of money unchanged, that we can produce by increasing the quantity of money whilst leaving the level of wages unchanged."[3] Thus a reduction in wages would lead to a decrease in the demand for money, or in liquidity preference, which, the quantity of money being given, will cause a reduction in the rate of interest. Hence, the primary effect of an increase in the value of money -- it does not matter whether the latter is measured in

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1 Don Patinkin, Money, Interest and Prices (which will be reffered to as Money), p. 21.

2 See T Mayer, "Empirical Significance of the Real Balance Effect", Quarterly Journal of Economics, May 1959, p. 275. See also J. Power, "Price Expectations, Money Illusion, and the Real Balance Effect", Journal of Political Economy, April 1959, p. 131.

3 J.M. Keynes, General Theory, p. 266.

terms of the price level (as in Pigou) or of wage-units (as in Keynes) -- is a decrease in the desire to hold cash; in the Pigovian model, however, the eventual excess of cash will be spent directly on commodities, whereas in the Keynesian model, it affects expenditures only through the prior reduction in the rate of interest. The reduction in the demand for money to hold (the "Keynes effect"), coupled with a direct increase in spending (the "Pigou effect"), is what T. Mayer regards as the composition of the "real-balance effect".[1]

In short, if the real value of an individual's initial cash holdings rises above the level which he regards as desirable, the individual will increase his excess demand functions for various commodities, thereby drawing down his money holdings. On the other hand, if his initial cash holdings shrink below the level that he thinks desirable, he will cut down his expenditures in order to build up his money balances.[2]

Hence, to the income and substitution effects of a price change, we must now add a third effect, that is, the "real-balance effect", so that the individual's demand function for any commodity now depends upon the array of relative prices of all commodities, real income and real money balances.[3] For, a change in the absolute level of prices -- relative prices and real income remaining constant -- induces variations in the real value of initial money balances and calls forth a reaction on the part of the individual. This

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1 T. Mayer, op. cit., p. 275.

2 See Don Patinkin, Money, op. cit., pp. 20-21.

3 Ibid., pp. 20-21.

reaction will take the form of an increase in spending, if the real value of initial money balances is raised above its desired level; whereas if it falls below the latter, a decrease in spending will occur, designed to restore real money balances to their desired level. The introduction of this functional relationship, between the demand for commodities and real money balances, assumes the absence of "money illusion". Thus, an individual will be said to be free of money illusion if his excess demand functions for commodities -- the excess amounts demanded of commodities being "the respective differences between the amounts demanded and the amounts initially held of the various commodities"[1] -- depend solely on relative prices, real income and real money balances.[2]

We can use an equation, of the type which has been formulated by Pigou et al., to express algebraically the manner in which the "real-balance effect" operates. Let us denote an individual's initial stock of money balances by m; his excess demand for money (defined in the equation below by X_m); his income, expressed in terms

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1 Don Patinkin, Money, p. 10ff.

2 See Don Patinkin, ibid., p. 23. -D.J. Botha restated the same proposition as follows: "An individual whose commodity excess demand is a function of relative prices, real income and real balances is free of money illusion. If all money prices change, there are no income or substitution effects; but there is a real-balance effect, i.e. the individual's demand for commodities decreases following his substitution of commodities by money in order to restore his initial real money balances... In short, while the behaviour (commodity demand) of an individual free of money illusion depends on the ratio only of accounting prices (i.e. on money prices) it does not depend only on the ratio of money prices (i.e. relative prices) but also on the absolute level of money prices... Put differently, the commodity excess demand functions of an individual free of a money illusion in Patinkin's sense have a zero elasticity with respect to an equi-proportionate change in his initial money balances and all money prices of commodities (but not with respect to a change in money prices only)." Op. cit., p.28.

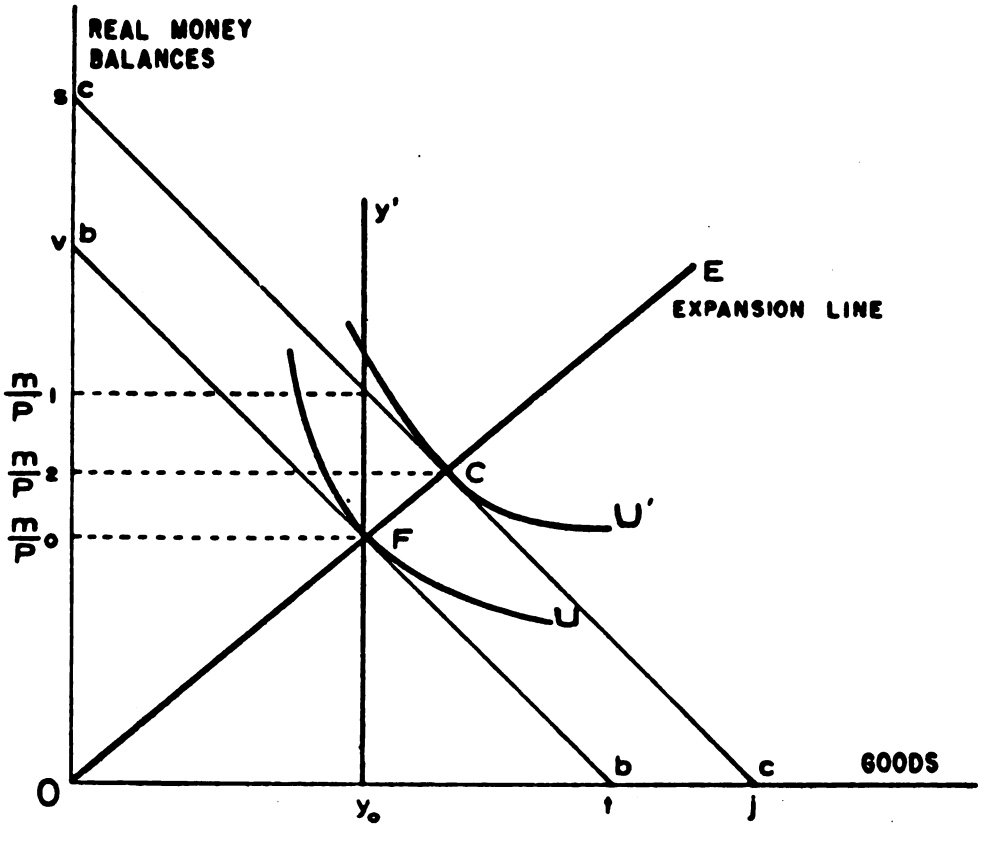
of units of goods received per week, by y; and the proportion of his income he wishes to keep in the form of real money balances by K; thus we write

$$X_m = K P y - m$$

in which $K P y$ is equal to the individual's demand for money balances. Then, if $K P y$ is equal to m, X_m will be equal to zero; whereas if it is larger (smaller) than m, the individual's excess demand for money will be positive (negative), which will induce him to decrease (increase) his expenditures in order to bring his money balances up to their desired level. Therefore, equilibrium obtains when $K P y$ is equal to m. This is shown diagramatically in Fig. 1, p. 69.

Real money balances ($\frac{m}{p}$) are measured along the vertical axis; and units of the composite goods along the horizontal axis. If we assume that the individual has an indifference map which shows his preferences between holding real money balances and consuming goods, we can, therefore, indicate, for each level of his total resources (defined as the sum of his weekly income plus his initial real money balances), the amount of real money balances he desires to hold. This amount is given by the point of tangency between an indifference curve and a budget line which shows the individual's total available resources (as defined above) and connects the two axes. Thus, if the individual receives an income equal to y_0, and that he holds initial real money balances equal to $\frac{m_0}{p}$, his total resources will amount to $y_0 + \frac{m_0}{p}$, that is point 't' in Fig. 1, p. 69; therefore, his budget line starts from this point and cuts the other axis, which measures real money balances, at 'v'. The budget line, which relates the composite goods to real money balances,

Fig. 1


REAL MONEY BALANCES
s
c
v
b
y'
E
EXPANSION LINE
E/p_1
E/p_2
E/p_0
C
F
U'
U
0
y_0
b
c
GOODS
i
j

must have a slope of 135°, since "one unit of liquid command over commodities-in-general [real money balances] can always be exchanged for one unit of actual commodities-in-general."[1] This becomes obvious once one recalls that real money balances are defined as a certain quantity of money by the price level of the composite goods that are measured along the horizontal axis in Fig. 1; thus, any given income can be expressed as a certain quantity of money balances divided by the level of the prices of these goods.

Then each amount of total resources, possessed by an individual, corresponds to a budget line, and the point of tangency between this line and an indifference curve yields the amount of real money balances desired by that individual. Of course, there exist several possible budget lines and several indifference curves; hence there may be several points of tangency, the locus of which constitutes what may be called an "expansion line". The path "OE" in Fig. 1 is the expansion line derived from our individual's indifference map and several (hypothetical) budget lines.[2] The individual must be on his expansion line to be in equilibrium. In other words, given the budget line, actual real money balances must be at the level that is indicated by the point of tangency between the budget line and an indifference curve; otherwise they will be either too high or too low, that is, either greater or smaller than desired balances. But, this is only the first of two conditions for full equilibrium to be achieved.

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1 Don Patinkin, Money, op. cit., p. 69.

2 See G.C. Archibald and R.G. Lipsey, "Monetary and Value Theory: A Critique of Lange and Patinkin", Review of Economic Studies, XXVI (1), October 1958, pp. 2-4.

The other condition is that the point of tangency between his budget line and his indifference curve he located on a perpendicular erected from the point that indicates the level of his income; so that this perpendicular intersects the expansion line precisely at the point of tangency (Cf. point F in Fig. 1, p. 69). This means that, at this point, the individual is consuming his entire income while he keeps an amount of real money balances that fully satisfy his liquidity preference. The reason for this is that the budget line represents the sum of the individual's (real) income plus his initial real money balances; of this total the individual chooses to keep a certain amount of real balances (determined in the manner explained above); equilibrium thus obtains when real money balances are at their desired level, so that the remaining resources -- that is, real income -- are entirely spent on commodities.[1] We can now demonstrate how the "real-balance effect" operates.

We start from an equilibrium situation in which the individual's (real) income is constant at the level y_o; real money balances $\frac{m_o}{p}$; the budget line 'bb', and the expansion line "E" (Cf. Fig. 1, p. 69). Let us assume that real money balances rise above their desired level to $\frac{m}{p'}$. Adding this increase to the individual's previous amount of resources will yield another budget line located to the right of 'bb', namely 'cc' -- the distance "tj" being necessarily equal to the difference between $\frac{m}{p'}$ and $\frac{m}{p}$ ψ. But, at this

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1 See G.C. Archibald and R.G. Lipsey, ibid., p. 3ff., p. 5. - The actual shape of the expansion line depends on the individual's indifference map, hence on his tastes and preferences (including all the factors which bear upon these). In the present case, the expansion line was drawn linear to simplify the demonstration.

new level of total resources, the individual's liquidity preference indicates an amount of desired real money balances equal to $\frac{m}{p}_a$ (given by the point of tangency between the indifference curve U' and the budget line 'cc', that is, point C in Fig. 1). Therefore, the individual will be induced to take steps to reduce his actual real money balances to $\frac{m}{p}_a$ by increasing his expenditures on goods to an extent equal to the difference $\frac{m}{p}_1 - \frac{m}{p}_a$. This has the effect of bringing down also the amount of his total resources so that he now has a new budget line located to the left of 'cc'. However, the second condition for full equilibrium is not fulfilled, since the perpendicular yy' does not intersect the expansion line at the level of real money balances $\frac{m}{p}_a$; this means that there still exists an excess of real money balances which will continue to induce the individual to cut down further his money balances by increasing his expenditures. As actual real money balances are reduced more and more, the budget line will continuously shift to the left until it reaches again its former level 'bb' at which the two conditions for equilibrium are fulfilled, namely: actual real money balances are equal to desired balances, and total consumption per week to total income per week.

The same analysis applies, mutatis mutandis, in the case where actual real money balances fall below their desired level. The individual will be induced to decrease his expenditures in order to build up his money balances, hence the real value of his money holdings. Thus, provided we assume away "money illusion", any difference between the actual and the desired real money balances will create a "real balance effect"; i.e., any such gap will call forth a reaction

on the part of the individual either to decrease or increase his money holdings according as to whether actual real money balances are above or below desired balances.

Let us now introduce a new type of good -- the bond -- which, for the purpose at hand, is assumed to fulfill no other function besides providing the individual with a means of redistributing his consumption expenditures over time. Following Patinkin, we define this new good as "a note obligating the issuer to redeem it from the bearer one week after issue at the fixed price of one dollar."[1] Our bonds, therefore, are not substitutes for money, and cannot be used in lieu of money to effect payments for commodities purchased during the week. Nevertheless, they do represent an alternative to holding money for the purpose of fulfilling future obligations, or of meeting expected expenditures.[2]

Like the price of any other commodity, the price of one unit of bond is determined by the supply and the demand functions for bonds, and it varies inversely with the rate of interest. It may be expressed as:

$$b = \frac{1}{r + 1} \qquad 3$$

where b stands for the price of one unit of bond, and r for the rate of interest. Dividing both sides by P, the price level, we can then

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1 Don Patinkin, Money, op. cit., p. 48ff.

2 Patinkin assumed the following: "For simplicity bonds are assumed to be as illiquid as commodities. That is, they cannot be sold except during the Monday Marketing period and cannot be used to make any necessary payments. Thus the individual in our simple exchange economy cannot regard bonds as even a partial substitute for money. In brief, if he deals with bonds, he does so only as a means of modifying the time shape of his consumption stream." Ibid., p. 49. (Italics are mine)

3 This is obvious since $r = \frac{1 - b}{b}$. Don Patinkin, ibid., p. 49.

obtain the real value of one unit of bond $\frac{b}{p}$.

$$\frac{b}{P} = \frac{1}{1+r} \Big/ P$$

Thus, following a change in the level of prices, we can also speak of a "real balance effect" in the bonds sector, which we will refer to as the "real indebtedness effect". In the absence of any "real-balance effect", there may still be a "real-indebtedness effect". For, "only if the terms of past indebtedness are adjusted to the new level of prices -- or, what is equivalent, only if initial bond holdings are changed at the same time and in the same proportion as prices and intial money holdings [assuming the latter to have changed in such a way as to prevent a real-balance effect after a price change] -- will this real-indebtedness effect disappear."[1] Otherwise, this effect will result from the inducement of debtors to increase spending as prices rise and the real burden of their debts falls; while creditors are induced to decrease expenditures since the real value of their assets -- the bonds which they hold -- falls as prices rise. The reverse, of course, will hold true if prices are falling. Thus, unless some kind of compensation is paid by the debtors to the creditors, or by the creditors to the debtors, according as to whether prices are rising or falling, there will be a "real indebtedness effect" at the level of every single individual who either carries or has issued bonds.

It follows that account must also be taken of the rate of interest as a variable upon which the individual's excess demand

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1 Don Patinkin, Money, op. cit., p. 56.

2 Ibid., p. 56ff.

functions for commodities depends inasmuch as a high rate of interest may induce people to redistribute their consumption expenditures over time by spending less now, and saving more. Hence, "the excess demand functions for current commodities of an individual with given tastes (including whatever preferences for present as against equivalent future consumption that he may possess) are now assumed to depend upon relative prices, the rate of interest, present and future real income, the real value of initial bond holdings and the real value of initial money holdings."[1] Moreover, we must extend our definition of "money illusion" to account for changes not only in relative prices, real income and the real value of initial money holdings, but also for changes in the rate of interest and the real value of intial bond holdings. In summary, an individual who is "free of money illusion" will react only to changes in the above mentioned real variables.[2]

Before closing the present chapter, we will attempt to restate the relationships, which we have just presented, in a more rigorous manner, taking full account of the restraint imposed by the given level of income and of the interdependence which exists between the demand for bonds to hold, the demand for money to hold, and the demand for commodities.

We denote real income by Y; real spending on goods other than bonds by C; real savings by S; the rate of interest by r; and

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1 Don Patinkin, Money, op. cit., pp. 51-52.

2 See Don Patinkin, ibid., p. 56. -Concerning the over-all position of the market, that is the net "real-indebtedness effect", see Don Patinkin, ibid., pp. 200-203; and his "Price Flexibility and Full Employment", reprinted in Readings in Monetary Theory, pp. 262-263.

the price level by p. Now, since an individual's real income, per unit of time, is divided between expenditures on commodities and savings, we can write

$$(1) \qquad Y = C + S$$

Real savings can be expressed, in turn, as equal to:

$$(2) \qquad S = \Delta B + \Delta m$$

in which ΔB stands for the excess demand for bonds (total demand minus initial bond holdings), and Δm for the excess demand for money (total demand minus initial money holdings). Equation (2) shows that real savings, per unit of time, are absorbed by new purchases of bonds and/or the enhancement of one's cash balances. We then define a position of equilibrium as one at which there is no net addition either to the stock of bonds or to the stock of money held by an individual; that is, when

$$Y = C, \text{ i.e., when } S = 0, \text{ or } \Delta B = \Delta m = 0$$

A further set of ralationships can be expressed between the demand for money to hold and the demand for bonds to hold. Writing K_1 for the proportion of their income people desire to keep in the form of money, and K_2 for the proportion they wish to keep in the form of bonds, we then have the following:

$$\frac{m}{B} = \frac{K_1 \, p \, Y}{K_2 \, p \, Y}$$

$$\frac{m}{B} = \frac{K_1}{K_2} .$$

The variables K_1 and K_2 depend, of course, upon a number of factors, of which only the level of real income, the rate of interest and the price level are relevant for the present purpose. To simplify the matter, any change in the price levelm in the rate of interest, or

in real income is assumed to be of a permanent nature; in addition, tastes and preferences are not permitted to vary. The functions expressing the demand for money and for bonds are the following:

$$(3) \qquad m = f\ (Y,\ r,\ p)$$

$$(4) \qquad B = g\ (Y,\ r,\ p),$$

and the demand for commodities can be represented by the equation

$$(5) \qquad C = c\ (Y,\ r,\ \frac{m}{p} \cdot \frac{B}{p})$$

Equations (3) and (4) express the demand for money and for bonds respectively as a function of real income, the rate of interest and the price level; while equation (5) shows the demand for commodities -- the same as the excess demand since we assume no initial holding of commodities -- as a function of real income, the rate of interest, real money balances, and the real value of bond holdings. These relationships will now be shown diagramatically in Fig. 2 (p. 79), the description of which is given below.

Along the vertical axis we measure the price of bonds, written as the reciprocal of the rate of interest, from O upwards; the value of money, that is, 1/p, from O_1 (upwards) to O; real income from O_1 (downwards) to O_2; and real spending from O_2 downwards.

Along the horizontal axis are measured the quantity of money held from O to the right, in the first quadrant, and again from O_1 to the right and from O_2 to the right in the second and third quadrants respectively. To the left of the vertical axis, we measure the volume of bonds held: from O to the left, in the fifth quadrant, and again from O_1 to the left and from O_2 to the left in the sixth and seventh quadrants respectively.

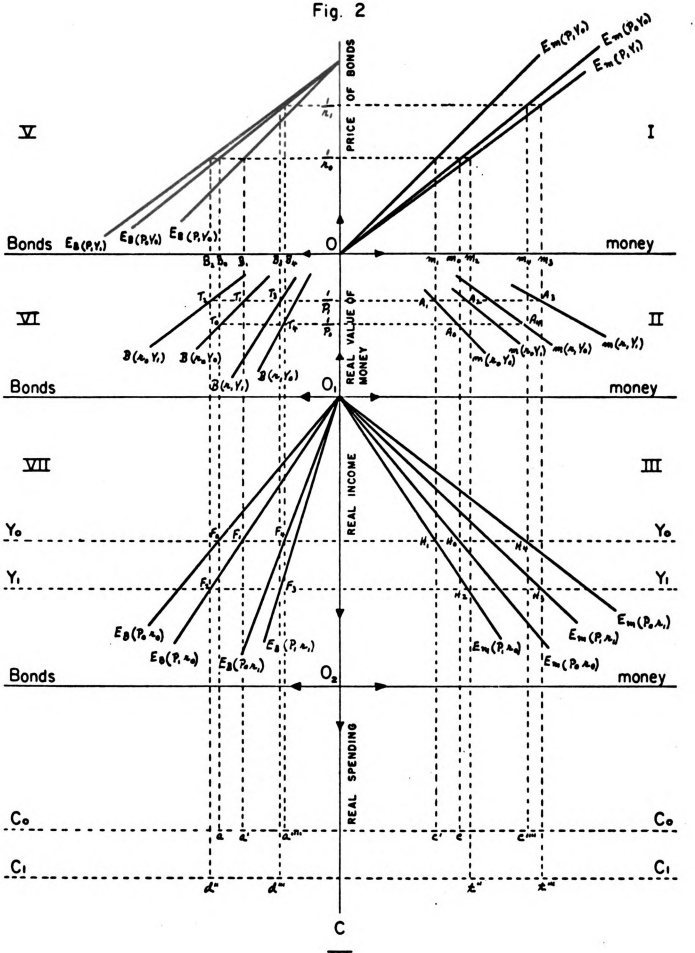
Each "E" line represents an expansion-line relating the

demand for bonds (E_B) or the demand for money (E_m) to the rate of interest and to the level of real income. In the first instance, the price level and real income are assumed to remain unchanged, while in the second instance, the rate of interest and the price level will be taken as constant. The demand for bonds and the demand for money, in relation to the price level, are represented by a "B" and an "m" line respectively, each line being drawn on the assumption of a given real income and rate of interest.

We start from an equilibrium position which is depicted by the rectangle aB_0m_0c : that is, a situation in which real income is at the level Y_0 , and is equal to real spending C_0 ; the price level is at p_0 ; the rate of interest at r_0 ; bond holdings are at B_0 as shown by the lines $E_B(p_0Y_0)$, $B(r_0Y_0)$, and $E_B(p_0r_0)$; and money holdings are at m_0 as indicated by the lines $E_m(p_0Y_0)$, $m(r_0Y_0)$, and $E_m(p_0r_0)$.

Now, let the price level fall from p_0 to p_1 ; if real income remains constant, the individual will now desire to hold B_1 and m_1 of bonds and money respectively: this is shown by the lines $E_B(p_1Y_0)$ and $E_B(p_1r_0)$ (for bonds) and the lines $E_m(p_1Y_0)$ and $E_m(p_1r_0)$ (for money). The shifts which occurred in these lines have in turn been accompanied by movements only along the functions relating the demand for money to the price level, that is, from point T_0 to T_1 for bonds, and from point A_0 to A_1 for money (Cf. Fig. 2, p. 79). Thus the new equilibrium position is described by the rectangle $a'B_1m_1c'$. Other results would obtain, were the level of real income higher following the fall in prices, say, at Y_1. In this case, the relevant lines are $E_B(p_1Y_1)$, $B(r_0Y_1)$ and $E_B(p_1r_0)$ for bonds,

Fig. 2


PRICE OF BONDS
REAL VALUE OF MONEY
REAL INCOME
REAL SPENDING
V
I
VI
II
VII
III
Bonds
money
O
O1
O2
C
Co
C1
Yo
Y1

and $E_m(p_1 Y_1)$, $m(r_0 Y_1)$ and $E_m(p_1 r_0)$ for money. Moreover, the level of real spending would have increased temporarily in the first instance, thereby reflecting the operation of the "real-balance effect" caused by the decline in the price level; whereas in the second case, it would change permanently, and equilibrium would not obtain until real spending become again equal to real income, that is after real spending had risen from C_0 to C_1. The rectangle that describes this new equilibrium situation is d''$B_2 m_2$t'' , which shows desired bond and money holdings of B_2 and m_2 respectively.

Now, let us suppose that the rate of interest falls from r_0 to r_1, the price level remaining at the level p_1, and real income at Y_1. The relevant lines are now those which bear the subscripts $(p_1 Y_1)$, $(r_1 Y_1)$, and $(p_1 r_1)$; and the respective quantities of money and bonds now desired by the individual are m_3 and B_3. This equilibrium situation is now described by the rectangle d'''$B_3 m_3$t'''. This sort of exercise can be pursued further by assuming for instance, that the price level as well as real income come back to their former level, which would yield an equilibrium situation depicted by the rectangle a''''$B_4 m_4$c'''' (Cf. Fig. 2, p. 79).

It is indeed very difficult, if not impossible, to say how long it would take an individual to adjust his cash or his bond holdings to given changes in prices, in the rate of interest or in the level of his real income. For, actually, there are so many factors involved not only in the process of adjustment, but even before in the process of taking the decision to modify or not to modify one's balances of money and bonds. The elasticities of

expectations,[1] in particular, play a major part in the decision making process. For the time being, however, we will not labor that point, reserving it for a later part of our study. Nevertheless, it is clear that all the factors involved will be reflected in the factor "K" in the cash-balances equation, that is, in the proportion of their real resources people desire to keep in the form of money or bonds. In addition, may it suffice to notice that perverse elasticities of expectations may thwart the impact of a change in either prices, the rate of interest or real income, or perhaps delay it considerably until it had lost any meaning it might have been expected to carry at first.

With this, we have said all that need be said, for our purpose, concerning the "real-balance effect". The time is now ripe to switch our attention and our analysis to the macroeconomic level in order to study the way in which the "real-balance effect" may act upon the levels of income and employment. We will begin with a brief description of the model that will serve as a basis to our inquiry.

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1 The elasticity of an individual's expectations of the price of a given commodity, for instance, is the ratio of the proportional rise in expected future prices of that commodity to the proportional rise in its current price. Thus an elasticity of expectations of unity means that "a change in current prices will change expected prices in the same direction and in the same proportion." See J.R. Hicks, Value and Capital, Oxford, 1957, p. 205.

CHAPTER VI

THE MODEL: a brief description

The Liquidity Preference Function is, in our opinion, the main pillar of the General Theory. Actually, it was the refuge from which Keynes evolved the "liquidity trap" to defend his own criticisms of "classical" economics, particularly with respect to the efficacy of falling wages in restoring full employment. According to Keynes, a fall in wages will affect the levels of income and employment only via a prior decrease in the rate of interest, other things being equal, since lower wages would entail a reduction in Liquidity Preference. The decrease in the rate of interest will in turn stimulate investment, and employment. But, if the supply of money varies at the same time and in the same direction and proportion as the wage-rate, or if the preference for liquidity is infinite at the then prevailing rate of interest, falling wages cannot stimulate investment, or employment, since, under these conditions they would have no effect at all upon the rate of interest. Keynes put it in these words:

> It is, therefore, on the effect of a falling wage- and price-level on the demand for money that those who believe in the self-adjusting quality of the economic system must rest the weight of their argument; though I am not aware that they have done so. If the quantity of money is itself a function of the wage-and price-level, there is, indeed, nothing to hope in this direction. But if the quantity of money is virtually fixed, it is evident that its quantity in terms of wage-units can be indefinitely increased by a sufficient reduction in money-wages...[1]

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1 J.M. Keynes, General Theory, p. 266; also see p. 309 about the importance of liquidity preferences.

But, as we have already indicated, the "real balance effect" has been used by Patinkin as a counter-argument to the Keynesian "liquidity trap"; so that falling wages and prices have the power of eventually wiping out all traces of involuntary unemployment in the economic system.[1] It has also been pointed out that this effect is a restatement of the classical position of Pigou and Haberler et al. in their debate with Keynes.[2] Nevertheless, in restating the classical position, Patinkin tried to do so through an integration of monetary and value theory, as Keynes, and other Cambridge economists, had also endeavoured to perform.[3]

To demonstrate his propositions, Patinkin divided the economic system into four sectors, each of which is described below.

(1) The market for labor services. Labor services are taken as "one composite good with a single price", the aggregate supply function of which is given by the following equation:

$$(1) \qquad N^s = R\left(\frac{W}{P}\right)$$

and the aggregate demand function may be represented as follows:

$$(2) \qquad N^d = Q\left(\frac{W}{P}, K_0\right)$$

where N^s and N^d represent respectively the amounts supplied and demanded; W represents the money wage rate; P the general price level

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1 See pages 58-61 above. Also see Kenneth K. Kurihara, "Real Balances, Expectations and Employment", Economic Journal, Vol. LXX (1960), p. 321; J.R. Hicks, "A Rehabilitation of Classical Economics", Economic Journal, Vol. LXVII (1957), pp. 278-289, hereafter referred to as "Hicks (1957)"; and, in the same journal (September 1959), Don Patinkin, "Keynesian Economics Rehabilitated: A Rejoinder to Professor Hicks", pp. 582-587, henceforth referred to as "Patinkin's Rejoinder (1959)".

2 See pages 62-64 above.

3 See Chapter III, part II, of the present study.

of commodities; $\frac{W}{P}$ the real wage rate; and K_0 the total fixed capital equipment of the economy.

Equation (1) shows the amount of labor services supplied as varying directly with the real wage rate; while equation (2) shows the amount of labor services demanded as varying inversely with the real wage rate. This is due to the fact that, given the stock of equipment (K_0), the real wage rate equals the marginal productivity of labor under conditions of perfect competition. That is,

$$\frac{W}{P} = \varphi_m \quad (N, K_0)$$

where φ_m is the marginal productivity of labor, from which the demand for labor is derived. Assuming the law of diminishing returns to hold the demand curve will have a negative slope, since the marginal productivity of a rising quantity of labor services, applied to a constant stock of capital, will eventually fall and thus command, in a perfectly competitive market, lower and lower real wages. Thus the amount of labor services demanded is inversely related to the level of the real wage rate.

Finally, for this market to be in equilibrium, the following condition must be satisfied, namely:

$$N^d = N^s$$

which is obtained only at the equilibrium real wage rate on the market for labor services. This is the rate that equates the amounts demanded and supplied of labor.[1]

(2) The market for commodities. Only finished commodities appear on the market. There are consumer commodities and investment

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1 Don Patinkin, Money, op. cit., pp. 127-130.

commodities; each type of such commodities is considered as a composite good. The consumption function is expressed by the equation

$$(3) \qquad C = g\left(Y, r, \frac{M_0^H}{P}\right)$$

and the investment function by the equation

$$(4) \qquad I = h\left(Y, r, \frac{M_0^F}{P}\right)$$

where C denotes the real amount of consuption goods demanded by households; I the real amount of investment goods demanded by firms; r the rate of interest; M_0^H the initial money holdings of households; M_0^F the initial money holdings of firms; P the general price level of both investment and consumption goods; and Y the gross real national income, necessarily equal to gross real national product.

Combining equations (3) and (4), and denoting the total demand for commodities by E, we obtain the following equation:

$$(5) \quad E = F\left(Y\ r, \frac{M_0}{P}\right), \qquad \left[\frac{M_0}{P} = \frac{M_0^H}{P} \quad \frac{M_0^F}{P}\right]$$

Similarly, the total supply of commodities may be expressed as:

$$(6) \qquad Y = S\left(\frac{W}{P} \cdot K_0\right)$$

In this case, however, Y stands for the gross real national <u>product</u>, since $S\left(\frac{W}{P} \cdot K_0\right)$ is a function which shows the willingness of the entrepreneurs to supply commodities as a function of the real wage rate and of the fixed stock of capital; in addition, this wage rate corresponds to a specific input of labor services, namely the amount of employment at which entrepreneurs, other things being equal, will maximize their profits. Therefore, we could also write the quantity of labor services demanded (N^d) -- or the function which expresses it, $Q\left(\frac{W}{P} \cdot K_0\right)$ -- <u>in lieu</u> of the real wage rate in equation (6);

that is, real gross national product, or the supply of commodities is equal to

$$(7) \quad Y = \varphi\left[Q\left(\frac{W}{P} \cdot K_0\right), K_0\right] \equiv S\left(\frac{W}{P} \cdot K_0\right)$$

In other words, equation (7), or its equal (6), gives the amount of commodities entrepreneurs are willing "to supply in order to maximize their profits at the given real wage with which they are confronted in the market."[1]

The equilibrium condition for the commodity market is that the amount demanded be equal to the amount supplied: that is,

$$E = Y \ .^{2}$$

(3) The market for Bonds. In this model, all bonds correspond to a "composite perpetuity of representative risk paying one dollar per period", the price of which is the reciprocal of the rate of interest.[3] Both the demand and the supply are for a stock of bonds: lenders wish to hold bonds, while borrowers supply them. In other words, "households decide on the total stock of bonds they wish to hold; changes in these stocks represent their net lending during the period. Firms decide on the total stock they wish to have outstanding; changes in this stock represent their net borrowing

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1 Don Patinkin, Money, op. cit., p. 135. -Notice that Patinkin refers not to the amount of commodities that are actually produced, but rather to the amount that is desired by entrepreneurs. In other words, the term supply means, here, the amount of commodities which will be effectively produced and offered for sale, provided, of course, that certain other conditions are also satisfied. This point will be developed further in the next chapter.

2 See Don Patinkin, ibid., pp. 130-36.

3 Ibid., p. 49, or page 77 above.

during the period."[1]

Letting B^d represent the number of bonds demanded and $1/r$ their per-unit price in dollars, the function describing the demand for bonds may be written as follows:

$$(8) \qquad \frac{1}{r}\ \frac{B^d}{P} = H\left(Y, \frac{1}{r}, \frac{M_o^M}{P}\right)$$

that is, the demand for bonds is a function of real income, the per-unit price of bonds and real money balances held by households. Similarly, the supply function for bonds may be expressed as follows:

$$(9) \qquad \frac{1}{r}\ \frac{B^S}{P} = J\left(Y, \frac{1}{r}, \frac{M_o^F}{P}\right)$$

which tells us that the supply of bonds depends on real income, the per-unit price of bonds, and real money balances held by firms. Both equations (8) and (9), however, leave aside the real value of initial bond holdings as a factor influencing the demand for and the supply of bonds. To allow for these initial balances, Patinkin redefined the demand for bonds as a demand for real bond holdings, i.e., the net demand (D) equal to the difference between the quantity lenders are willing to hold and the quantity that borrowers are willing to supply; then equation (9) must be substracted from equation (8), which gives:

$$(10) \qquad H\left(Y, \frac{1}{r}, \frac{M_o^M}{P}\right) - J\left(Y, \frac{1}{r}, \frac{M_o^F}{P}\right) = D$$

Equation (10) can be rewritten more generally as

$$(11) \qquad D = B\left(Y, \frac{1}{r}, \frac{M_o}{P}\right),$$

that is, the net demand for real bond holdings is a function of real

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1 Don Patinkin, Money, op. cit., p. 137.

income, the per-unit price of bonds, and total real money balances in the economy. Thus equilibrium obtains when the quantity of real bonds lenders are willing to hold is also the one that borrowers are willing to supply on the market; that is, there must be neither an excess of potential lenders over borrowers, nor an excess of potential borrowers over lenders. In other words, equation (11) must have zero for value (D 0). Otherwise, a positive value for D would imply a rate of interest that is above the equilibrium rate, or the rate that equates the amounts of real bonds demanded and supplied; whereas, if D had a negative value, this would imply the contrary.[1]

(4) The market for money. As in the case of bonds, the demand for money refers to a stock and not to a flow and may be expressed by the following equation:

$$(12) \qquad M^d = L\left(Y, r, \frac{Mo}{P}\right) P$$

in which M^d denotes the "amount of nominal money holdings demanded by households and firms taken together -- the governmental demand is assumed to be equal to zero. Equation (12) tells us that the demand for money to hold is a function of income, the rate of interest and initial real money balances.[2]

In contrast to the Keynesian conclusion, this demand curve for money does not become infinite at a certain (minimum) rate of interest at which no one is any longer willing to hold bonds. Patinkin explained that "this conclusion emerges directly from the budget restraint after feeding into it the assumptions already made

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1 See Don Patinkin, Money, op. cit., pp. 137-45.

2 Ibid., p. 145.

as to the effects of, say, a decrease in interest on the other markets of the economy.[1] Thus a decrease in the rate of interest is assumed to affect the planned inflow and outflow of money by leading to an

> increase in the total planned expenditures of households consumer commodities, an
>
> increase in the total planned expenditures of firms on investment commodities, a
>
> decrease in the total planned holdings by households of the bonds of firms and other households (i.e., total planned lendings of households), an
>
> increase in the total planned issuance by households of their own bonds (i.e., total planned borrowings of households), and an
>
> increase in the total planned issuance by firms of their own bonds (i.e., total planned borrowings of firms).[2]

Therefore, the only significance of having reached the minimum rate of interest is that households do no longer intend to convert their bond holdings into money holdings for the simple reason that they no longer have any such bonds to sell, having succeeded in getting rid of all of them. However, planned money holdings may continue to grow, provided that the planned inflow of money of the last two items continue to overbalance the planned outflows of the first

---

1 Patinkin's budget restraint for the economy as a whole corresponds to the following:

"the amount of money demanded (that is, the stock of money planned for the end of the period)
= the given holdings (stock) of money at the beginning of the period
+ the planned money inflow from the sale of labor services, commodities, and bonds during the period
- the planned money outflow on the purchase of labor services, commodities, and bonds during the period." Ibid., p. 147, n. 16.

2 See Don Patinkin, ibid., p. 147.

two. Thus according to this argument, the demand curve for money could become horizontal at a certain minimum rate of interest only if the first two items happened to offset the last two; moreover, the demand curve would be horizontal to a certain extent only, namely until the maximum number of bonds held at this rate have been converted into money by their holders. Once this is done, and provided that the planned inflow of money (for households and firms) continue to offset the planned outflow, the demand curve becomes a vertical line.[1]

According to Patinkin, the only case in which the demand curve for money could become perfectly elastic at a certain rate of interest, is the one in which the supply of bonds is infinite at this rate. But, such a situation is not likely, since it implies that "an individual who plans an infinite supply of bonds is for some reason unconcerned with his obligation to make interest payments on these bonds."[2] We will come back to this argument at a later stage of this study.

Turning now to the supply of money, M^S, we take it here as a constant equal to M_0. Therefore, a situation of equilibrium is one in which the amount of money demanded is equal to the amount supplied. That is,

$$M^d = M_0 = M^S .$$ [3]

Such is the framework of the model which has been used by

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1 See Don Patinkin, Money, op. cit., p. 149.

2 Ibid., p. 149.

3 Ibid., p. 149.

Patinkin in his attempt to integrate monetary and value theory. The following discussion will be based essentially upon this model and will consist in showing the working of the latter during an unemployment situation. The markets that will be relevant for our purposes are the following: the market for labor services, the market for commodities, and the market for money. We will leave aside the market for bonds because this study deals with the "real-balance effect" in connection with the levels of income and employment, and not with the "real-indebtedness effect".

CHAPTER VII

THE WORKING OF THE MODEL: INVOLUNTARY UNEMPLOYMENT

We will start with a full employment situation in which aggregate real income is Y_F , the price level P_0 , the proportion of their real income people desire to keep in the form of real balances K_0 , and the money supply M_0 . This situation is also assumed to be one of equilibrium, the latter being defined as one in which the supply of money, M_0 , is just equal to the amount of money people want to hold, i.e. $K_0P_0Y_F$. Hence,

$$M_0 = K_0 P_0 Y_F .$$

Such a position is depicted in Fig. 3 at the point of intersection between the expansion line "E" and the vertical line drawn upwards from Y_F (Cf. point A in Fig. 3, p. 93).[1]

Let us now assume an autonomous increase in the preference for liquidity, that is an increase in the proportion of their real income people wish to hold in the form of real balances. Such a change may be portrayed as a deplacement of the expansion line around its point of origin, from the level "E_0" to the new and higher level "E_1" -- E_1 has a greater slope than E_0 , reflecting our assumption of an autonomous increase in "K". In short, people now desire to hold larger real balances while still enjoying the same level of real income Y . These new desired real balances are indicated by the

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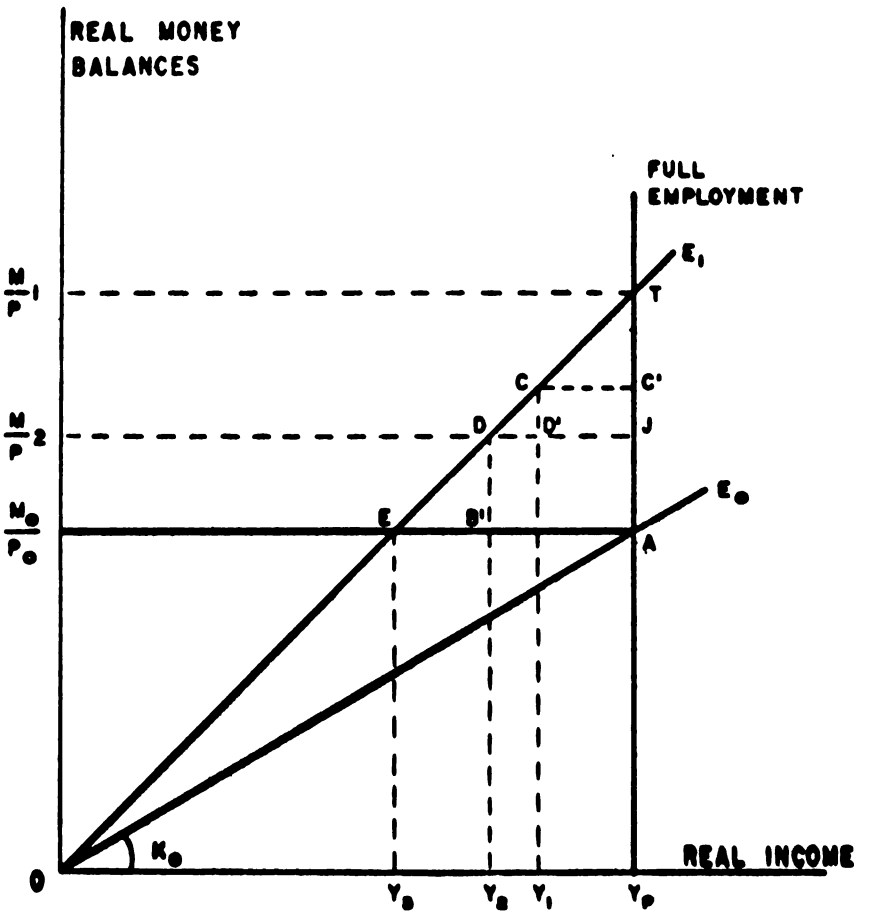
1 The community's expansion line is derived in the same fashion as the individual's line. Concerning the latter, see p. 68 of this study.

Fig. 3


REAL MONEY
BALANCES
FULL
EMPLOYMENT
E_1
$\frac{M}{P}_1$
T
C
C'
$\frac{M}{P}_2$
D
D'
J
E_0
$\frac{M_0}{P_0}$
E
B'
A
K_0
0
REAL INCOME
Y_0
Y_2
Y_1
Y_p

point of intersection between E_1 and the perpendicular erected from Y_F; they correspond to the level $\frac{M}{P}'$. (Cf. Fig. 3). However, the quantity of money has been assumed to remain unchanged at M_0; therefore, the increase in people's liquidity preference must be satisfied by other means, namely by a fall in the price level which would bring the real value of the stock of money up from $\frac{M_0}{P_0}$ to $\frac{M}{P}'$. But, for the time being, we will also assume that prices remain unchanged, so that real money balances stay at the level $\frac{M_0}{P_0}$. Then, as people seek individually to build up their cash balances, this will result in a fall in aggregate demand or in total expenditures, hence in income and employment.[1] In what follows, we will explain how this fall will occur.

Let $\left(\frac{M}{P}\right)^a$ represent actual real money balances, and $\left(\frac{M}{P}\right)^d$ desired real money balances. These variables always refer to a specific level of real income. The stock of money and the price level will be taken as constant. Thus, in the event of a change in the preference for liquidity, real income will change by an amount equal to

$$\left[\left(\frac{M}{P}\right)^d - \left(\frac{M}{P}\right)^a\right] \frac{1}{K}$$

The fall in real income reflects the decrease in real

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1 This is an example of the fallacy of composition. For, although some individuals will succeed in increasing their cash balances, all the individuals in the economy will not be able to do so since the supply of money is constant. Therefore, the cash balances of some individuals will be increased but at the expense of those of other individuals. This increase in liquidity preference will lead to a decrease in total spending, provided that prices do not fall at the same time; falling prices have the effect of increasing the real value of the stock of money and can, therefore, produce the same results as an actual increase in the nominal stock of money as far as liquidity preference is concerned.

spending induced by an increase in liquidity preference which has not been met either by a corresponding addition to the nominal stock of money or by a corresponding decline in prices. We can trace the resulting decline in the level of real income in three steps. These are represented in Fig. 3 by the distances TC', CD', and DB'. Each such vertical distance corresponds to a horizontal distance which shows the variation that is induced in the level of real income by a cut in total spending. That is,

$$(TC')\mu \equiv C'C \equiv Y_F - Y_1$$

$$(CD')\mu \equiv D'D \equiv Y_1 - Y_2$$

$$(DB')\mu \equiv B'E \equiv Y_2 - Y_3$$

where μ is akin to a multiplier or just a shorthand notation for the reciprocal of the slope of the expansion line, i.e., $\frac{1}{K}$. Summing up the results of a change in liquidity preference -- the quantity of money and prices remaining the same -- we obtain a net change in the level of real income, which is equal to

$$(1) \qquad \Delta Y \equiv (TC' + CD' + DB')$$

But,
$$TC' + CD' + DB' \equiv TA \equiv \left(\frac{M}{P}\right)^d_F - \left(\frac{M}{P}\right)^a_F$$

in which the subscript "F" denotes the full employment level of real income from which we started. Thus we can now rewrite equation (1) as follows:

$$(2) \qquad \Delta Y \equiv \left[\left(\frac{M}{P}\right)^d - \left(\frac{M}{P}\right)^a\right] \cdot \frac{1}{K}$$

provided that $\left(\frac{M}{P}\right)^d$ and $\left(\frac{M}{P}\right)^a$ are chosen with reference to the same level of real income.

Let us now see what will happen if prices are flexible -- the nominal stock of money being constant. Equation (2) already provides us with the answer to that question. If, following a rise in

desired real money holdings $(\frac{M}{P})^d$, prices were to fall quickly to the extent of raising the real value of the existing nominal stock of money $(\frac{M}{P})^a$ up to the new desired level, no variation would occur in the level of real spending, hence in the level of real income. In other words, the fall in prices would have acted as a substitute for an increase in the nominal stock of money designed to satisfy the increase in liquidity preference. In short, after an increase in people's desire for real money balances, each price fall has the effect of shortening the gap between desired and actual real money balances, thereby preventing a decline in real income which is equal to $\frac{1}{K}$ times the increase in the real value of <u>actual</u> money balances. Thus in the present example, if prices had fallen so that real money balances were brought from $\frac{M_0}{P_0}$ to $\frac{M}{P}a$, real income would have declined from Y_F to Y_a, instead of Y_3. The difference $Y_a - Y_3$ is equal to the product

$$JA \cdot \frac{1}{K} \quad \text{(Cf. Fig. 3, p. 93)}$$

where JA is the distance representing the increase in actual money balances.

The same reasoning applies, <u>mutatis mutandis</u>, in the case of a decrease in liquidity preference. We need not labor this case, however, for lack of purpose in the present context, and will now develop Patinkin's model.

II

We may distinguish between three groups of decision makers in our economy: the households, the wage-earners, and the business units.

The households decide how and when to spend their income. Their demand function for commodities was shown to depend upon income, the rate of interest and real money balances.[1] In the following, we will be mainly concerned with the fact that they have a certain preference fro liquidity, which can vary; so that they will be said to be in equilibrium when their real money balances are at their desired level. By combining the households' and the business units' demand for commodities, we obtained the total demand for commodities.[2] We can repeat the operation with respect to the demand for real balances, and then say that, for the commodity market to be in equilibrium, there must exist enough real balances to satisfy the total demand for such balances. That is, equilibrium exists on the commodity market when

$$\left(\frac{M}{p}\right)^{d} = \left(\frac{M}{p}\right)^{a}.$$

The equilibrium which obtains, provided that there is no excess of desired over actual real money balances, may be called the equilibrium of output; that is, once people's desire for real money balances are satisfied -- i.e., desired balances are equal to actual balances -- there is no further inducement for them to modify their expenditures, either by increasing them in order to get rid of excess real balances, or by decreasing them in order to hold larger real balances. Under these conditions, it can be said, therefore, that the volume of output which people are now consuming (i.e., real aggregate expenditures)

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1 See p. 85 of this study. Real bond holdings are not mentioned, here, because they have been excluded from our analysis.

2 See p. 85 above.

is one of equilibrium in the sense that, *ceteris paribus*, businessmen are warranted to produce this output which is neither excessive nor insufficient, comparatively to people's willingness to spend.[1]

The *wage-earners* sell their sevices to the business units. The amount they supply will vary directly with the real wage rate. Therefore, at each given rate, they will offer a specific quantity of labor sevices which we will denote by N^s. Accordingly, full employment will be said to exist in the economy, provided that the maximum amount of labor services supplied at a given real wage rate actually finds employment. That is, when

$$N^s = N^a ,$$

in which N^a stands for the amount of labor services actually employed (or the actual level of employment). It follows that involuntary unemployment corresponds to the excess of labor services supplied over the quantity that is actually employed, at a given real wage rate. As Patinkin put it: "The norm of reference to be used in defining involuntary unemployment is the supply curve of labor; for this curve shows the amount of employment which the workers of the economy want to obtain in the light of the money wage, price level, and budget restraints with which they are confronted. Hence as long as workers are "on their supply curve" -- that is, as long as they succeed in selling all the labor they want to at the prevailing wage rate -- a state of full employment will be said to exist in the economy."[2]

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1 See Don Patinkin, *Money*, p. 218.

2 *Ibid.*, p. 212. -Patinkin added that the essence of involuntary unemployment is the fact that workers are *off* their supply curve. This is the argument he presents against those who draw the supply curve of labor infinitely elastic at the prevailing money wage rate

Such a situation will be referred to as the equilibrium of the market for labor services.

The business units in turn decide how much they shall produce and how much labor to employ. They have two restraints which they must take into account: the first is the level of aggregate demand, since they will be making losses if they produce an output which is too large in the light of people's willingness to spend, that is, in the light of people's preference for liquidity;[1] the second restraint is the marginal productivity of labor, since businessmen will not be willing to pay labor a real wage rate that is above the latter's marginal productivity.[2] Since we also assumed that entrepreneurs want to maximize profits, then the amount of labor services demanded will correspond to that quantity for which the marginal value product of labor is equal to the real wage rate. This amount need not be equal to the actual level of employment inasmuch as the latter is a function of actual output which depends itself on the level of effective demand.

Obviously, with a given stock of capital and given tech-

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until a point where the maximum number of workers available at this wage rate are actually employed. See Appendix A, pp. 186-193 of this study, for a criticism of Patinkin's views on the essence of involuntary unemployment.

1 See what has been said concerning the relationship between people's preference for liquidity, on the one hand, and the level of effective demand, on the other, on pages 96ff. of this study, and Don Patinkin, Money, op. cit., p. 166ff.

2 See Don Patinkin, Ibid., p. 127. -If entrepreneurs want to maximize profits, as we assumed above, within a framework of perfect competition, they will hire labor until the latter's marginal product is equal to the prevailing real wage rate. "Thus the firm's demand curve for labor is the marginal productivity curve derived from its production function." Don Patinkin, ibid., pp. 127-28.

niques of production, the level of employment is a function of the level of output; that is,

$$N^a = N(Y^a)$$

where Y^a denotes output, and not income. But, the level of output depends, in turn, on the level of effective demand. Therefore, there is a relationship between the level of employment and the level of effective demand, which is called the employment function. This relationship is described by Patinkin as follows:

> In particular, our demand function for labor describes the behaviour of firms maximizing profits within a framework of perfect competition. This means that the planned labor input it specifies for any given real wage rate reflects the firms' assumptions that they are abole to sell all their resulting output at the prevailing market price. Hence any development in the commodity market which invalidates this crucial assumption must also invalidate these plans.[1]

We can, therefore, make a useful distinction between the

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1 See Don Patinkin, ibid., p. 216; also see J.M. Keynes, General Theory, Chapter XX.

The definition given by Patinkin is basically similar to Keynes' Employment Function. According to Keynes, the employment function "only differs from the aggregate supply function in that it is, in effect, its inverse function...; the object of the employment function being to relate the amount of effective demand... with the amount of employment, the supply price of the output of which will compare to that amount of effective demand." (J.M. Keynes, ibid., p. 280). By the Aggregate Supply Function is meant the relationship between the aggregate supply price of the output resulting from providing a particular level of employment and that level of employment -- the aggregate supply price of that output is "the expectation of proceeds which will just make it worth the while of the entrepreneurs to give that employment." (J.M. Keynes, ibid., pp. 25, 24, respectively). By the Aggregate Demand Function is meant the relationship between the proceeds which entrepreneurs expect to receive from a particular level of employment and that level of employment. Finally, the value of these proceeds "at the point of the aggregate demand function, where it is intersected by the aggregate supply function, will be called the effective demand." (J.M. Keynes, ibid., p. 25).

amount of employment entrepreneurs are willing to provide in the light of the real wage rate -- given the constant stock of capital which is assumed here -- and the amount they are actually giving. A similar distinction can be made between what may be called the <u>supply</u> curve of entrepreneurs -- that is, the volume of output which would be produced with the labor input demanded by the entrepreneurs -- and the actual level of output. This last distinction, given the first one, automatically follows because of the relationship between labor inputs and output [as given by the production function $Y = \varphi(N, K_0)$]. See p. 85 of this study.

Let N^d stand for the labor input demanded (amount of employment offered) by entrepreneurs, and N^a for actual input (the existing level of employment). Then equilibrium obtains when the following condition is satisfied:

$$N^d = N^a .$$

This equality describes a situation which is called the equilibrium of supply. It means that, at this point, entrepreneurs are actually producing their "optimum" output, namely the one which maximizes profits and at which the real wage rate is equal to the marginal productivity of labor. Thus the norm of reference to be used in determining whether there is equilibrium of supply or not, is the marginal productivity of labor, that is more generally, the demand curve for labor; so that the supply side of the market will be said to be in disequilibrium whenever the actual volume of employment (hence output) does not correspond to the one entrepreneurs are willing to provide in the light of the real wage rate. In this respect, a fall in the real wage rate induces entrepreneurs to hire more labor and, there-

fore, to produce and sell more; in other words, falling real wages cause the entrepreneurs' supply curve of commodities to shift continuously to the right, while rising real wages have the contrary effect.[1]

Thus far, we have outlined three partial equilibria and the conditions that must be fulfilled to their achievement. These three types of equilibrium are:

1) The equilibrium of <u>output</u>, which obtains when desired real money balances are equal to actual real money balances, <u>i.e.</u>, $\left(\frac{M}{P}\right)^d = \left(\frac{M}{P}\right)^a$;

2) the equilibrium of the market for <u>labor services</u>, which is achieved when the maximum amount of labor services offered at a given real wage rate actually finds employment, <u>i.e.</u>, $N^s = N^a$;

and 3) the equilibrium of <u>supply</u>, which is characterized by the equality between the quantity of labor services (labor input) demanded by entrepreneurs -- given the real wage rate -- and the amount which is actually employed by these entrepreneurs, <u>i.e.</u>, $N^d = N^a$.

Therefore, a situation of full equilibrium means that all these conditions hold simultaneously. We can combine the last two conditions, so that we finally have the following two for full equilibrium:

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1 The possibility that entrepreneurs produce an output which is either below or above the one that would maximize profits calls for the same distinction (as in the case of labor services) between points that are <u>on</u> and points that are <u>off</u> the supply curve. See Don Patinkin, <u>Money</u>, <u>op. cit.</u>, pp. 218, 220, 222. - For comments on this subject, see <u>Appendix</u> A, pp. 186-193 of this study.

$$(1) \qquad \left(\frac{M}{P}\right)^d = \left(\frac{M}{P}\right)^a$$

$$(2) \qquad N^d = N^a = N^s .$$

Before investigating the dynamic adjustments of these sectors when in disequilibrium, some further comments about the real wage rate are in order. In order for the condition $N^d = N^s$ to be satisfied, the real wage rate must be at its equilibrium level -- the latter being defined as the rate which makes quantity of labor services desired by entrepreneurs (N^d) equal to the amount of these services which workers are willing to supply (N^s). The equilibrium wage rate is, therefore, identical to an equilibrium price; that is, it is determined by the point of intersection between the demand and the supply curves for labor services. However, the <u>actual</u> real wage rate may be either above or below the equilibrium rate. Thus there are other possibilities which must be taken into account according as to whether the actual rate is above or below the equilibrium rate (as defined above). These possibilities are listed below on the assumption that equilibrium of output has obtained $\left[\left(\frac{M}{P}\right)^d = \left(\frac{M}{P}\right)^a\right]$:

A) The actual real wage rate is <u>above</u> the equilibrium rate:

1) it may be equal to the marginal productivity of labor, hence, $N^d = N^a$;

2) it may be lower than the marginal productivity of labor, hence $N^d > N^a$;

3) it may be higher than the marginal productivity of labor, hence $N^d < N^a$.

When the actual rate is above the equilibrium rate, this necessarily implies that there exists an excess supply of labor services. This is obvious, since the supply curve of labor is positively sloping, while the demand curve for labor is negatively sloping.[1]

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1 These respective slopes are given by the supply and the demand

Concerning the supply side of the market (that is, the volume of output desired by the business units), it will be said to be in equilibrium only if A-1 is the case; if it is A-2, the business units will be induced to expand employment, hence output; finally if it is A-3, the business units will contract employment, hence output, since they will not pay labor a real wage rate that is above the latter's marginal productivity.[1]

B) The actual real wage rate is <u>below</u> the equilibrium rate:

1) it may be equal to the marginal disutility of employment, hence $N^s = N^a$;

2) it may be higher than the marginal disutility of employment, hence $N^s > N^a$;

3) it may be lower than the marginal disutility of employment, hence $N^s < N^a$.

When the actual real wage rate is below the equilibrium rate, this necessarily implies that there is excess demand for labor services. This, again, is due to the fact that the demand curve for labor is downward sloping, while the supply curve slopes upwards;

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functions for labor. The amount of labor services supplied varies directly with the real wage rate, while the amount demanded varies inversely with the real wage rate. See pp. 83-84 of this study.

1 As the real wage rate rises, the quantity of labor demanded by entrepreneurs diminishes; this downward movement is simultaneously accompanied by leftward shifts in the supply curve of output. This is easily understood, once it is recalled that there exists a link between the amount of people employed and the output resulting from that level of employment. Conversely, the supply curve of output will shift to the right when the real wage rate falls. Furthermore, entrepreneurs will expand (contract) output whenever the real wage rate prevailing on the market is below (above) the marginal productivity of the amount of employment they are actually giving. This is, as we have seen earlier, the behaviour of entrepreneurs who want to maximize profits.

hence, the region which is located below the equilibrium real wage rate must be characterized by an excess of demand over supply. An excess demand for labor services implies, in turn, an excess supply of output in the sense that entrepreneurs are willing to produce an output that is larger than the one which they are now putting on the market. Concerning the labor services market, it will be said to be in equilibrium if B-1 i the case; if B-2 is rather the case, workers will supply a quantity of services in excess of the amount which is actually employed and will, therefore, want a higher level of employment; finally, if B-3 is the case, they will reduce the amount of services supplied, since they will not accept a real wage rate that is below the marginal disutility of employment.[1]

In summary, we may say that, whenever the actual real wage rate differs from the equilibrium rate, either the labor services market alone, or the supply side alone (that is, the volume of output desired by the entrepreneurs), or still both sectors, will not be in equilibrium. Thus, given perfect flexibility of wages and prices, adjustments will take place in the event that any excess develops in either one of these sectors. It now remains to see how this will occur. First, let us set out the diagram through which we will conduct our analysis.

There are four quadrants in Fig. 4 (p. 107):

In quadrant I, real output or income is measured along the horizontal axis from O to the right, and real money balances along

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1 The level of employment cannot go beyond the point where the real wage rate is equal to the marginal disutility of employment. See, for instance, Don Patinkin, Money, op. cit., p. 212ff.

the vertical axis from 0 upwards; Y_0 marks the full employment level of output, that is the maximum amount of commodities that can be produced with all the available resources in the economy; the "E" lines are expansion lines of the type already described in our study (See Fig. 1, p. 69).

In quadrant II, the level of employment is measured along the vertical axis from 0 downwards; the horizontal axis measures output or real income from 0 to the right and corresponds to the horizontal axis in quadrant I. The supply function is described by the line $Z = \varphi(N)$ which becomes vertical (that is, parallel to the axis measuring employment) after the point at which output reaches its full employment level. The slope of the supply function diminishes as the level of employment rises, thereby reflecting diminishing returns.[1] The aggregate demand function is represented by the lines $D_r = f(N)$, and the point of intersection between any of these lines and the supply function gives the effective demand. Each demand function is drawn on the assumption of a given level of employment.

In quadrant III, the real wage rate is measured along the horizontal axis from 0 to the left, and the level of employment along the vertical axis as in quadrant II. The demand and the supply curves

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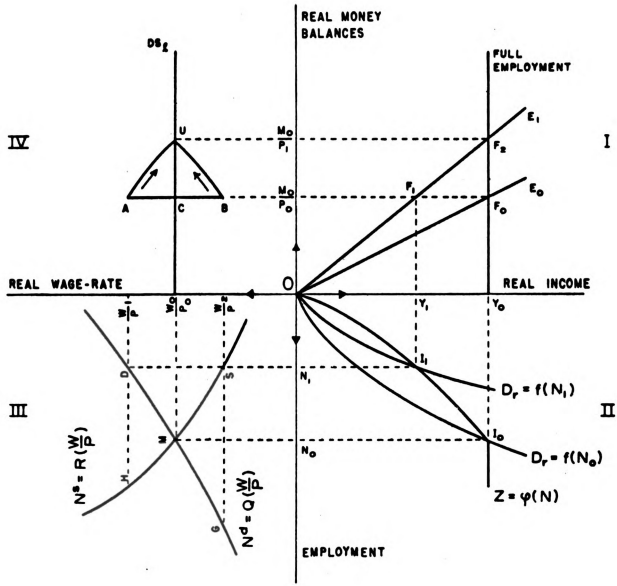
1 See P. Wells, op. cit., p. 539. There is a difference between quadrant II in Fig. 4 and Well's diagram (Ibid., p. 539). The latter puts the level of employment in direct relation with the level of aggregate demand; whereas the former (our diagram) contains another function which represents the level of aggregate demand, so that the level of employment is determined at the point of intersection between this function and the one which describes the aggregate supply. Our aggregate supply function is no more nor less than a production function and reflects directly the operation of the Law of Diminishing Returns. Nevertheless, the level of employment remains dependent upon the level of effective demand.

Fig. 4


REAL MONEY BALANCES
FULL EMPLOYMENT
IV
I
III
II
REAL WAGE-RATE
REAL INCOME
EMPLOYMENT
O
U
A
C
B
E_1
E_0
F_1
F_0
Y_1
Y_0
I_1
I_0
N_1
N_0
$D_r = f(N_1)$
$D_r = f(N_0)$
$Z = \varphi(N)$
$N^s = R(\frac{W}{p})$
$N^d = Q(\frac{W}{p})$

for labor services are represented by the functions $N^d = Q\left(\frac{W}{P}\right)$ and $N^s = R\left(\frac{W}{P}\right)$ respectively -- given the stock of capital.[1]

In quadrant IV, the vertical is the same as in quadrant I and measures real money balances; the horizontal axis is also the same as in quadrant III and measures the real wage rate. The line DS indicates the level of real wage rate that equates the amount of labor services demanded by the business units and the amount of these services suppled by workers. In other words, this line gives the equilibrium real wage rate. The triangle AUB is simply the reproduction of the triangle DMS in quadrant III and will be explained in the course of the exposition.

Let us start from a position of equilibrium in which output and real income are at the full employment level Y_0 ; real balances at $\frac{M_0}{P_0}$, and the line indicating liquidity preference at the level E_0; the aggregate demand function is $D_r = f(N_0)$; employment is at the level N_0; and the real wage rate at $\frac{W_0}{P_0}$. We will assume, for the time being, that prices and wages are inflexible, and that the nominal stock of money is constant.

Liquidity preference now increases autonomously so that the expansion line shifts to the left from E_0 to E_1 . Under our assumptions, the increase in the demand for real money balances will entail a reduction in real income equal to $Y_0 - Y_1$ (that is, $F_2 - F_0 \cdot \frac{1}{K}$).[2]

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1 Obviously, the amount of labor services demanded by entrepreneurs is the same thing as the amount of employment offered by entrepreneurs to workers. Similarly, the amount of labor services supplied by workers correspond to the quantity of employment demanded by workers.

2 K_1 is the new proportion of real income people now want to hold in the form of real money balances. In other words, K_1 measures the slope of the new expansion line E_1 . (Cf. Fig. 4, p. 107).

In fact, the leftward shift in the expansion line has translated itself into a leftward shift in the aggregate demand function; the latter now cuts the aggregate supply function at I_1, which yields a lower level of employment N_1 (Cf. quadrants I and II, Fig. 4, p. 107). Thus employment has fallen from N_0 to N_1; this new level is below the one that is desired by entrepreneurs and workers alike, namely N_0, since, by assumption, real wages did not fall. The real wage rate is still $\frac{W_0}{P_0}$; thus involuntary unemployment to the extent N_0-N_1 exists in the economy (Cf. quadrant III, Fig. 4). This also means that the supply curve of output has not changed, since the amount of labor services demanded by entrepreneurs has remained the same (N_0); the aggregate supply function tells us that, to this quantity of labor input, there corresponds a level of output equal to Y_0 . Therefore, the present situation is characterized by an excess of supply in the labor services market, and by an excess of supply in the commodity market, that is, an excess of desired over actual output of commodities.

Concerning the households sector, we notice that the level of real money balances just satisfies their increased preference for liquidity (E_1), at the lower level of real income Y_1 . Put differently, households are now no more induced to cut down spending for the purpose of satisfying their increased demand for real money balances; thus the present level of their real expenditures is an equilibrium one. There is, therefore, equilibrium of output, since $(\frac{M}{P})^a$ is equal to $(\frac{M}{P})^d$ at the level of real income Y_1 (Cf. quadrant I, Fig. 4). As a whole, however, this situation is not one of equilibrium in the strict sense of the word. For, our second condition

is not fulfilled at this point, since $N^a < N^d = N^s$.[1] Then, let us now investigate the situation when we allow wages and prices to vary.

Thus far, the attempts made by people to build up their cash balances -- wages, prices and the nominal quantity of money being constant -- have resulted in a decrease in total spending, hence in income and employment. This decline has in turn created a "glut" on the commodity market; firms, seeing their volume of sales reduced and inventories piling up, will be induced, therefore, to bid down the prices of commodities as well as the price of labor.[2] Let us assume that prices and wages do not fall until real income has declined from Y_0 to Y_1. At Y_1, we have seen that people's demand for real money balances was entirely satisfied by the existing real money balances $(\frac{M_0}{P_0})$ in the economy. Thus, any fall in prices, at this point, will raise the real value of these balances above the desired level. Assuming that people do not suffer from money illusion, then the fall in the prices will give rise to a real balance effect: people, seeing their real money balances rising above the level they desired, find themselves with excess real money balances and will, therefore, increase expenditures in order to decrease their cash balances, thereby getting rid of their excess liquidity. This will lead to an increase in real income equal to $\Delta(\frac{M}{P})^a \cdot \frac{1}{K}$ · where $\Delta(\frac{M}{P})^a$ stands for the increase in the real value of the nominal stock of money in existence,

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1 See pp. 101-103 of this study.

2 See Don Patinkin, Money, op. cit., p. 217.

due to the decline in prices.[1] However, this does not automatically insure the restoration of full employment equilibrium. There must be other forces at work to insure that the sytem will continue its way back to a position of full employment equilibrium, once there are no more unsold commodities, nor excessive inventories to exert downward pressures on the price level. These forces are found in the gap which, in an unemployment situation, exists between the actual levels of employment and output, on the one hand, and the levels that are desired either by workers alone, or by entrepreneurs alone, or by both groups at the same time. Thus, it is necessary to return once more to a consideration of the behaviour of the real wage rate.

To simplify the matter, let us discard the two possibilities that the real wage rate either rises above the marginal value product of labor, or falls below the marginal disutility of employment, on the grounds that the first condition would be unacceptable to businessmen, while the second would be rejected by workers.[2] This leaves us with the possibilities that the real wage rate remains the same, that is, at its original equilibrium level (defined as the level that equates the amount of labor demanded and supplied); or, it may rise above the equilibrium rate and become equal to or lower than the marginal value product of labor; or lastly, it may fall below the

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1 See pp. 95-96 of this study, concerning the effect of price changes upon the level of income *via* the variations induced in the real value of money balances.

2 Nevertheless, it could happen that the actual real wage rate rises above the marginal productivity of labor, or that it falls below the marginal disutility of employment, due to frictions, or to imperfections of competition. See the *General Theory*, pp. 5-7.

equilibrium rate and become equal to or higher than the marginal disutility of employment.[1]

However, the assumption that the real wage rate remains unchanged, as employment falls, is clearly inconsistent with the assumptions of a perfectly competitive economy in which firms operate under diminishing returns and with unchanged production functions.[2] Consequently, we will deal only with the two cases when the real wage rate either rises above or falls below the equilibrium rate.[3] Let us first take up the case in which the actual real wage rate rises above the equilibrium rate during a fall in employment and output.

Such a situation will be marked by an excess supply of labor services. Thus, if the actual rate became equal to $\frac{W}{P}_1$, at the level of employment N_1, the quantity of labor services demanded at

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1 See pp. 103-105 of this study.

2 If the Law of Diminishing Returns operates, then, ceteris paribus, the marginal productivity of labor must rise as employment falls, that is, as less and less labor is being applied to a constant stock of capital (which we have assumed). Thus in a perfectly competitive economy, the logical conclusion is that the real wage rate will tend to rise as employment falls and cannot be assumed to remain constant. Patinkin assumed that real wages remain constant as employment falls, although he also assumed, in the first place, perfect competition and diminishing returns. All these assumptions are scattered in various parts of his book. See Don Patinkin, Money, op. cit., pp. 125, 128, 217, 218. -For views opposite to Patinkin's, see J.M. Keynes, the General Theory, pp. 17, and S.C. Tsiang, "Prof. Pigou on the Relative Movements of Real Wages and Employment", Economic Journal, LIV (1944), pp. 352-365, especially p. 361.

3 These are the cases which are consistent with our assumptions of perfect competition, and of diminishing returns within firms; and also with our assumption that entrepreneurs want to maximize profits and, therefore, will not pay labor a real wage rate which is above labor's marginal productivity, and that workers, on the other hand, will not accept a real wage rate that is below the marginal disutility of employment.

this rate would just be equal to the amount actually given employment ($N^d = N^a$); but, the quantity supplied would be in excess of the quantity demanded by an amount which is represented by the distance HD (Cf. quadrant III, Fig. 4). In other words, $N^s > N^d = N^a$ (Case A-1, p. 101). In this case, money wages will fall as will real wages. The fall in real wages will then disrupt the $N^d = N^a$ equality and will, therefore, stimulate entrepreneurs to produce more, since at a lower real wage rate, their desired output, or the level of employment they are willing to provide, is greater than actual output, or the actual amount of employment (that is, $N^d > N^a$).[1] However, the entrepreneurs will not be able to sell this additional output, since people's preference for liquidity is just satisfied, at the level of real income Y_1. Thus, no additional spending will be done unless excess real money balances develop. But, since the nominal stock of money is constant, only a fall in prices, ceteris paribus, will succeed in raising real money balances above their desired level when real income is at Y_1. The fall in prices will be generated by the $N^d > N^a$ inequality, which implies, as we have seen earlier, that there is an excess supply of commodities, hence excess capacity within firms in general. Firms will be induced to cut prices in order to sell more, as long as they are confronted with idle capacity -- that is, as long as they are producing an output which is smaller than their "optimum" output in the light of the real wage rate.[2] As prices fall,

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1 See pp. 104-105 of this study.

2 Since entrepreneurs want to maximize profits, they will be willing to produce that output at which the marginal productivity of labor is equal to the real wage rate. See pp. 99-101 of this study.

excess real money balances will develop, and this will generate a "real-balance effect" in the commodity market. In their attempts to adjust downwards their cash balances, people will increase their expenditures on commodities; this means that the aggregate demand function ($D_r = f(N)$) will move to the right and will intersect the aggregate supply function at a point which corresponds to higher levels of employment and output. In Fig. 4, quadrant I, the point of intersection between the $D_r = f(N)$ and the $Z = \varphi(N)$ curves will move back in the direction of the full employment level represented by the point I_0 (Cf. Fig. 4).

The same analysis applies, *mutatis mutandis*, where the actual real wage rate falls below the equilibrium rate after a decline in the level of effective demand and in output and employment. In this case, excess demand develops in the labor services market; that is, N^d is greater than N^a.[1] In Fig. 4, if real wages had fallen from $\frac{W_0}{P}$ to $\frac{W_1}{P}$, the excess demand for labor sevices would correspond to the distance GS; but at $\frac{W}{P}a$, the market for labor services is in equilibrium, since the actual amount of labor services employed (N^a) is equal to the amount workers are willing to provide (N^s). Thus in addition to the equilibrium of output *i.e.*, $(\frac{M}{P})^d = (\frac{M}{P})^a$, which is obtained at the level of output and real income Y_0 and of employment N_0, we also have the equilibrium of the market for labor services (*i.e.*, $N^s = N^a$) when the real wage rate is at $\frac{W}{P}a$. This means that disequilibrium exists only on the supply side of the market. Now, N^d is greater than N^s; hence N^d is also greater than N^a, since

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1 This situation corresponds to Case B on p. 104 of this study.

$N^s = N^a$ at $\frac{W}{P}_1$. The $N^d > N^a$ inequality implies in turn, as we have seen earlier, an excess supply of commodities; for, the fall in the real wage rate, from $\frac{W}{P}_0$ to $\frac{W}{P}_1$, had the effect of inducing rightward shifts in the supply curves of firms, which has in turn created a (positive) gap between the output which is desired by entrepreneurs -- this output is a function of N^d -- and the output actually produced by firms and which depends on N^a. Therefore, firms will be induced to lower prices in order to increase the volume of their sales; this will generate a real-balance effect. Thus the aggregate demand function $D_r = f(N)$ will shift to the right as people increase their expenditures in order to get rid of the excess liquidity created by the fall in prices. This excess occured at the level of real income Y where actual real money balances were equal to desired real money balances before the decline in prices. After the decline real money balances rose above desired balances, thereby inducing, people to decrease their cash balances, through increased spending, in order to adjust these balances to the desired level. The resulting increases in the level of effective demand will lead to increases in the levels of income, output and employment, that can be observed in Fig. 4, as the aggregate demand function $D_r = f(N)$ shifts to the right.

Concerning the fluctuations in the level of real wages during the process of these dynamic adjustments, we have attempted to indicate diagrammatically the limits within which they will tend to take place. In quadrant IV, Fig. 4, we have marked two points, A and B. The distance AB is equal to the distance DS in quadrant III, both showing the range over which the real wage rate is permitted

to vary when employment is at the level N_1.[1] Similarly, the triangle AUB is equal to the triangle DMS in quadrant III, the former being arrived at by reproducing all the successive gaps between the demand and the supply curves for labor (employment) over a range of values for the real wage rate between $\frac{W}{P}_0$ and $\frac{W}{P}_1$, inclusive of these two rates.[2] In short, as employment varies between N_0 and N_1, the real wage rate will not be permitted to rise above the maximum points represented by the segment AU of the triangle AUB, nor to fall below the minimum points represented by the segment BU of the said triangle. At the same time, as we have seen previously, forces exist, given perfect flexibility of wages and prices, to push the real wage rate

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1 This restraint comes from our former assumptions that entrepreneurs would not pay a real wage rate above the marginal productivity of labor, and that workers would not accept a real wage rate that is lower than the marginal disutility of employment. The marginal productivity of labor constitutes the demand curve for labor, while the supply curve of labor reflects the marginal disutility of employment for workers.

2 The triangle AUB has a different shape due to the fact that quadrant III and quadrant IV have only one side in common, namely the axis which measures real wages; while the other axis, in quadrant III, measures the level of employment, and the one in quadrant IV, the level of real balances. An example of the manner in which triangle AUB has been constructed will help to understand its shape. Suppose the real wage rate is equal to $\frac{W}{P}_1$; at this rate, we notice a gap between demand and supply in the labor market, which is equal to the distance DS. From D, we drop a perpendicular to the aggregate supply function, which cuts the latter at point I_1, from which point we draw another perpendicular to the relevant expansion line, E_1. In this case, this perpendicular cuts E_1 at F_1, from which point we draw another one, parallel to the real wages axis, until we reach the level of real wages from which we departed, that is, $\frac{W}{P}_1$. Let us designate this point by A; it follows, therefore, that A must lie on a straight line drawn from D and parallel to the axis that measures real balances. Similarly, such a line drawn from S, in quadrant III, will yield point B in quadrant IV; hence the distance DS is equal to the distance AB. Each point on the segment AU, or BU, has been determined in a like manner.

towards its equilibrium level either for business-units or for workers, and towards the equilibrium rate defined as the rate which would equate the amounts demanded and supplied of labor services. Finally, quadrant IV gives us the interesting relation between changes in real money balances, in real wages, and, indirectly, changes in employment. Thus the stability of the system requires that there be a balance between changes in real money balances, real wages, employment and output.

In short, the essence of the theory presented above can be put in the following terms: "Equilibrium means full employment, or, equivalently, unemployment means disequilibrium. Hence our study of the corrective market forces automatically generated by the presence of involuntary unemployment is a study of the dynamic workings of an economy in disequilibrium. And the assumptions made until now, that, granted flexibility, these forces will restore the economy to a state of full employment, is an assumption that the economy is consistent and stable; that, in other words, an equilibrium position always exists and that the economy will always converge to it."[1]

Obviously, these conclusions are at variance with the Keynesian position, the essence of which is found in the following passage: "There is, therefore, no ground for the belief that a flexible wage policy is capable of maintaining a state of continuous full employment; any more than for the belief that an open-market

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1 Don Patinkin, Money, op. cit., p. 224. The same argument has been presented alternatively in terms of the bond and money markets, with the introduction of an increase in the quantity of money to compensate for the assumed rigidity of wages and prices. Ibid., pp. 164-180, 255ff.

monetary policy is capable, unaided, of achieving this result. The economic system cannot be made self-adjusting along these lines."[1]

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1 J.M. Keynes, General Theory, p. 267.

CHAPTER VIII

A CRITICAL APPRAISAL OF PATINKIN'S MODEL

Our appraisal will consist essentially in a critical examination of the main indictments that have been launched by Patinkin against the Keynesian underemployment equilibrium theory. Moreover, the present chapter will serve as a transition from the last part of our study to the final one the purpose of which will be to show one other way in which the economic system could generate forces that would prevent it from settling down at a less than full employment position, or that could also subject it to fluctuations. We will start by considering the "real-balance effect" argument against the Keynesian underemployment equilibrium theory.

I

The central issue which divides "Classical" and "Keynesians" is related to the efficacy of a system endowed with perfectly flexible money wage in eliminating unemployment.[1] This issue has in turn made it necessary to consider whether Keynes' conclusions are based upon the assumption of wage rigidities, or whether they follow from some other influential factors inherent in the economic system itself.

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1 See the General Theory, pp. 266, 267 and 378. -Nevertheless, one must be cautious in interpreting Keynes. It is particularly important to distinguish between his policy conclusions based upon empirical observations, and the conclusions which he arrived at after having introduced some variable or allowed for the influence of a particular variable. We will come back to this point in the course of this chapter.

Franco Modigliani, for instance, attributed Keynes' underemployment equilibrium to wage rigidities and describes the Keynesian supply of labor function as follows:

$$W = \alpha W_0 + \beta F^{-1}(N) P$$

in which W stands for the money wage-rate; N for aggregate employment and N_0 for full employment; $F^{-1}(N)P$ for the inverse of the function $N = F(\frac{W}{P})$ which expresses the supply of labor under the classical hypothesis; α and β for positive constants, being both functions of N, W, P and characterized by the following properties:

$$\alpha = 1 \quad \beta = 0 \qquad \text{for} \qquad N \leq N_0$$

$$\alpha = 0 \quad \beta = 1 \qquad \text{for} \qquad N > N_0$$

Then the above equation tells us that the money wage-rate remains constant at the level W_0 until full employment is reached.[1]

On the other hand, other economists think that wage rigidities have never been a basic and necessary assumption of the Keynesian theory, but rather the policy conclusions to which Keynes arrived after he had weighted the results to be expected from wage flexibility. In support of their argument, these economists point to chapter XIX of the General Theory, which bears the title of 'Changes in Money Wages'. In this chapter, Keynes concluded the following: "In the light of these considerations namely those he made about the consequences of flexible wages I am now of the opinion that the maintenance of a stable general level of money-wages is, on a balance of

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1 Franco Modigliani, "Liquidity Preference and the Theory of Interest and Money", reprinted in the American Economic Association Readings in Monetary Theory, ed. by F.A. Lutz and L.W. Mints, Philadelphia, 1950, pp. 186-239; especially pp. 188-89, 211ff. Also see Don Patinkin, Money, op. cit., pp. 238-9; and J.M. Keynes, General Theory, pp. 8, 9, 295, 301-303, 336.

considerations, the most advisable policy for a closed system; whilst the same conclusion will hold good for an open system, provided that equilibrium with the rest of the world can be secured by means of fluctuating exchange... But the money-wage level as a whole should be maintained as stable as possible, at any rate in the short period."[1]

But again on the purely academic level, wage rigidities now appear to be an assumption which one can ignore without thereby making it impossible to explain underemployment equilibrium. This view is held by Patinkin who asserted that this argument, concerning the "real-balance effect", "... makes it unmistakably clear -- what should always have been clear -- that the involuntary unemployment of the General Theory need not have its origin in wage rigidities." Then he explained that:

> ... by unequivocally placing the center of emphasis on the inadequacy of aggregate demand in the commodity market, and by recognizing the resulting involuntary unemployment to be a phenomenon of economic dynamics, we have freed ourselves from the static necessity of connecting decreases in employment with increases in the real wage rate. We have been able to explain the existence of involuntary unemployment without placing any restrictions whatsoever on the movement of the real wage rate. Conversely, we have shown that reductions in this rate is neither a necessary nor a sufficient condition for the rapid restoration of full employment equilibrium in the economy.[2]

Therefore, Keynes' underemployment equilibrium theory must be based upon other assumption, or possibly, on the neglect of other factors. Thus to Patinkin, the effect of falling prices upon the

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1 J.M. Keynes, General Theory, p. 270.

2 Don Patinkin, Money, op. cit., pp. 237-38.

real value of people's money balances, and the subsequent favorable effect on the level of spending, are the factors which Keynes did not take into consideration: "In particular, he Keynes repeatedly emphasizes that the alternative to holding money is to hold bonds and that any excess of the former is diverted to purchasing the latter. There is never an indication that it may also be diverted to purchasing commodities."[1] In other words, Patinkin criticizes Keynes for having overlooked the "real-balance effect". This charge will be considered in the following.

As we pointed out in an earlier part of our study, Keynes did not overlook the effect of a falling wage- and price-level on the demand for money.[2] He also allowed for the influence of assets on the demand for consumption commodities. Unfortunately, however, he thought of this influence only in terms of physical assets, the stock of which is constant in the short-run. He never seemed to have thought in terms of monetary assets, and how changes in their real value might influence the short-run consumption function.[3]

The criticisms leveled at Keynes, on this particular topic, have prompted J.R. Hicks to reply that the so-called "real-balance effect" (of which Patinkin makes so much -- according to Hicks' own expressions) is already embodied in the LL curve, that is, the curve "showing the rate of interest at which the demand for money will equal a given supply of money, at each given income (Y)."[4] In our

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1 Don Patinkin, Money, op. cit., pp. 463-64. Also see the General Theory, pp. 84, 168-9, 171-72, 199-202, 205-6, where Keynes emphasizes that holding securities is the alternative to holding money, thus neglecting the commodity side.

2 See the General Theory, p. 266.

3 Ibid., Chapter VIII, pp. 91-95.

4 J.R. Hicks, "Hicks (1957)", pp. 280, 281.

opinion, however, this argument is based upon a misinterpretation of the real balance effect, inasmuch as the latter shows itself not only as a shift in the LL curve (the Keynes effect proper), but also in a deplacement in the IS curve (the Pigou effect), that is, "the curve (based on the Marginal Efficiency of Capital schedule and the Consumption Function) connecting the levels of income at which Savings equal Investment, at various rates of interest."[1] It follows, therefore, that, even if liquidity preference becomes infinite at a certain rate of interest (the liquidity trap), it remains possible, through shifts in the IS curve, that the economic system moves back towards full employment equilibrium until this curve intersects the LL function at the full employment level of income. In other words, there is a "real-balance effect" which, according to one author, embraces both the Keynes effect and the Pigou effect, and works even in the case of absolute liquidity preference.

J.H. Power made some interesting remarks about the kind of expectations that are likely to render the "real-balance effect"

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1 Don Patinkin, "Keynesian Economics Rehabilitated: A Rejoinder to Professor Hicks", Economic Journal, LXIX (1959), p. 584. In his 1957 article, Hicks declared the following: "I see no reason at all for supposing that it [the real balance effect] is not included in the Keynesian theory. There may, it is true, be a certain "real-balance effect", before wages rise, if prices rise ahead of wages; but that is incorporated in the LL curve itself." For, given a constant money supply, a fall in wages leads to an expansion of the quantity of money in terms of wage-units, while a rise in wages has the opposite effect. A rightward shift in the LL curve is akin to an expansion of the money supply, whereas a leftward shift in this curve is identical to a contraction in the money supply. They also represent respectively a decrease and an increase in the preference for liquidity. See A. Hansen, Monetary Theory and Fiscal Policy, 1949, p. 77ff. -- But, as we have seen above, a shift in the LL curve is not the so-called "real-balance effect". See T. Mayer, op. cit., p. 276n.

effective. He distinguishes between the "intertemporal substitution effect", on the one hand, and the "wealth effect", or the "real-balance effect", on the other. The intertemporal substitution effect "refers to a hastening or postponing of purchases within the context of a given expected income and consumption stream", whereas the wealth effect "implies an expectation that one is permanently wealthier, permitting higher consumption both in the present and all future periods."[1] If we accept this distinction as significant, we can then proceed to the further conclusion that, in order for an "intertemporal substitution effect" to be stabilizing, the elasticity of price-expectations must be less than unity; that is, when present prices change, expected future prices must change less than proportionately.[2] Power's argument runs as follows: if to-day's price of commodity X falls by 10%, people will hasten to acquire quantities of X provided that they expect the reduction in its price to be of short duration; or more generally, provided that they believe the new price of X, as of to-day, to be the lowest of all likely levels within the context of a given economic horizon, the length of which varies not only between different consumers or buying units, but also between categories of goods for the same individual. Thus one would expect this horizon to be generally shorter in the case of goods that are necessities of life, than in that of other (luxury) goods, for the average individual, given tastes and preferences. In any case, the increase in aggregate demand will be of a temporary nature, and rather

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1 J.H. Power, "Price Expectations, Money Illusion, and the Real Balance Effect", Journal of Political Economy, LXVII (1959), especially p. 134.

2 See J.H. Power, ibid., p. 135; and J.R. Hicks, Value and Capital, Oxford, 1957, pp. 205, 250ff.

equivalent to a redistribution of purchases over time, especially in the case of goods that can be easily stored.

On the other hand, if people expect the new lower level of prices to prevail in the future -- that is, if expectations are static --[1] they will feel permanently wealthier. But, to rely on prices and wages flexibility as a means of maintaining equilibrium, means that prices and wages must change; therefore, static expectations must refer only to the long-run. But according to Power, there is no discernible long-run trend; thus a "real-balance effect" is precluded: "For if there is no definite long-run direction of price movement, individuals would be foolish to alter, for example, the nominal values of their life-insurance policies and pension plans with every shift in the cost-living index."[2] It follows, therefore, that the case usually thought to be favorable to the real-balance effect -- static expectations -- turns out otherwise. This is due to the fact that prices will be expected to change again, either to reverse the initial movement or to continue it. This case, which Power called a state of dynamic expectations, is consistent with the operation of the real-balance effect. Nevertheless, there remains the strong possibility that "the intertemporal substitution effect would swamp the real-balance effect to render the system dynamically unstable."[3]

Without contesting the fact that the "intertemporal substitution effect" implies merely a relocation of expenditures over

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1 See J.H. Power, op. cit., p. 133.

2 J.H. Power, ibid., p. 138.

3 J.H. Power, ibid., p. 141.

time, we find ourselves, however, in disagreement with Mr. Power when he attributed so little importance to that effect as a means of stimulating the revival of economic activity. On the contrary, if it is agreed that there may be no real-balance effect "if prices are expected to return to their previous levels..."[1], then a favourable intertemporal substitution effect may act as a sparkle for the revival of activity, and might even insure a strong real-balance effect. This seems likely when, for instance, the postponing of purchases causes further declines in the real wage-rate as a result of increasing unemployment. The decline in the wage-rate will have the effect of widening the gap between desired and actual output, which will induce firms to lower prices still further. This, as we have seen earlier, will give rise to a real-balance effect.[2] It might also be argued -- especially if people expect prices to return to their previous levels -- that they might want not only to redistribute their expenditures over time, but also to take advantage of the lower prices of commodities on the market, due to a slackening of sales, in order to enjoy a higher level of consumption. This would be true particularly in the case of those durable goods which yield a flow of services over time. Notice that the question of expectations, regarding future price levels, makes it necessary to allow for the

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1 See T. Mayer, op. cit., p. 289. - A similar view was expressed by J.H. Power, op. cit., p. 135: "If, on the other hand, it is felt that the present price decline may be reversed in the future -- or if there is sufficient certainty about this possibility -- there may be little or no consciousness of an increase in the real value of wealth [the real-balance effect proper]".

2 See what has been said on this subject in the preceeding chapter.

possibility of shifts in liquidity preference and thus merits a much deeper study. As Patinkin put it, however, "once the Pandora box of expectations and interest and price uncertainty is opened upon the world of economic analysis, anything can happen."[1]

Having made these considerations, we can now return to the question of underemployment equilibrium and wage rigidities.

The "real-balance effect" provides us with an effective answer to the question of the place of wages rigidity in the Keynesian model. This is why we have waited until now to deal with this question. We will now show that, contrary to Patinkin's conclusions,[2] the involuntary unemployment of the General Theory must have its origin in wage rigidities, in view of the assumptions made by Keynes about the behaviour of real wages as employment rises or falls.

It will be recalled that Keynes accepted one of what he called the two fundamental postulates of the classical theory of employment, namely that "with a given organisation, equipment and technique, real wages and the volume of output (and hence of employment) are uniquely correlated, so that, in general, an increase in employment can only occur to the accompaniment of a decline in the rate of real wages... Thus if employment increases, then, in the short period, the reward per unit of labor in terms of wage-goods must, in general decline and profits increase. This is simply the obverse of the familiar proposition that industry is normally working subject to decreasing returns in the short period during which equipment etc. is

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1 Don Patinkin, Money, op. cit., p. 180.

2 See Don Patinkin, ibid., pp. 237-38.

assumed to be constant; so that the marginal product in the wage-good industries (which govern real wages) necessarily diminishes as employment is increased."[1] Obviously, this implies that real wages rise as employment falls. Keynes acknowledged this at the beginning of the General Theory:"... a decline in employment, although necessarily associated with labor's receiving a wage equal in value to a larger quantity of wage-goods..."[2] The same assumptions in this regard were made by Patinkin.[3] Thus, one would expect the real wage-rate to rise after a decrease in aggregate demand caused a fall in employment. If one maintains the first fundamental classical postulate, namely that the wage is equal to the marginal product of labour, it will follow, therefore, that, in the Patinkinian model, entrepreneurs would have no incentives to expand output and lower prices, if at the same time people's preference for liquidity is satisfied. For, under these conditions, there is not only equilibrium of output --i.e., $(\frac{M}{p})^d = (\frac{M}{p})^a$ -- but also equilibrium of supply -- i.e., $N^d = N^a$.[4] Let us now suppose that money wages are rigid downwards. Then, the existing unemployed workers, or, more generally, the excess supply of labor, at the now higher real wage-rate, has no effect at all upon the real wage-rate. Thus in the absence of corrective forces in the labor market, the system will remain at this position of

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1 J.M. Keynes, General Theory, chapter II, especially pp. 17ff., 5.

2 J.M. Keynes, ibid., p. 18.

3 Don Patinkin, Money, p. 128.

4 See the conditions of equilibrium which are presented on pages 102-103 of this study; also Don Patinkin, Money, pp. 218, 222ff.

underemployment equilibrium, which is characterized by the equality between actual and desired real money balances, and between actual and desired output for entrepreneurs. In other words, if money wages are rigid downwards, and that the first classical postulate is maintained, then the system is incapable of generating automatic forces that will bring it back to full employment. For any attempt of firms to increase their labor inputs would result in an output which could not be sold. They would be compelled, therefore, to reduce output and, accordingly, input until they had once again returned to the levels that are warranted by the level of liquidity preference.[1] Obviously, such a situation prevents a "real-balance effect", since entrepreneurs have no inducement to lower prices in order to produce and sell more, when they are paying a real wage-rate that is equal to the marginal productivity of labor. Therefore, rigid money wages are a sufficient condition in order to prevent a "real balance effect", and a necessary assumption of Keynes' underemployment equilibrium theory.

Actually, Keynes relaxed the assumptions of wage rigidities in Chapter XIX of the General Theory, when he compared a decrease in wages to an increase in the quantity of money measured in terms of wage-units. This is how falling wages could cause a fall in the rate of interest and, through this effect, stimulate investment. But, as a counter-argument to the effects of wage flexibility, Keynes introduced the concept of the liquidity trap to rescue his earlier

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1 See what has been said on this subject on pp. 96-97 above and the references cited therein.

conclusions. Keynes' conclusions, therefore, now seem entirely consistent with his assumptions.[1] Let us now consider Patinkin's criticisms of the Keynesian Liquidity Preference Function.

II

For various reasons, Keynes concluded that the liquidity preference function may become perfectly elastic after the rate of interest has fallen to a certain level -- in the sense that "almost everyone prefers cash to holding a debt which yields so low a rate of interest."[2] This proposition has been criticized by Patinkin, on the ground that it assumes that the supply of bonds -- that is, the demand for money -- becomes infinite at a certain rate of interest.

Patinkin's criticisms are based upon the assumption that a <u>decrease</u> in the rate of interest affects the planned inflow and outflow of money by causing an

<u>increase</u> in total planned spending of households and firms,

an <u>increase</u> in the total planned issuance of bonds by households and firms, that is an increase in total planned borrowings, a

<u>decrease</u> in total planned lendings by households to firms and other households.[3]

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1 See the <u>General Theory</u>, p. 266, and page 81ff. of this study. Inflexible wages were also an empirical observation for Keynes, and therefore a restraint to be taken into account in formulating a theory of employment. In addition, they were the policy conclusions to which Keynes arrived after having considered the shortcomings of a policy of flexible wages: "There are advantages in some degree of flexibility in the wages of particular industries so as to expedite transfers from those which are relatively declining to those which are relatively expanding. But the money-wage level as a whole should be maintained as stable as possible, at any rate in the short period." (<u>General Theory</u>, p. 270).

2 J.M. Keynes, <u>General Theory</u>, p. 207.

3 See Don Patinkin, <u>Money</u>, <u>op. cit.</u>, p. 147ff. and pp. 88-91 above.

It follows, therefore, that the only significance of having reached the minimum rate of interest lies in the fact that "individuals no longer plan to convert bond holdings into money holdings for the simple reason that they no longer have such bonds to sell." Nevertheless, since money is not an inferior good, planned money holdings may continue to grow, provided that total planned issuance of bonds -- that is, the demand for money -- continues to overbalance total planned expenditures. If total planned expenditures are equal to total planned issuance of bonds, then liquidity preference might become absolute but only until all bonds have been converted into money. Actually, the case of an infinite liquidity preference would, under those conditions, imply that the supply of bonds is infinite at the relevant rate of interest. "But an individual who plans an infinite supply of bonds is for some reason unconcerned with his obligation to make interest payments on these bonds."[1] Obviously, this is not likely. In fact, Patinkin rejected the assumption of an infinite supply of bonds at any rate of interest and concluded that there will come a time where individuals will have converted all bond holdings into money holdings, so that the demand curve for money will become a vertical line. This conclusion rests, however, upon the assumption that total planned expenditures by households and firms offset total planned issuance of bonds by households and firms. In other words, just as one can assume, following Keynes, that there comes a time where bonds will have displaced money in all the uses in which they can displace it, so it may be held, on the

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1 Don Patinkin, Money, op. cit., p. 149.

other hand, that there also exists a point where money will have displaced bonds in all the uses in which it can displace them -- a possibility that can be allowed for, by drawing the LL curve with a vertical stretch at both extremities (Cf. Fig. 5, p. 133).[1] Once money has displaced bonds in all the uses in which it can displace them, any further increase in real balances in the economy, either as a result of an outright increase in the stock of money or because of a price decline, must be spent upon commodities, thereby raising prices in a like proportion. Therefore, the quantity theory is basically true.[2]

It has not been possible thus far to sight empirical cases in which liquidity preference became virtually absolute at a certain minimum rate of interest "in the sense that almost everybody prefers cash to holding a debt which yields so low a rate of interest" (General Theory, p. 207). A.H. Hansen, however, instanced the "crisis of liquidation" in the United States in 1932 as portraying a situation in which the liquidity preference function has "flattened out" and in which "scarcely anyone could be induced to part with holdings of money on any reasonable terms."[3] There have been, indeed, several attempts to quantity the Keynesian Liquidity Preference Function, e.g., by people like Kalecki, Behrman, H.J. Brown and J.

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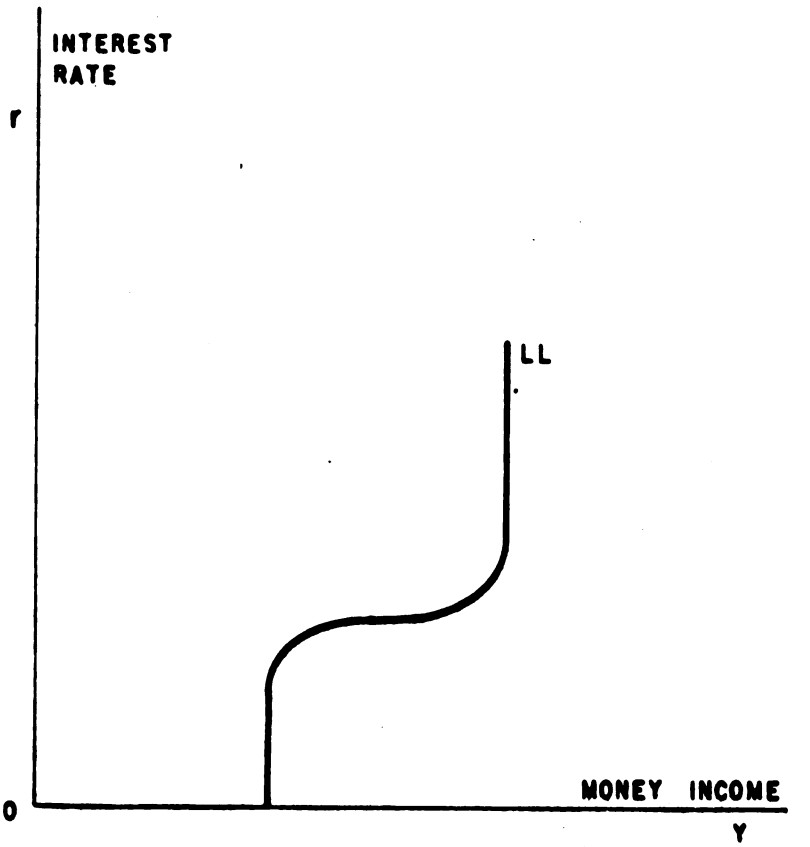
1 See Don Patinkin, ibid., pp. 148-49; and J.R. Hicks, "Hicks (1957)", p. 287. Hicks drew the LL curve with a swerve in the middle to indicate the transition of the system from one pattern of demand for money to another.

2 See J.R. Hicks, ibid., p. 286.

3 A.H. Hansen, A Guide to Keynes (McGraw-Hill Book Co. Inc., 1953), pp. 132-33.

Fig. 5



Tobin who count among the first economists who have made such attempts. Their studies purported to establish a positive correlation between the rate of interest and the velocity of circulation of money. Later on, other economists added other variables, particularly to account for the effect of changes in the value of money during the current year and iddle business balances lagged one year.[1] However, all these studies have not yet shown conclusively that the liquidity preference schedule becomes infinitely elastic at low rates of interest.[2]

These studies, therefore, lend support to Patinkin's argument. A priori, there seems to be no reason why the demand for money should become infinite after a certain point. If the demand for money remains finite in all ranges, we can reject the Keynesian view that the rate of interest is insensitive to changes in the

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1 See, for the United Kingdom, "The Short-Term Rate of Interest and the Velocity of Cash Circulation", Review of Economic Statistics (May 1941), pp. 97-99; also his Theory of Economic Dynamics (New-York: Rinehart, 1954), p. 76ff. For the United States, J.N. Behrman, "The Short Term Interest Rate and the Velocity of Circulation", Econometrica, (April 1948), pp. 185-190 and 370. A.J. Brown, "Interest, Prices, and the Demand Schedule for Idle Money", (originally published in 1939), in Thomas Wilson and P.W.S. Andrews (ed.) Oxford Studies in the Price Mechanism (Oxford: Oxford University Press, 1951), pp. 32-41; and J. Tobin, "Liquidity Preference and Monetary Policy", in Arthur Smithies and J. Keith Butters (ed.) Readings in Fiscal Policy (Homewood, Illinois: Richard D. Irwin, 1955), pp. 245-47. -Among the other group: Lawrence R. Klein, Economic Fluctuations in the United States, 1921-1941 (Cowles Commission Monograph No. 11; New York: John Wiley and Sons, 1950), pp. 53, 65, 92, 108, 132ff. We may also mention at this stage the study done by Phillip Cagan, "The Monetary Dynamics of Hyperinflation" in M. Friedman (ed.) Studies in the Quantity Theory of Money (University of Chicago Press, Chicago, 1956), pp. 25-117; and R.T. Selden, "Monetary Velocity in the United States", loc. cit., pp. 179-251; for a restatement of the Quantity Theory see M. Friedman "The Quantity Theory of Money -- A Restatement", loc. cit., pp.3-21.

2 See Martin Bronfenbrenner and Thomas Mayer, "Liquidity Functions in the American Economy", Econometrica, October 1960, pp. 810-834.

quantity of money once it has reached a certain minimum level. On the policy level, therefore, the government, according to Patinkin, need not wait for individuals, but can enter the bond market and bid up the price of bonds as high as it wants: "It follows that if the government is willing to pursue a sufficiently vigorous open-market policy -- one that encompasses private as well as government bonds -- there is no reason why it should not be able to drive interest down as low as it wants."[1] By forcing down the rate of interest, the government can then drive all private individuals out of the bond market, to the point where all individuals will prefer to hold cash rather than a debt. Thus, if the liquidity preference function should become infinite after a certain point, this would not occur until the last man has droped out of the security market.[2]

The fundamental idea upon which all these previous considerations concerning liquidity preference are based, is that the ratee of interest represents the "reward for parting with liquidity"; or viewed from another angle, it constitutes a rough measure of the cost of holding money, in the sense that it represents what a person

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1 Don Patinkin, Money, op. cit., p. 248. -J.R. Hicks argues against Patinkin's proposition by saying that "What Keynes seems... to be saying, at bottom, is that a financial system, of the kind that exists in developed "capitalistic" countries, cannot exist if the resultant rate of interest -- the rate at which funds pass out of the financial system into real investments -- is too low. The most that Patinkin can claim to have established is that the rate of interest might be forced still lower if that financial system were abolished, and the supply of funds to business were made directly by government..." But he added: "in the applications we want to make we do not normally desire to proceed to such extremes." J.R. Hicks, "Hicks (1957)", p. 288.

2 See M. Bronfenbrenner and T. Mayer, op. cit., p. 833.

loses by preferring to hold cash rather than to invest it in securities. Different people, however, may hold different views as to what rate of interest constitutes the minimum below which they would prefer to hold cash rather than a debt which yields so low a rate of interest. "For any one person there is a certain cost (both psychic and financial) of buying securities, and at an interest rate just equal to that cost his demand for securities is zero (i.e., his demand for money is infinitely elastic). For a group of people together, however, there is no single cost of investment (per dollar of investment), and hence different persons will drop out of the security market at different interest rates."[1] Therefore, for the community as a whole, in other words, it is not likely that the community's preference schedule becomes perfectly elastic at low rates of interest. The purely theoretical considerations made above lead us to this conclusion. But other factors as well influence people's liquidity preference, viz., the rate of change in prices, a variable which is now considered as more and more important by students of monetary theory. This is not to say that changes in the value of money had not been accounted for in earlier formulations of the theory of the preference for holding money. The Cambridge economists and others in the field of monetary theory stressed the importance of the value of money -- that is, of the price level -- in the individual's calculations of the amount of money he should keep on hand. Leon Walras, for instance,

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1 M. Bronfenbrenner and T. Mayer, ibid., p. 833. -Also see J.R. Hicks, "A Suggestion for Simplifying the Theory of Money", Economica, New Series, 2 (1935), (reprinted in Readings in Monetary Theory ed. by F.A. Lutz and L.W. Mints, 1951, pp. 13-32), on some of the factors which bear upon people's liquidity preference.

thought that an individual who desires to have in his possession, at a given moment, a certain provision of money "is not concerned with the (nominal) quantity of this money, but only with the quantity of goods, commodities or services, that he wants to buy with it."[1] But looking at the development of Post-Keynesian monetary theory, we notice that the Keynesian Liquidity Preference Function, which stressed the rate of interest and the level of income as the main factors upon which the demand for money depends has somewhat overshadowed the importance of changes in the value of money as a factor influencing people's desire to hold money balances.[2] E. Cannan and A.C. Pigou had emphasized the importance of the rate of change in prices as a factor upon which the demand for money depends; and more recently, M. Friedman took this factor into account in restating the Quantity Theory of Money.[3] In a still more recent article, Friedman again

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1 L. Walras, Etudes d'économie politique appliquée, pp. 94-95; also see Don Patinkin, Money, op. cit., Note C, p. 386ff.

2 See the General Theory, p. 199ff., and p. 308. -Notice, however, that Keynes talked in real terms inasmuch as he used the "wage-unit" as a unit of account. The wage-unit is the money-wage of a labor unit; hence we can express any quantity measured in terms of money as corresponding to another quantity measured in terms of wage-units, simply by dividing the former quantity by the wage-unit (General Theory, p. 41). Thus he compared a reduction in wages to an increase in the quantity of money measured in terms of wage-units, and he allowed for the effect of a falling wage- and price-level on the demand for money (General Theory, p. 266). However, Keynes never seemed to have seriously considered this question and happened to talk about it only to administer another blow to the classical theory of employment, as he invoked the liquidity trap to offset the effects of falling wages upon the demand for money, and hence upon the rate of interest. Ibid., p.266.

3 See E. Cannan, "The Application of the Theoretical Apparatus of Supply and Demand to Units of Currency", and A.C. Pigou, "The Value of Money", respectively pp. 3-12, and pp. 162-183 in Readings in Monetary Theory, ed. by F.A. Lutz and L.W. Mints, Philadelphia, 1951. Also see Studies in the Quantity Theory of Money, ed. by M. Friedman (Chicago: the University of Chicago Press, 1958), pp. 3-21, especially p. 9.

emphasized the influecne of changes in the value of money, i.e., in the price level, upon people's desire for cash.[1] Therefore, there should be a relationship between the rate of price changes and the level of real income via liquidity preference. Obviously, the importance of price changes in this respect depends upon the magnitude and the frequency of the price changes themselves. Thus as soon as we admit the possibility that frequent or substantial "unidirectional" changes in the price level may affect people's desire to hold money balances, we must consider the possibility that a "real balance trap" develops; that is, for instance, a situation in which people prefer to hold money rather than to spend it in spite of the fact that these money balances continue to rise in real value. In other words, there may come a time where the real value of money would have risen to such an extent that people, expecting further increases in the real value of their money balances, would have an increasing preference for liquidity. If we count the rate of price changes as one of the costs of holding money, then it will pay to hold money in a period of falling prices (deflation) as money balances rise in real value and the cost of holding them decreases; whereas in a period of rising prices (inflation, or rapid inflation), holding money balances carries a disadvantage with it inasmuch as the real value of money, or its purchasing power, is falling, and hence the cost of holding money balances increases.[2]

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1 See M. Friedman, "The Demand for Money: Some Theoretical and Empirical Results", Journal of Political Economy, LXVII (1959), especially pp. 334-35.

2 R.T. Selden, for instance, remarked that "the real value of money

From this we can conclude that, in the event that the rate of change in prices supersedes the rate of interest "as an index of the cost of holding money", the proportion of their total resources, or of their total real income, people desire to keep in the form of cash balances will itself become a function of the rate of change of prices, that is, of the rate of change in the real value of money. Under such conditions, real income will be insentitive to changes in the real value of money. This in turn implies that the "expansion line", or the line which relates real income and desired real balances, will continue to shift either to the left (in the case prices are falling), or to the right (where prices are rising) -- the stock of money being constant. In Fig. 6, (p. 140) we can see, as real balances rise successively from $\frac{M}{P_1}$ to $\frac{M}{P_2}$, from $\frac{M}{P_2}$ to $\frac{M}{P_3}$ and so on, the expansion line shifting from E_1 to E_2, from E_2 to E_3, until it reaches the level E_n. In the present example, people's liquidity preference becomes virtually absolute once the real value of money has risen to the level corresponding to $\frac{1}{P_1}$; in other words, if the price level continues to fall below P_1, people will hold an increasing amount of real money balances because, under these conditions, holding money balances would yield a premium which supersedes the gains to be expected from investing or spending it. The line TU in Fig. 6 is the locus of all the displacements in the expansion lines as the

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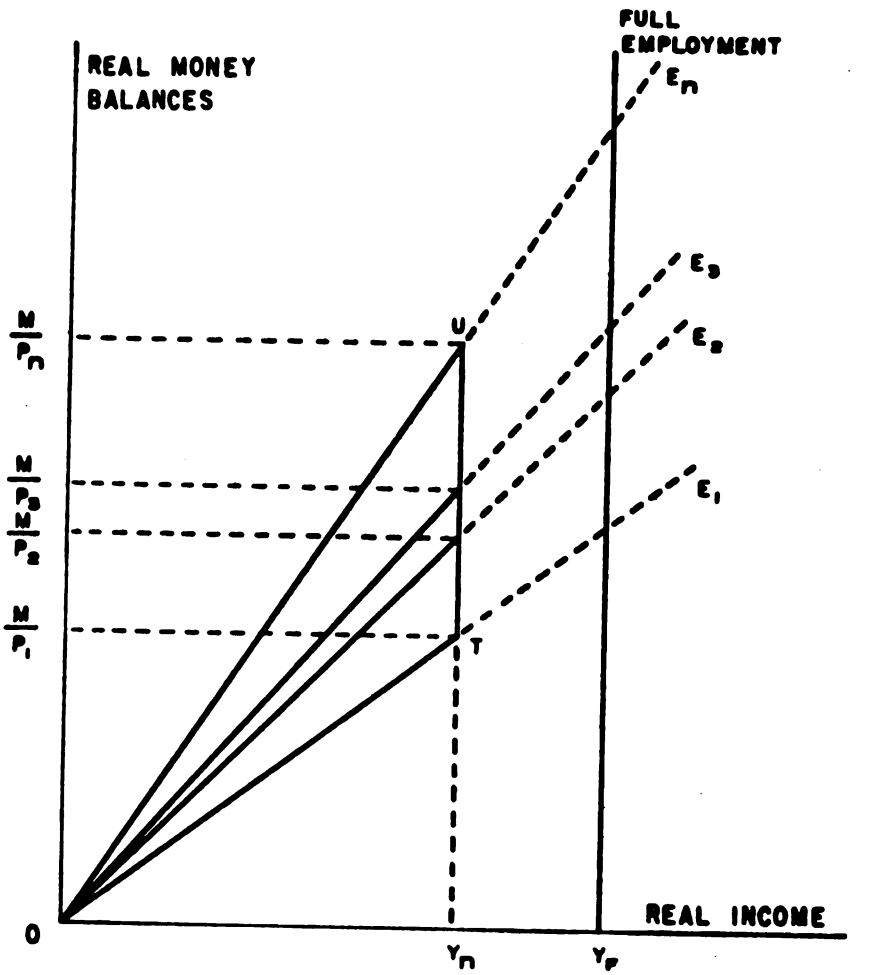
and other fixed claims falls as prices rise. Holding wealth in goods rather than in money avoids this capital loss. Thus, where holding tangible assets is an alternative to holding cash, the cost of holding money increases. For these reasons the rate of change in the price level is probably not inferior to equity yields (adjusted only for the yield on money) as an index of the cost of holding money." See R.T. Selden, "Monetary Velocity in the United States", in Studies in the Quantity Theory of Money (M. Friedman ed.) p. 202; also in the same publication, P. Cagan, "The Monetary Dynamics of Hyperinflation", especially p. 31.

Fig. 6


FULL
EMPLOYMENT
REAL MONEY
BALANCES
E_n
E_3
E_2
E_1
U
T
$\frac{M}{P_n}$
$\frac{M}{P_3}$
$\frac{M}{P_2}$
$\frac{M}{P_1}$
0
Y_n
Y_F
REAL INCOME

price level falls below P_1. (Cf. Fig. 6, p. 140). It indicates what we have called a "real-balance trap". The length of TU will depend upon the state of expectations. When it is thought that the value of money is steadily rising, people will naturally feel that it is more profitable to hold money than goods.

The validity of the preceding argument is, of course, questionable in the case of very gradual changes in the movement of prices. For, "any changes in the expected rate of change of prices during a period of relative price stability will be small, perhaps too small to have any appreciable effect" on the quantity of money demanded.[1] In short, small price changes will generally lack strength in order to exert any significant influence on the demand for money balances, and hence on the demand for commodities *via* the change in the real value of money balances. Put differently, a "real-balance effect" may be prevented because price changes are too small to arise people's consciousness in order that individuals adjust their cash balances to the desired level. Moreover, one must allow for possible changes in the level of real money balances desired by individuals. It is also possible that individuals will let their real money balances fluctuate between a maximum and a minimum point without taking steps to adjust them. From these considerations, it follows that price changes must be of a certain magnitude in order to induce people to adjust their money balances. But, large price changes are likely to create uncertainty about future changes; thus, the fear of

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1 See P. Cagan, *op. cit.*, pp. 25-117; and M. Friedman, "The Demand for Money: Some Theoretical and Empirical Results", *Journal of Political Economy*, LXVII (1959), p. 347.

inflation may provoke a flight from money, while the fear of deflation may lead to a rush toward money.[1] Patinkin avoided these difficulties by assuming what J.H. Power called "static expectations" -- that is, that each price change is regarded as permanent. But this is hardly reconcilable with the fact that price flexibility is a necessary condition for the maintenance of equilibrium. Thus, it is more likely that we will have cyclical price movements around a more or less stable long-run trend, accompanied by short-run elasticities of expectations and destabilizing intertemporal substitution effects. This is probably what T. Mayer had in mind in making the following remarks: "Little can therefore be expected from the real balance effect as a countercyclical tool except in the case where prices are falling in the depression but are not expected to rise during the subsequent boom."[2]

In summary, the attack launched by Patinkin against Keynes' underemployment equilibrium theory consisted mainly in showing that Keynes did not allow for the influence of changes in the real value of monetary assets on the short-run consumption function (the so-called "real-balance effect"); and that liquidity preference does not become virtually absolute at a minimum rate of interest. A third charge is directed against the supply side in the Keynesian system,

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1 On the question of strength, see T. Mayer, "The Empirical Significance of the Real Balance Effect", Quarterly Journal of Economics, LXXIII (1959), p. 267ff. Concerning the effects of substantial or rapid changes in the value of money, see E. Cannan, "The Application of the Theoretical Apparatus of Supply and Demand to Units of Currency", reprinted in Readings in Monetary Theory, pp. 3-12, especially p. 12; and the General Theory, Chapter XVII on the "Essential Properties of Interest and Money"; see also A.P. Lerner, "The Essential Properties of Interest and Money" in the Quarterly Journal of Economics, LXVI (1952), pp. 172-93.

2 T. Mayer, "The Empirical Significance of the Real Balance Effect", Quarterly Journal of Economics, LXXIII (1959), p. 289.

but will be dealt with in the Appendix B to this chapter.[1] These were the main indictments leveled at the Keynesian theory by Patinkin whose work J.R. Hicks considers as "a modernised version of the theory which Keynes called 'classical'."[2] In fact, Patinkin retained the basic features of classical economics, his main conclusions being that perfect wages and price flexibility will eventually eliminate unemployment. We cannot accept, however, the conclusion that he has dealt Keynesian theory a serious blow, for the Keynesian message has consisted not in defending the thesis of the "compatibility of under-employment equilibrium and fully flexible prices" but in attacking the validity of the classical assumptions. As Keynes put it: "The classical theorists resemble Euclidean geometers in a non-Euclidean world who, discovering that in experience straight lines apparently parallel often meet, rebuke the lines for not keeping straight -- as the only remedy for the unfortunate collisions which are occuring. Yet, in truth, there is no remedy except to throw over the axiom of parallels and to work out a non-Euclidean geometry."[3] It was in that vein that Keynes concluded that "there is, therefore, no ground for the belief that a flexible wage policy is capable of maintaining a state of continuous full employment; -- any more than for the belief that an open-market monetary policy is capable, unaided, of achieving

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1 See Appendix B, pp. 194-199.

2 J.R. Hicks, "Hicks (1957)", p. 278.

3 General Theory, p. 16; also see T. Mayer, op. cit., Quarterly Journal of Economics, LXXIII (1959), pp. 289-91. - Notice that Patinkin himself acknowledged that, as far as a practicable full-employment policy is concerned, the Keynesian Theory is ore relevant than his. See his Introduction, in Money, and the conclusions of his argument on page 3.

this result. The economic system cannot be made self-adjusting along these lines."[1] The real-balance effect argument, therefore, definitely lacks the strength to make us reject the Keynesian message. Nevertheless, the Patinkinian theory is much more than a pure academic exercise; and it deserves attention inasmuch as it clarifies the fundamentals of the traditional Quantity Theory of Money, and recalls the influence of monetary assets on people's economic behaviour. As C.F. Christ put it: "It [Patinkin's book] is a theoretical treatise, presenting no empirical material and citing almost none. Its virtue does not lie chiefly in presenting fundamental new ideas, for it does little of that. Rather its virtue lies in consolidating the gains that economists have made, or should have made, in the course of the debates in the monetary litterature; and in bringing monetary and value theory together in a common framework."[2]

Having presented and discussed Patinkin's argument with respect to the theory of income, output and employment, we will now take up the "permanent income hypothesis". Then, introducing this hypothesis into the cash-balances equation, we will offer another tentative explanation for the relationship between variations in desired real money balances and variations in real income and employment.

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1 General Theory, p. 267.

2 C.F. Christ, "Patinkin on Money, Interest and Prices", Journal of Political Economy, LXV (1957), p. 347.

CHAPTER IX

THE CONCEPT OF PERMANENT INCOME DEFINED

I

Since the publication of the General Theory, many economists have endeavoured to test the consumption function empirically. These investigations yielded several consumption functions based on different sets of hypothesis. In particular, however, differences have been observed between the short-run and the long-run behaviour of consumption expenditures in relation to income: Keynes' fundamental rule -- namely, "that men are disposed, as a rule on the average, to increase consumption as their income increases, but not by as much as the increase in income" -- does not seem to be valid in the long-run. Simon Kuznets, for instance, concluded in a study done for the United States: "Judging by the movements of the proportion of capital formation to national product, the ratio of savings to income for individuals declined, as between the last quarter of the nineteenth century and the twentieth century -- even if we consider in the latter only the peacetime periods and exclude the severe depression of the thirties. Thus, with a marked secular rise in income per capita, the savings-income ratio for individuals appears to have sustained a secular decline -- whether we deal with net savings and income or with savings and income gross of consumption of consumer capital (i.e., mainly residential housing)."[1] In explanation of this

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1 S. Kuznets, "Proportion of Capital Formation to National Product", American Economic Review, Papers and Proceedings, XLII (1952), pp. 507-26, especially p. 525.

secular decline. Kuznets singled out the "increased pressure of consumer demand", associated with "shifts of population from countryside to the cities, from individual entrepreneur to employee status, with the impact of new consumer goods, and, in recent years, also with changes in the distribution of income by size."[1]

The conflict between the short-run savings-income ratio -- which Keynes' fundamental psychological law was intended to explain[2] -- and the long-run savings-income ratio has continued to stimulate further empirical investigations and has led to the formulation of new theories on the nature of the consumption function.[3] Worthy of special attention in this respect is that theory that has been developed by Milton Friedman, based upon the "permanent income hypothesis". According to this hypothesis, consumer reaction to an unexpected change in circumstances depends on "the effect of the change in the consumer unit's evaluation of its longer term income prospects, as summarized in its estimated permanent income." Friedman's thesis is briefly stated in the following passage quoted from an article by R. Eisner:

> Friedman argues essentially that both income and consumption should be viewed as consisting of permanent and transitory components and that while the permanent components of income and consumption are positively related to each other, there is no correlation between

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1 S. Kuznets, op. cit., p. 526.

2 See the General Theory, p. 96ff.

3 See M.J. Farrell, "The New Theories of the Consumption Function", Economic Journal, LXIX (1959), pp. 681-695; and M. Friedman, A Theory of the Consumption Function (a publication of the National Bureau of Economic Research), Princeton: Princeton University Press, 1957, pp. 3-5, for an interesting bibliography on the subject of the Consumption Function.

> transitory components or between either transitory component and the permanent component of the other variable. This means that total or "measured" consumption will vary systematically with total of "measured" income only to the extent that the variation in measured income represents a variation in permanent income. Where individuals receive a temporary increment in income one would expect an increase in their consumption only in response to the portion of that increase which, because of the addition to their wealth represented by the increment of income over any finite period of time, would be viewed as an increase in permanent income. The remainder of the temporary increase in income may be thought of as the transitory component of income and would have no effect on consumption.[1]

This, briefly stated, is Friedman's underlining theory as to a tentative explanation for the apparent lack of similarity between the short-run and the long-run consumption function -- a problem we shall not pursue further in this study. For our purposes, we shall retain only the basic novel feature of the hypothesis, namely the concept of permanent income, which we will interprete, however, somewhat differently from Friedman.

II

We define "measured" income as the sum of two components, to wit: a transitory component represented by Y^{τ}, and a permanent component designed by Y^{p}. That is,

$$Y = Y^{p} + Y^{\tau}$$

The precise line to be drawn between these two components will be indicated by the consumer units' "horizon", that is, "a period of time

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1 R. Eisner, "The Permanent Income Hypothesis: Comment", American Economic Review, XLVIII, pp. 972-985, p. 972ff.; see also H.S. Houthakker, "The Permanent Income Hypothesis" (A Review Article). American Economic Review, XLVIII, pp. 396-404; and M. Friedman, A Theory of the Consumption Function, p. 6ff.

used to dichotomize factors affecting income into "transitory" factors all of whose effects on income are over within this time period; and "permanent" factors, whose effects last beyond this time period." Thus this horizon does not correspond to the length of time for which expectations are formed, or decisions taken, but rather to a shorter period than that; for each consumer unit must actually look beyond his "horizon" in order to distinguish between the transitory and the permanent components of his income.[1] As to the length of the "horizon", we will regard it as depending mainly upon the degree of certainty with which expectations are held, concerning future changes in income as well as the duration of these changes. For example, it seems reasonable to expect salaried people to have a shorter "horizon" than people whose incomes are subject to fluctuations, e.g. businessmen. This is due to the fact that an unexpected increase in salaries is readily taken as a definitive and reliable improvement in one's income status; whereas an unexpected favorable change in profits, for instance, is not an indication that the change will repeat itself another year.[2] Notice, however, that this argument will not be valid

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1 M. Friedman stressed this point in a mimeographed note on "The Concept of "Horizon" in the Permanent Income Hypothesis", which is dated April 26, 1959.

2 As a matter of fact, empirical investigations have proved that the so-called "permanent" component of income is correlated with occupation. On this point, we quote R. Eisner: "One of the basic empirical characteristics of income data is that the variance of income is highly related to occupation. Indeed it is probably this fact that has given rise to much of the more recent neo-Keynesian theory of the consumption function. In particular, the variance of income in the "self-employed" occupation is notoriously vastly greater than in other occupations. And it is also clear that a very large part of the variance of total income in the self-employed category must be due to variance of transitory income. A self-employed person may have a high income one year and a low income or even a negative income the next." R. Eisner, op. cit., pp. 975-76.

in all cases. Actually, it all depends upon the type, or the nature of the "unexpected" changes that occur. This involves the question of knowing whether there exists any correlation between the "transitory" component and the "permanent" component of measured income.

This question is rather a matter for empirical investigation. A priori, there seems to be no reason why one should assume or posit the absence of any correlation between these two components. For our part, we will take the "transitory" component of measured income to designate the difference that exists, at any given time, between measured income, on the one hand, and permanent income, on the other, as stated in the above equation; then, we will describe the relation in which measured income stands to permanent income, under the head of three broad assumptions:

The first assumption: Both measured and permanent incomes are constant over time.

(i) they may be equal to each other, viz. when people are perfectly certain that their measured income is not subject to change, or that a given unexpected variation in the latter is of a permanent character;

(ii) they may not be equal to each other, viz. when elements of uncertainty are present, concerning the stability of the level of their measured income. In this case, $Y^{\sim}$, or the gap between "measured" and "permanent" income, is akin to a precautionary margin, the magnitude of which depends on the degree of uncertainty with which expectations are held in connection with future changes in measured income.

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1 In his Theory of the Consumption Function, the absence of correlation

The second assumption: Either measured income or permanent income is constant over time.

(i) Measured income is constant; permanent income varies as a result of changes in the state of expectations, or in the length of horizon, which necessarily implies opposite and equal changes in the transitory component, since Y is constant (by assumption).

(ii) permanent income is constant; measured income varies as a result of favorable or unfavorable changes in, say, business conditions. In this case, all changes are regarded merely as "transitory". This may be due either to a high degree of uncertainty, or to a lengthening of a consumer unit's horizon.

The third assumption: Both measured and permanent incomes vary over time.

This case is more complex inasmuch as it involves several possible combinations of changes in Y^p and Y^t, which, from a purely theoretical standpoint, constitute as many plausible explanations for variations in measured income.[1] But, whatever the direction of changes

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between the "transitory" and the "permanent" component was one of the assumptions made by Friedman (Cf. the passage quoted from R. Eisner's Comment, on page 147 of this study; see also H.S. Houthakker, op. cit., passim, and M. Friedman, loc. cit.) - Now, Friedman seems to have acknowledged the possibility of a positive, or of a negative correlation between these two components, after a statistical investigation done by Eisner established such possibilities. See R. Eisner, op. cit., and H.S. Houthakker, op. cit.; see Friedman's "The Concept of "Horizon" in the Permanent Income Hypothesis" (Mimeographed).

1 M. Friedman emphasized this point in his "The Concept of "Horizon" in the Permanent Income Hypothesis" (Mimeographed).

in either components, a special and important characteristic of permanent income -- on account of its assumed nature -- is that it fluctuates less than measured income. In other words, the elasticity of permanent income with respect to measured income is less than unity, on the average.[1] Thus, one possible case is that measured income exceeds permanent income at cyclical peaks, and that it falls short of permanent income at cyclical troughs. However, there exist other possibilities which are equally compatible with the assumption that permanent income is more stable than measured income. A total of three cases come to mind, given the equation $Y \equiv Y^p + Y^t$, to wit:

		At cyclical peaks	Sign of Y^t	At cyclical troughs	Sign of Y^t
Y^p	is	above Y	−	above Y	−
Y^p	is	below Y	+	below Y	+
Y^p	is	below Y	+	above Y	−

These cases are illustrated in Fig. 7-a,b,c (p. 152). In this figure, Y^p and Y are measured along the vertical axis, and time, t, along the horizontal axis. It must be stressed that the relationship between measured and permanent incomes need not have the same degree of closeness all over the cycle: the degree may be high or low,

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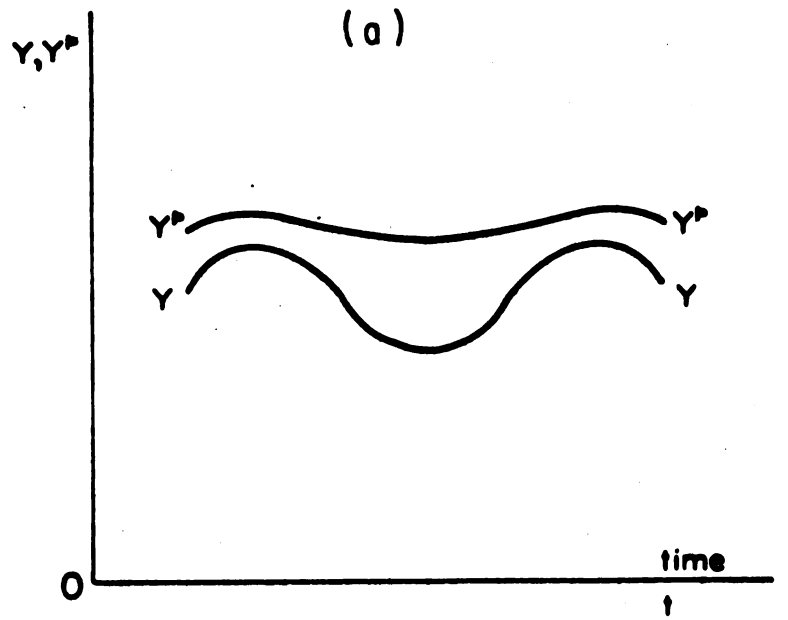
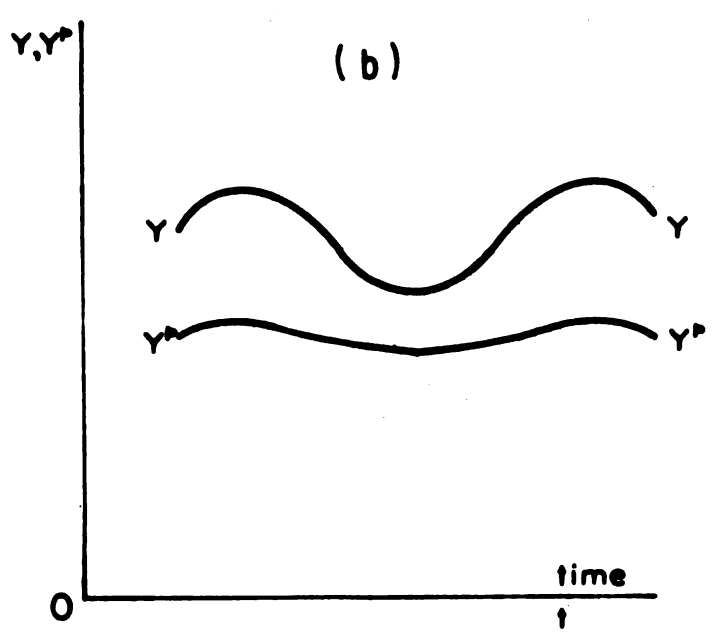
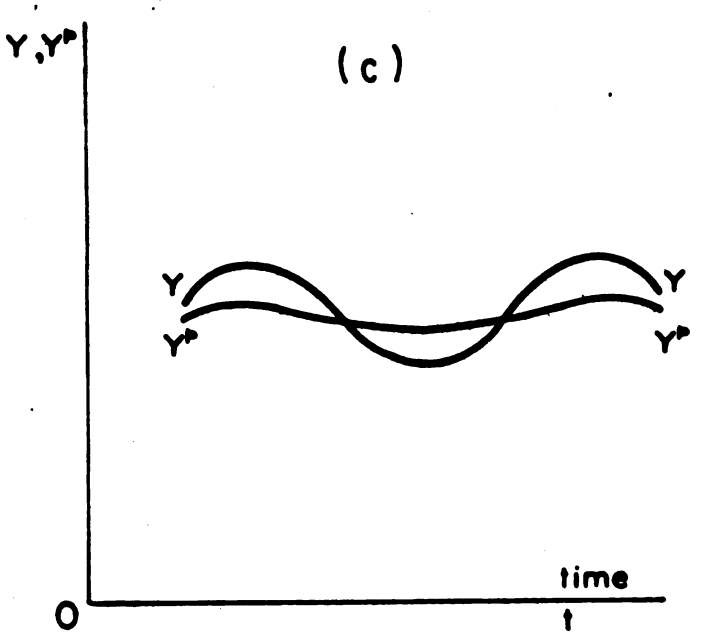
1 If we designate by F the relationship between permanent and measured income -- F being the elasticity of the former with respect to the latter -- then, according to the new Theory, F is smaller than unity. See M.J. Farrell, op. cit., p. 689ff.

Fig. 7







either at peaks, or at troughs only, or at both. Furthermore, we have drawn the curves of measured income and of its permanent component in such a way that permanent income varies simultaneously with measured income. This does not exclude the possibility of lags between the fluctuations that occur in each one of these variables. The "transitory" component, as we have seen earlier, may at times act as a shock absorber, and therefore delay fluctuations in either Y or Y^r. All these considerations would be relevant in the formulation of a complete permanent income theory, which would necessarily have to analyze the relationships that may exist between the different components of measured income. For the purpose at hand, however, it is only important to know that, by definition, permanent income is liable to fluctuate less than measured income. In the following, we will take up the case in which measured income exceeds permanent income at cyclical peaks, and falls short of permanent income at cyclical troughs.[1] This leads us to consider the question of the demand for money in relation to permanent income, and the implications of this relationship for the cyclical behaviour of the economic system.

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1 Let us recall that the "permanent income hypothesis" has been formulated to explain the behaviour of the long-run consumption function which, in contrast to the short-run function developed by Keynes, is relatively stable. The "permanent" component of income is the variable to which people, according to the new hypothesis, adjust their reactions. See M. Friedman, A Theory of the Consumption Function.

CHAPTER X

PERMANENT INCOME, THE DEMAND FOR MONEY, INCOME AND EMPLOYMENT

The "permanent income hypothesis" found its way out of the relation between aggregate consumption and aggregate income into the Theory of the Demand for Money, that is the relation between the demand for money and aggregate income. In the latter theory, the hypothesis was used to explain an apparent conflict between empirical findings for short periods and long periods, concerning the behaviour of the income velocity of money. These findings showed that "income velocity rises during cyclical expansion as real income rises and falls during cyclical contractions as real income falls", whereas it declines secularly, at least for the period extending from 1870 to 1954.[1]

The equation that has been used to compute the permanent component of income in order to relate the latter and the demand for real balances, is similar to the one that were used by Friedman in his study on the consumption function, namely:

$$y^{p}(T) = \beta \int_{-\infty}^{T} \varepsilon^{(\beta-\alpha)(t-T)} y(t)dt$$

which tells us that expected income (a substitute for permanent income) at time T is given by a weighted average of past incomes,

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1 See M. Friedman, "The Demand for Money: Some Theoretical and Empirical Results", Journal of Political Economy, LXVII (1959), pp. 327-351, henceforth referred to as "Friedman (1959)". -It is clear that, by the Theory of the Demand for Money, we refer to the Quantity Theory of Money, which Friedman, in a restatement, designated as a theory of the demand for money. See M. Friedman, "The Quantity Theory of Money -- A Restatement", in M. Friedman (ed.) Studies in the Quantity Theory of Money, p. 4ff.

adjusted for secular growth at the rate of α per cent per year; at time "t", the weights are equal to $\epsilon^{\beta(t-T)}$ and, thereafter, they decline exponentially.[1] The findings adduced strong support for the view that "cyclical movements in velocity largely reflect movements along a "stable" demand curve for money, and that the apparent discrepancy between the secular and the cyclical results reflects a divergence between measures of income and prices constructed by the statisticians for short periods and the magnitudes which holders of money adjust their cash balances."[2]

To express the demand function for money, we can make use of the "cash-balances" equation in which we now write Y^P, instead of Y, in conformity with the assumption that people adjust their demand for money to permanent rather than to measured income. Thus we have,

$$\frac{M}{P} = kY^P$$

in which M stands for the stock of money, P for the general price level, and K for the proportion of permanent income people desire to keep in the form of real balances - Y^P, i.e., permanent income, is expressed in real terms. Thus, if we assume that actual real balances are always equal to desired real balances, any fluctuation in the level of these balances will reflect "a movement along a univariate demand curve in response to a cyclical movement in permanent income."[3]

Figure 8 (p. 158) illustrates such a demand function for money drawn through the origin.[4] Real money balances are measured

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1 See M. Friedman, "Friedman (1959)", p. 337.

2 M. Friedman, ibid., p. 342.

3 Italics are mine. See M. Friedmand, ibid., p. 345.

4 I have drawn a straight line to represent the stable demand function

along the vertical axis; permanent income along the horizontal axis extending from point O_1 to the right; and measured income along the horizontal axis which begins at the point of origin O_2 to the right. In what follows, I will assume a given stock of money equal to M_0, and a constant price level P_0; hence real balances are constant and equal to $\frac{M_0}{P_0}$. It will also be useful to distinguish between actual real balances $(\frac{M}{P})^a$, and desired real balances $(\frac{M}{P})^d$; and also between the proportion of permanent income people desire to keep in the form of real balances, K (defined as $(\frac{M}{P})^d / Y^p$), and the proportion they are actually keeping on the basis of their measured income, $\underline{k}$, (defined as $(\frac{M}{P})^a / Y$). Full equilibrium obtains when

$$(1) \qquad Y^p = Y$$

$$(2) \qquad (\frac{M}{P})^d = (\frac{M}{P})^a$$

hence, $$(3) \qquad K = \underline{k}$$

that is, when permanent income is equal to measured income, and that desired real money balances are equal to actual real money balances. It now remains to show how an inequality between permanent income and measured income induces, through changes in liquidity preference,

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for money. But this need not be so, and was done only to simplify the matter and facilitate the demonstration. The slope of the function may become steeper as permanent income rises. Friedman, for instance, remarked that "Over long periods, real income and velocity tend to move in opposite directions; over reference cycles, in the same direction," (Ibid., p. 329). Then, if we put $V = \frac{1}{K}$, where V stands for the income velocity of money, and K for the proportion of real income people desire to hold in the form of real balances, it will follow that people desire to hold larger and larger real balances as income rises. This implies a non-linear demand function for money. -- The function was drawn through the origin because, according to my main assumption, people do not want to hold real balances when permanent income is equal to zero.

fluctuations in the level of expenditures.

Let us start from situation in which real balances are constant at the level $\frac{M_0}{P_0}$; the stable demand function for money E^s; permanent income Y_0^P ; and measured income at the full employment level Y_f. We need not be preoccupied with the manner in which measured income succeeded in rising above Y^P ; since our objective is to show how the cycle arises, it is natural to start from a state of affairs in which there is no cycle.

Let us now assume that people adjust permanent income to measured income, so that the former rises to Y_f^P (Cf. Fig. 8, p. 158). This change calls forth an increase in the demand for real money balances. Thus desired real money balances are now equal to $\frac{M}{P}$, larger than $\frac{M_0}{P_0}$, the former equilibrium level when permanent income was at Y_0^P . Therefore, people will seek to build up their cash balances; in the aggregate, however, they will not succeed in doing so, since the quantity of money is constant at the level M_0 . Nevertheless, their efforts to improve their liquidity position will take the form of an over-all decrease in total money expenditures. This will in turn lead to a decline in aggregate real income -- given constant prices. On the contrary, had the quantity of money increased, or had prices fallen, or both, the decline in income could have been either partially or totally averted.[1] In the present example, the level of income would have not been affected if real balances had risen to $\frac{M}{P}$, as people demanded larger money balances. It is, therefore, the failure of real money balances to rise which generated the variation

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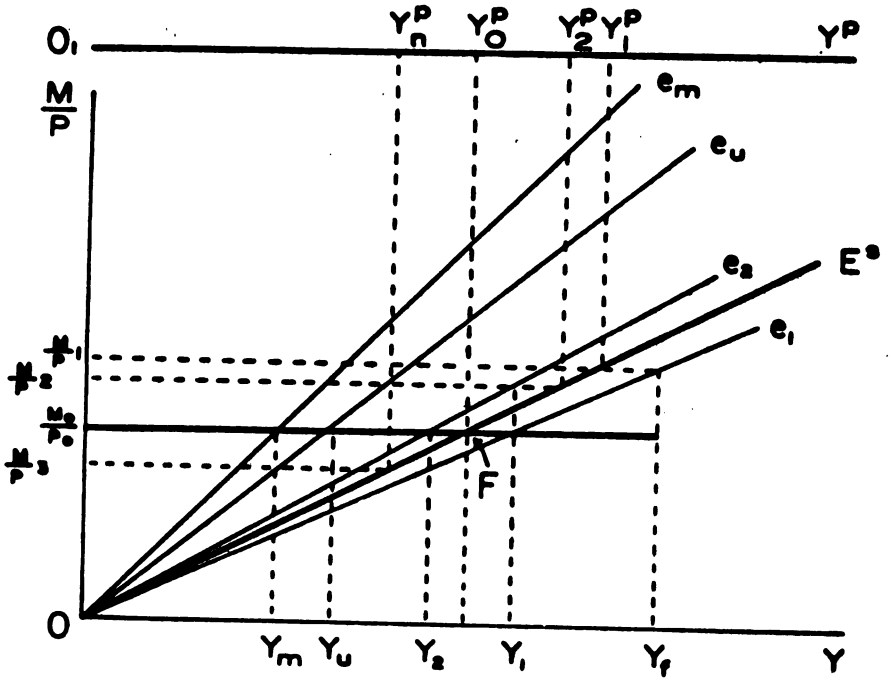
1 See the demonstration that has been given on pages 92-96 above.

Fig. 8


O_1
Y_n^p
Y_0^p
Y_2^p
Y_1^p
Y^p
$\frac{M}{P}$
e_m
e_u
e_2
E^s
e_1
$\frac{M_1}{P_2}$
$\frac{M_2}{P_0}$
$\frac{M_2}{P_3}$
F
O
Y_m
Y_u
Y_2
Y_1
Y_f
Y

in measured income from Y_f to Y_1 - the latter level being determined by the point of intersection between the horizontal line which indicates the actual real balances and a function drawn through the origin and the point which relates the new desired real money balances and the level of measured income at the time of the change in permanent income. The lines e_1, e_2, ... e_m, e_u are such functions.[1] The decline in measured income will in turn induce people to revise downwards their estimates of permanent income. In the present case, this occurs with a lag; permanent income decreases, say from Y_1^P to Y_2^P which shows desired real money balances equal to $\frac{M}{P}_2$ still larger than actual real balances ($\frac{M_0}{P_0}$). As a result, expenditures will be cut down further, and hence measured income will continue to fall. Thus the gap between $\frac{M}{P}_2$ (desired real balances and $\frac{M_0}{P_0}$ (actual real balances) will cause measured income to decline from Y_1 to Y_2 -- Y_2 being determined by the point of intersection between the horizontal line which indicates actual real balances, and a function drawn through the origin and the point which relates the new desired level of real balances ($\frac{M}{P}_2$) and the level of measured income at the time of the change in Y^P, that is, Y_1. This is shown by the function e_2. The downward movement in the level of measured income will not cease until actual real balances are equal to desired real balances, which occurs when permanent income comes back to its former level Y_0^P

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1 The lines e_1, e_2, etc. differ in slope. Thus, as we move leftwards, their slope is increasing which means that the proportion of their measured income people actually keep in the form of real balances is rising: actual real balances are constant while measured income declines. In other words, actual income velocity is decreasing. This is in accordance with Friedman's remarks about the cyclical behaviour of velocity: "... income velocity tends to rise during cyclical contractions when real income is falling -- that is, to conform positively." M. Friedman, "Friedman (1959)", p. 329.

(Cf. Fig. 8, p. 158). But, this point does not represent a full equilibrium situation as we will now see.

Let us assume that permanent income reaches the level Y_o^P and that measured income has finally declined to Y_m as a result. In this case, a situation of <u>temporary</u> equilibrium is achieved in the sense that actual real balances are equal to desired real balances. This equilibrium is temporary because of the inequality which still exists between measured income and permanent income; therefore, the latter will be adjusted downwards, say, from Y_o^P to Y_n^P, as will be desired real balances which, at Y_n^P, are equal to $\frac{M}{P}$3. Now that desired real balances are lower than actual real balances, people will find themselves with excess liquidity. Therefore, they will attempt to get rid of that excess by increasing their expenditures. The rise in aggregate demand will in turn lead to an increase in income, output and employment. In Fig. 8, as permanent income falls from Y_o^P to Y_n^P, a gap is created between actual and desired real balances to an extent represented by the difference $\frac{M_o}{P_o} - \frac{M}{P}$3; so that the resulting increase in spending brings the level of measured income up from Y_m to Y_u (Y_u is determined by the function e_u). The system has then departed automatically from the through and now tends back towards full employment equilibrium. This has taken place in the absence of any fall in wages or prices <u>à la</u> Patinkin. The types of adjustments which have just been described will continue to take place during the phase of expansion until equality is again restored between $(\frac{M}{P})^d$ and $(\frac{M}{P})^s$.

Thus far, it has been established that the system will not remain stable so long as any two of our set of three equations are

not satisfied: measured income will keep on changing, as will permanent income, with the result that both variables will mutually affect themselves through induced variations in liquidity preference. This is the essential idea of the application of the concept of permanent income to the demand function for money. Much more would have to be said, however, if one had to consider all the possible combinations of forces which may be relevant at one time or another in the study of the relationships between the "permanent" and the "transitory" components of measured income. We do not intend to draw a list of these forces. On account of their large number, chances are that the list would be incomplete. Nevertheless, it may be useful to point out the main factors which mirror the play of these forces and which may be contradicted by empirical observations. They are:

1) the rate of change in permanent income, and

2) the elasticity of the demand for real balances with respect to permanent income.

Taking the equation $\frac{M}{P} = KY^P$, we can compute the elasticity of the demand for real balances as being equal to

$$\varepsilon = \frac{\int \frac{M}{P}}{\int Y^P} \cdot \frac{Y^P}{M/P}$$

where $\frac{\int \frac{M}{P}}{\int Y^P}$ is equal to K, and measures the slope of the Demand Function (which has been assumed constant to simplify the matter). Similarly, we can express the rate of change in permanent income, per unit of time, as equal to β. We can think, therefore, of a proper combination of forces acting through K and β which would yield regular cyclical fluctuations in measured income and also in permanent income, the latter lagging the former. This is illustrated in Fig. 9 (p. 162) where both Y and Y^P are measured along the vertical axis,

Fig. 9

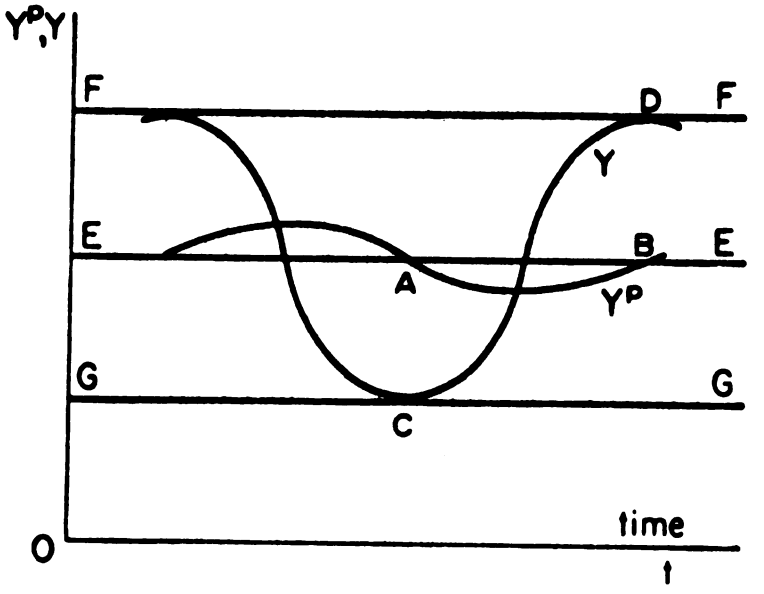
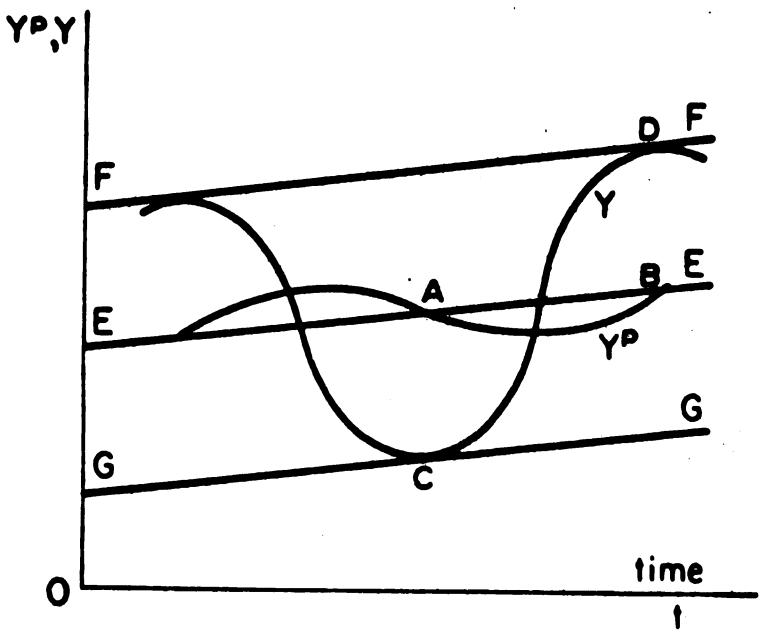


Fig. 10



and time t, along the horizontal axis; real money balances are constant at the level $\frac{M_0}{P_0}$. The line "FF" is a ceiling which indicates the highest level attainable by measured income -- that is, the maximum permitted by the resources available in the economy; the line "EE" represents the equilibrium path of permanent income, or the highest level to which permanent income can rise in the light of the stable demand function for money and of the existing amount of real money balances in the economy. On the other hand, the line "GG" is the floor below which measured income is not permitted to fall, given the stable demand function for money and the amount of real money balances available; this line simply means that, in the event measured income drops below permanent income after a cyclical contraction, there will occur a time where measured income will stop falling -- namely once equality is restored between $\left(\frac{M}{P}\right)^d$ and $\left(\frac{M}{P}\right)^a$; it will then remain unchanged at that level, provided that permanent income stays on its equilibrium path.[1] In Fig. 9, measured income reaches the floor when permanent income attains its equilibrium path at point A, during a cyclical contraction. Similarly, measured income reaches the ceiling when permanent income is on its equilibrium path at point B, during a cyclical expansion.[2] In other words, if Y^p were to remain on its

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1 See what has been said on pages 156-160 above. In short, if, during a cyclical contraction, the system reaches a position in which actual real money balances are equal to desired real money balances, then measured income will stop falling. The latter will not start rising until permanent income is revised further downwards, which will create a positive difference between actual and desired real money balances -- other things being equal.

2 It has been assumed that measured income exceeds permanent income at peaks, and falls short of it as troughs. These characteristics of measured income are consistent with the assumption that the latter fluctuates more than permanent income. See page 151ff. above.

equilibrium path once it had reached point A, measured income would stay at the level indicated by the line "GG"; whereas if Y^p were to stay on its equilibrium path once it had reached point B, measured income would remain at the level which is indicated by the line "FF". Therefore, given actual real money balances, it is the failure of permanent income to remain on its equilibrium path which generates cyclical fluctuations in the system, through the process which we have previously described. As Fig. 9 shows, measured income starts rising as permanent income falls below its equilibrium path (the case of a positive gap between actual and desired real balances); whereas it starts falling when permanent income rises above its equilibrium path (the case of a negative gap between actual and desired real balances). These opposite changes in the two variables start respectively from the coordinate points A and C, and B and D, in Fig. 9.

A similar analysis applicable in the case where the economy as well as real money balances are permitted to grow at a certain rate per unit of time. Under these conditions, the lines "FF" and "GG" slope upwards. To simplify the matter, we have assumed that the rate of growth is constant and that it is the same for both the productive capacity of the economy and the amount of real balances made available in the system (Cf. Fig. 10, p. 162). Given that proper combination of forces, we will still get regular cyclical fluctuations. Nevertheless, on account of the rate of growth that has been allowed for, cyclical peaks occur at higher and higher levels as the analysis is pursued further and further over time. The same remarks apply to cyclical troughs.

All the preceding argument can be briefly stated as follows;

given people's liquidity preference and the amount of real money balances available in the economy, the maximum level of permanent income that can be supported, without adverse effects upon the level of measured income, is indicated by the line "EE". If permanent income rises above this line, an increase in real money balances will be necessary to satisfy the increase in people's demand for such balances, generated by the rise in permanent income. Otherwise, that is, if prices are not flexible or if there is no net addition to the nominal stock of money, actual real money balances will be insufficient in order to satisfy people's increased liquidity preference. Therefore, ceteris paribus, measured income will decline. As this decline takes place, permanent income will be adjusted downwards, and hence desired real money balances also. As we have seen in earlier parts of our study, total expenditures, and hence measured income, will not stop falling until equality is restored between actual and desired real money balances. Conversely, if permanent income falls below its equilibrium path, a positive difference will arise between actual real balances and desired real balances. As a result, expenditures will rise as people attempt to get rid of their excess liquidity, and measured income will follow up until equality is again restored between actual and desired real money balances. But, this type of "equilibrium" is partial only, since none of the other two conditions for full equilibrium is satisfied, namely $Y^{p} \neq Y$, and $K \neq \underline{k}$.

The regularity obtained thus far in the cyclical fluctuations is due to the presence of a proper combination of forces acting through , that is, the rate of change in permanent income -- given K, that is, the proportion of permanent income people desire to keep in

the form of real money balances.[1] In other words, given K, the magnitude of the cyclical fluctuations in the level of measured income will depend essentially on the values taken by β during cyclical expansions and cyclical contractions. The proper combination of forces which thus far gave us regular fluctuations was an assumption designed to facilitate the demonstration. Thus, in the absence of such conditions, we might get irregular fluctuations within the area comprised between the ceiling FF and the floor GG, inclusive of these upper and lower limits (Cf. Fig. 9). In other words, measured income might oscillate at a less than full employment level. In this respect, our conclusion resembles Keynes' underemployment equilibrium, if the latter is interpreted not as a position of equilibrium in the strict sense of the word, but rather as a situation in which the system oscillates "round an intermediate position appreciably below full employment and appreciably above the minimum employment a decline below which would endanger life."[2] Nevertheless, we differ from Keynes inasmuch as forces exist within our system which can restore full employment. For, we already know that, ceteris paribus, the existing real money balances do warrant a maximum level of measured income which appropriate values for make it quite possible to reach. Similarly, these balances fix a minimum level below which, ceteris paribus, measured income will not fall. In this respect, our argument, therefore, is less restrictive than the Keynesian conclusion. More-

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1 Notice, however, that the assumption of a stable demand function for money does not necessarily imply a constant K. The value of K may differ along a stable demand function, viz., if the latter is non-linear.

2 J.M. Keynes, General Theory, p. 254.

ever, it does not impose any assumption as to whether prices and wages are flexible or not. As a matter of fact, we have conducted our analysis without having assumed perfect flexibility of wages and prices. Thus, to demonstrate that income can fluctuate or that the system can move back to full employment after a disturbance has arisen, one can rely upon the "Keynes effect" only, i.e., upon one of the two components of Patinkin's "real balance effect", the other one being the "Pigou effect". Nevertheless, the considerations made above with respect to the value of $K\beta$, during both cyclical expansions and cyclical contractions, force us to recognize that the "real-balance effect" -- that is, the effect which "measures the influence on demand of a change in real balances, other things being held constant" -- could play a major role in helping the system out of a situation in which actual real money balances would be equal to desired balances, and permanent income to measured income, and hence K to k, at a less than full employment level. Under these conditions, only a fall in prices or an increase in the quantity of money in circulation could raise real money balances above their desired level and generate, therefore, what Patinkin called a "real-balance effect". Finally, without having the pretense of covering all possible cases, we will push our analysis a little further and point at a few more intricate relationships between changes in permanent income, variations in the demand for money balances, and variations in the level of measured income.

We start by modifying our equation in which we now introduce time. Let us write then:

$$(1) \qquad \left(\frac{M}{P}\right)_t = KY_t^P$$

which expresses the demand for real balances at time 't' as a function of permanent income at time 't'. As to permanent income, we now define it as being equal to

$$(2) \qquad Y_t^P = Y_{t-1}^P + \beta \Delta Y_{t-1}$$

This equation tells us that permanent income at time 't' is equal to permanent income at time 't - 1' plus β times the change in measured income at time 't - 1' -- this second part of the right side of the equation expresses the rate of change in permanent income as a percentage of the absolute change in measured income at time 't - 1'. Equation (1) can be rewritten as follows:

$$(3) \qquad \left(\frac{M}{P}\right)_t = KY_{t-1}^P + K\beta\Delta Y_{t-1}$$

after substituting the value of Y^P, in equation (2), into equation (1). Thus, the increase in the demand for real balances from time 't - 1' to time 't' is given by the second term on the right-hand side of equation (3), i.e., $K\beta\Delta Y_{t-1}$. This allows us to draw certain conclusions regarding the direction of the effects of the size of the product $K\beta$ upon the level of measured income in the following periods, while taking into account the variations of permanent income either above or below the latter's equilibrium path.

Let us assume that K cannot exceed 1; in other words, we assume that people do not want to hold more than 100% of their permanent income in the form of real money balances.[1] Thus, given the postulate that permanent income fluctuates less than measured income,

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1 This assumption does not weaken the argument, since the same conclusions will apply even if K has a value that is above 1. It has been made to facilitate the exposition, so that we can use 1 as a basis for comparison.

we may eliminate at once all values of $K\beta$ in excess of unity, on the ground that they are inconsistent with our fundamental postulate. Otherwise, fluctuations in Y^p, induced by variations in measured income, would be proportionately larger than fluctuations in the latter variable. Moreover, if $K\beta$ is equal to unity at all points over the cycle, or on the average only, the distinction between permanent and measured income would be of no avail, since, under these conditions, permanent income would fluctuate as much as measured income. Therefore, must be less than unity.[1]

To carry our analysis, we must first divide the cycle into a certain number of stages or phases. The division that has been suggested by J.A. Schumpeter appears to be the most appropriate in the present case, to wit: (1) prosperity, (2) recession, (3) depression, and (4) recovery. In addition, Schumpeter believed, unlike Burns and Mitchell, that the critical mark-off points are found, not in the peaks and troughs of the cycle, but at or near what he called the "neighbourhoods of equilibrium".[2] This amounts to say that the cycle

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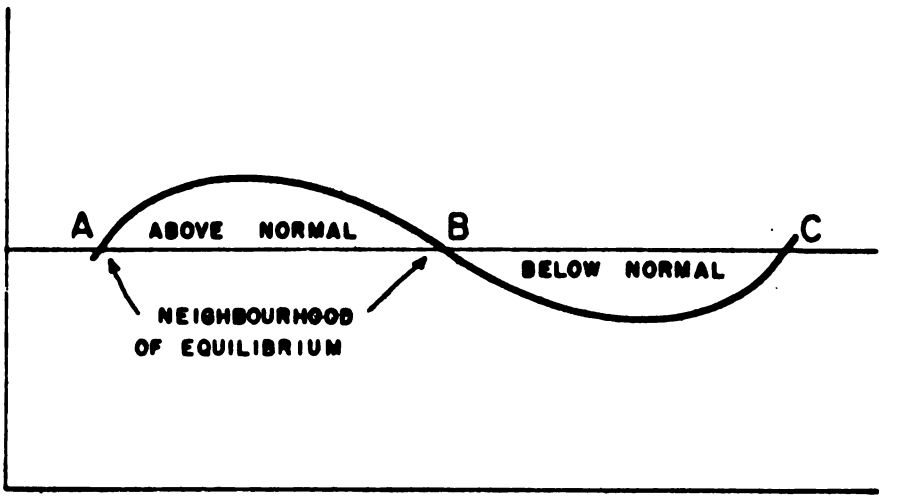
1 This assumption has also been made by M. Friedman. See M.J. Farrell, op. cit., p. 689ff.; M. Friedman, "Friedman (1959)", Journal of Political Economy, LXVII (1959), p. 333 where one reads: "Measured income presumably exceeds permanent income at cyclical peaks and falls short of permanent income at cyclical troughs."

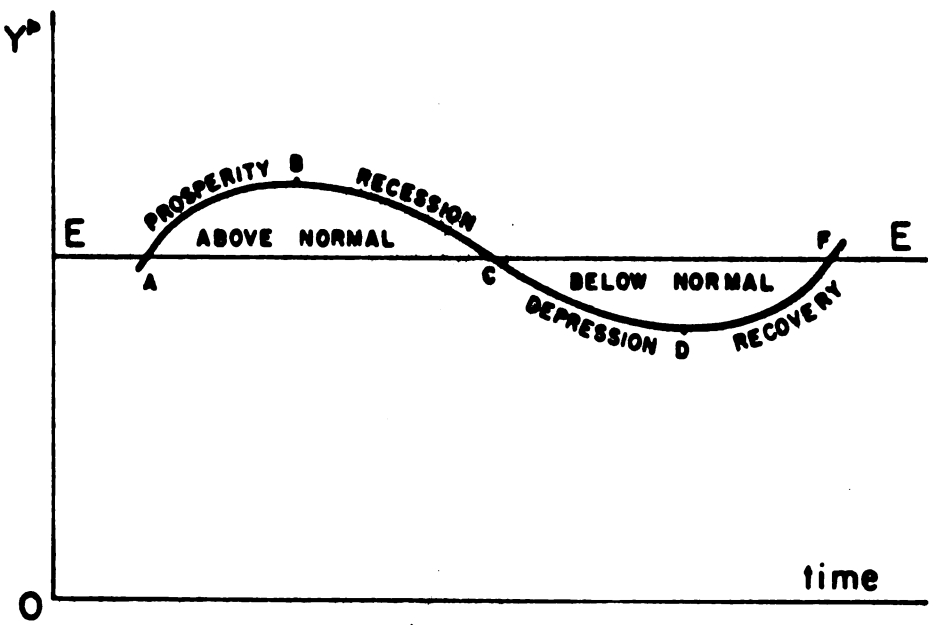
2 See J.A. Schumpeter, Business Cycles, Mc-Graw Hill Book Co., New-York, 1939, Vol. I, pp. 207-209. -The division that has been suggested by A. Burns and W.C. Mitchell is the following: revival, expansion, recession and contraction. The peaks and the troughs are regarded as the critical mark-off points in the cycle. Each cycle, measured from trough to trough, is further divided into nine stages. See A. Burns and W.C. Mitchell, Measuring Business Cycles, National Bureau of Economic Research (New-York, 1946); also see W.C. Mitchell, What Happens During Business Cycles, A progress Report, National Bureau of Economic Research (Studies in Business Cycles, No. 5), p. 14ff.

Fig. 11



(CF. HANSEN'S "BUSINESS CYCLES AND NATIONAL INCOME", P. 8)

Fig. 12



is a movement around some equilibrium path (Cf. Fig. 11, p. 170). In fact, our explanation of the cyclical movements in measured and permanent incomes does not materially differ from Schumpeter's basic interpretation of cyclical movements. Figures 9 and 10 above describe the same movements as Fig. 11, namely oscillations round an equilibrium path. Consequently, we can draw Fig. 12 (p. 170), which is a partial reproduction of Fig. 9 and describes the movement of permanent income around its equilibrium path EE (as defined above). Following Schumpeter, we call the phase extending from A to B, prosperity; the one going from B to C, recession; the one from C to D, depression; and the one from D to F, recovery. The area located within the border formed by the points ABC is called "Above Normal"; while the area located within the border formed by the points CDF is referred to as "Below Normal". All this is consistent with the postulate that the line "EE" represents an equilibrium path for permanent income, on the basis of the existing amount of real money balances in the economy. Furthermore, given our assumption that the value of K does not exceed unity, and the postulate that β is smaller than 1, we may, therefore, compare the value of the product $K\beta$ to 1. As we do this, we notice that the closer $K\beta$ is to 1, the greater is the variation that is induced in the demand for real money balances and hence in measured income, provided that actual real money balances do not change correspondingly. This is due to the fact that a large $K\beta$ gives rise to a large variation in the demand for real balances, as permanent income changes; if actual real balances remain unchanged, then the inducement to cut down expenditures in order to satisfy an increase in the demand for money balances, or to increase expenditures in order to get

rid of excess liquidity, will be the stronger.[1] Thus, there is no lack of symmetry between a situation which is defined as "above normal" and one which is regarded as "below normal", when it is question of the value of the product $K\beta$.

Suppose, however, that we ought to consider the direction of the changes in the level measured income in relation to the ceiling FF, a restraint imposed by the availability of limited resources in the economy. Consequently, any variation in the level of permanent income which causes measured income to move away from the line FF in a downward direction, will be regarded as "destabilizing". On the other hand, we will speak of a "stimulating" change in permanent income whenever a given variation in the latter gives rise to a change in measured income in the direction of the line FF. Thus, when permanent income rises above its equilibrium path, this represents a change which is destabilizing, because of the ensuing decline in the level of measured income. On the other hand, when permanent income falls below its equilibrium path, we will speak of a change which is stimulating, because such a change generates excess real money balances, which will lead to an increase in total expenditures, and hence in measured income. This distinction can be pushed further by taking into account not only the proportion of permanent income people desire to keep in the form of real money balances, but also the magnitude of the change in permanent income itself; in other words, we ought to consider the value of the product $K\beta$, while using 1 as a basis for comparison. Then we can set up the following table:

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1 See what has been said on pages 156-160 above.

Phase	Location of Y^p in relation to the line "EE".	Value of $K\beta$ compared to 1	Effects of change in Y^p upon the level of Y
1 Prosperity	above	the closer to 1	the more destabilizing
2 Recession	above	the closer to 1	the less destabilizing
3 Depression	below	the closer to 1	the more stimulating
4 Recovery	below	the closer to 1	the less stimulating

There is only an apparent lack of symmetry between the results contained in this table, which comes from the fact that we are using a different criterion than in our former analysis of the implications of the value of $K\beta$.[1] Let it then be recalled that, in setting this table, we were concerned with the direction of the changes in the level of measured income (Y) in relation to the line FF which marks full employment (Cf. Fig. 9, p. 162), while these changes were induced by variations in the demand for real money balances generated by fluctuations in the level of permanent income.

Now, since this study deals essentially with underemployment equilibrium, phases 3 and 4 -- that is, the depression and the recovery respectively -- are the ones that matter here. Actually, there is a close connection between these two phases, since the recovery will be the stronger, the greater the decline in permanent income below the equilibrium path EE. As we have seen above, the fall in permanent income below the line EE generates a positive gap between

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1 See page 172 above.

the existing amount of real money balances and the amount people desire to hold in the light of the new level of their permanent income.[1] Thus, given the value of K (which expresses the demand for money balances), this gap will be the larger, the more permanent income will have fallen below the equilibrium path EE. Now, the gap between actual and desired real money balances measure the extent to which excess liquidity exists. We can conclude, therefore, that the greater the fall in permanent income below EE, the larger will be the excess liquidity thus created, and hence the stronger the inducement for people to decrease their cash balances in order to bring them down to their new desired level in the light of the lower level of permanent income. The attempts to decrease these money balances will take the form of an increase in total expenditures, which will stimulate output and employment. In summary, the strength of the upturn in the level of actual output and employment will depend upon the magnitude of the increase in total spending generated by the presence of excess liquidity the dimensions of which depends in turn on the extent to which permanent income deviates downwards from the equilibrium path EE.

The application of these theoretical findings to the effects of a change in the quantity of money upon the level of prices is straightforward. Given the assumption that the demand for money is a function, not a measured income, but of permanent income, it follows that account must be taken of the variations in the latter variable

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1 J.A. Schumpeter remarked that the further away from the "normal" level goes the level of economic activity, during the period of prosperity, the more pronounced will be the subsequent fluctuations, or the deeper the ensuing contraction. All the phases of the cycle are closely related to one another. Op. cit., See also A. Hansen, Business Cycles and National Income, New-York, 1951, p. 8ff.

as the quantity of money is increased. This is obvious, since a rise in permanent income means that people now desire to hold a larger quantity of money. If we assume that people are free of money illusion, then the price level cannot rise in proportion to the increase in the quantity of money as permanent income rises; otherwise, that is, if prices rose proportionately to the increase in the money supply, real money balances would remain the same as before, and hence the increase in the demand for real money balances would not be satisfied. Thus, given the assumption that people do not suffer from money illusion, the question is whether an increase in the money supply will affect the level of permanent income, or not, and hence the demand for money. Moreover, it is necessary to know in what direction will these variables be affected before a conclusion can be drawn as to the effects of the increase in the quantity of money upon the level of prices. Actually, the matter is much more complicated than it is usually thought. In the present case, for instance, it is relevant to ask whether a change in permanent income will be accompanied by a change in people's pattern of expenditures. Such a change would probably lead to a reallocation of resources between uses, and this might have some effects upon the efficiency of the factors of production with probable consequences for the future levels of output, employment, real income and prices. We shall not, however, pursue this discussion any further, for lack of purpose in the present context.

Fundamentally speaking, the above considerations do not differ from the argument which has been advanced by the Cambridge school and which was embodied into what is referred to as the "cash-

balances" equation. For, what is being emphsized is people's desire to hold money, or, what amounts to the same thing, the demand for money to hold. Nevertheless, the distinction between permanent income and measured income, and the formulation of the demand for money as a function of permanent income give a wider coverage to the approach which is based upon the permanent income hypothesis. The use of the latter approach makes it possible to analyze the effects of variations in the demand for money in a more effective way. Furthermore, it provides us with an explanation for the apparent conflict between the cyclical and the secular behaviour of the income-velocity of money, through the introduction of a stable demand function for money.[1]

With this, we have said all that need be said in order to argue that Patinkin's "real-balance effect" is neither a necessary condition for the automatic restoration of full employment, nor a sufficient demonstration of the validity of the propositions of the Quantity Theory of Money. In other words, we can theoretically rely solely upon variations in the demand for money, induced by fluctuations in permanent income, in order to show that the economic system can generate forces which push it back towards full employment after a disturbance had set in. It is therefore unnecessary to assume perfectly flexible wages and prices and to have recourse to the "Pigou effect", as Patinkin did, to demonstrate the possibility for the system to move automatically back to full employment, when in disequilibrium.

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1 See "Friedman (1959)", Journal of Political Economy, LXVII (1959), pp. 327-351 and pp. 157-161 above, especially p. 159, n. 1.

SUMMARY AND CONCLUSION

This study has given us the opportunity to follow the evolution of early classical monetary theory in its bread lines. It has also put in evidence two different approaches to the theory of money and prices, each one emphasizing a particular function of money, to wit: Fisher's transactions-velocity approach, and the "cash-balances" approach of the Cambridge school. However, there was left the question of establishing a connection between the theory of money and prices and the theory of value and output, a question which bothered the younger Cambridge generation, e.g., R.G. Hawtrey, D.H. Robertson and J.M. Keynes whose Treatise on Money represents one of the first attempts towards a systematic integration of monetary and value theory. The effects of change in the money supply upon the levels of output and employment had to be taken into account, which Keynes intended to demonstrate more conclusively in his General Theory after he became dissatisfied with the tangled web of his Treatise. However, the monetary propositions expressed in the General Theory lacked generality, because, according to Don Patinkin, they do not record the more direct effect of falling prices (or of a falling wage-unit) upon the level of aggregate spending, via the demand for money to hold. This effect constitutes what Patinkin called the "real-balance effect". Consequently, the validity of Keynes' under-employment equilibrium theory must be questioned, since Keynes' liquidity trap, which was used as a counter-argument against the classical belief that flexible wages would eventually restore full employment, ignores the more direct effects of a fall in the wage-unit upon the

level of expenditures; in other words, it ignores the "real-balance effect".

However, even on the purely theoretical level, there are the problem of how much price flexibility should we have in order to make sure that the "real-balance effect" will effectively work, and also the more important question relative to the effect of sizable or continuous price declines upon people's willingness to hold money. In short, there is the possibility that a "real-balance trap" develops, which would have the same consequences as Keynes' liquidity trap; in other words, should a persistent and noticeable decline in prices -- i.e., creeping deflation -- lead to a continuously growing demand for money, there might come a time where liquidity preference becomes itself a function of the decline in prices, in which case any increase in the real value of the nominal stock of money would not give rise to an excess of actual cash balances over desired balances, but would be absorbed, instead, by a corresponding increase in the demand for cash balances, with no effect at all upon the level of aggregate expenditures. Moreover, there is the risk that people do not react to small price changes. On the other hand, it is precisely the adverse effects of substantial changes in prices which must be feared. Therefore, the prerequisites for the "real-balance effect" to operate, namely perfect price flexibility, finally turn out to be probably not the most favourable conditions for it to be really effective. Another factor might do as well as would perhaps the "real-balance effect" under proper conditions. This factor is permanent income, to which we finally related the demand for money.

Given the postulate that permanent income fluctuates less

than measured income -- the difference between the two being defined as the transitory component -- I took the case in which permanent income exceeds measured income at cyclical troughs and falls below the latter at cyclical peaks. Then, expressing the demand for money as a function of permanent income, I obtained cyclical fluctuations in measured income as permanent income varied and thus generated increases in the demand for money, which could not be satisfied by the quantity of money on hand at an unchanged price level. This new demand function for money is a stable one and is represented by the factor "K", that is, the proportion of permanent income people desire to hold in the form of money, in contrast to "k", or the proportion of measured income kept in the form of money. Therefore, full equilibrium obtains when: a) actual money balances are equal to desired money balances, b) permanent income is equal to measured income, and hence c) K is equal to k. However, changes in permanent income will not necessarily provoke fluctuations in the level of measured income, unless the resulting effects of an increase or a decrease in the demand for money are not offset by a corresponding increase or decrease, respectively, in the quantity of money or by changes in the price level in the right direction. In conclusion, given the stock of money and the level of prices, there is a maximum level of permanent income, and hence of measured income, that can be sustained. These levels are determined by liquidity preference which is a function of permanent income. If permanent income should rise above that level, measured income would fall as a result, but not below a certain minimum level determined by the stock of money on hand in comparison to the demand for money; in other words, measured income will stop

falling once permanent income has returned to its equilibrium level - the latter being defined as the one at which, the price level being given, actual money balances are equal to desired money balances. Therefore, given the stable demand function for money, the rate of change in permanent income is the critical factor, because it determines the extent to which the amount of money demanded will vary.

Essentially speaking, all the preceding argument, being based upon the cash-balances equation ($M = KPY$), follows the line of reasoning which was laid down by the Cambridge school. Nevertheless, the distinction between permanent income and measured income, on the one hand, and the formulation of a stable demand function for money, on the other, make it possible to exploit further the potentialities of the notion of the demand for money. Thus, I have been able to describe cyclical fluctuations not only in measured income but in measured income-velocity (defined as the ratio of measured income to the stock of money, i.e., $\frac{1}{k}$). My approach seems to promise more than Patinkin's "real-balance effect". One of the reasons for this is that we actually experience little price flexibility, besides the fact that price changes seem to occur mostly in one direction only, that is, upwards. Moreover, wages are not flexible either and tend to move upwards only. There are also other intricate problems which must be dealt with in the Patinkinian model, particularly with respect to the debtor-creditor relationship as prices change, the elasticity of price-expectations, shifts in the liquidity preference schedule induced by frequent unidirectional changes in prices, etc.

This summarizes the argument which has been developed in this thesis. It now remains to draw some conclusions with a view on

policy applications.

Liquidity preference undoubtedly plays an important part in determining the level of economic activity. For, on account of its being essentially a psychological phenomenon like the propensity to consume or to invest, it reflects, through its variations, the changes that occur in the individuals' attitudes towards spending more or less now than in the future. Furthermore, as we move more and more from a barter exchange economy to a monetary economy, or else as people attach more and more importance to the store of value function of money, the demand for money inevitably becomes a variable to which one must pay increasing attention. It should be added also that the development of new types of financial institutions as well as the creation of new kinds of financial assets which, at least in some cases, are close substitutes for money, represent othe important factors which have to be taken into account in analyzing variations in the demand for money. This is to say that, in the real world, the matter is actually more complicated than I have presented it in this study. Nevertheless, my simplifying assumptions do not harm the fundamental message which this study is intended to convey, namely, the importance of monetary factors in an economy which not only uses money to facilitate exchanges but regards it as a form of holding wealth, that is, as a store of value. From this, it results that people will desire to hold a certain proportion of their total resources in the form of money. Difficulties arise, however, once we try to determine all those assets which add up to an individual's total resources or wealth. Friedman, for instance, has suggested that total wealth includes all sources of "income" or consumable

services, which means that we should count both human and non-human assets in measuring total wealth.[1] But this concept, however interesting it may be, is difficult to handle when we come to empirical investigations. On the other hand, the concept of permanent income is a more workable one, which can be estimated statistically, although it lacks precision.[2] Nevertheless, it has already been applied to monetary theory and is likely to stimulate further research in other fields.[3]

In connection with the problem of the demand for money is the problem of the rate of growth of the economy. My simplified model in Chapter X (Cf. Fig. 10, p. 162) described a situation in which real money balances were permitted to grow at a rate equal to the rate of growth of the economy, the latter being determined by the availability of productive resources. The growth in real money balances may come either from genuine increases in the quantity of money or from falling prices; there is also the possibility that favourable changes in one of these variables will more than compensate adverse changes in the other. For all practical purposes, however, falling prices should be excluded as a means of raising the real value of

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1 See M. Friedman, "The Quantity Theory of Money - A Restatement", in M. Friedman (ed.) Studies in the Quantity Theory of Money, pp.3-21.

2 See M. Friedman, A Theory of the Consumption Function; and his "The Concept of "Horizon" in the Permanent Income Hypothesis" (Mimeographed); also see R. Eisner, op. cit.; and H.S. Houthakker, op. cit..

3 See M. Friedman, "The Demand for Money: Some Theoretical and Empirical Results", Journal of Political Economy, LXVII (1959), pp. 327-351; and his A Theory of the Consumption Function.

money balances in order to satisfy the increase in the demand for money which accompanies the growth in population and in the productive capacity of the economy. Therefore, the increase in real money balances will be expected mainly from genuine additions to the total supply of money. The question remains, however, as to the rate at which the supply of money should be increased.

This question cannot be given a prcise answer unless we know to what extent people suffer from money illusion. Thus in a mature monetary economy where people are fully aware of the relationship that exists between the level of prices and the value of money, it will be easier to predict their behaviour when the quantity of money or prices change than in an economy in which people are not sufficiently familiar with these notions. This is not to say, however, that an individual should automatically be said to suffer from money illusion, if he does not react to a change in the real value of his cash balances. As I pointed out in this study, there may be a certain range over which the average individual will permit his real money balances to fluctuate without necessarily taking steps to adjust them to their desired level. Common experience tells us, for instance, that people often compare the real value of money, not between short periods of time, over which prices have changed very little or not at all, but rather over long periods, viz. people of older generations often compare what money is worth to-day to what it could have purchased twenty, thirty or fifty years ago. On the other hand, we seldom hear people compare the value of money between years or months, or weeks; this is probably due to the fact that price changes between these relatively short periods are not significant enough to attract

attention. Obviously, people would behave in a different manner if there was hyperinflation.[1] Furthermore, we must also appraise the effects of the growth of financial institutions and of other kinds of financial assets such as insurance-policies, short-term bonds, etc., upon people's attitude towards money. For, if these innovations contribute to reduce the gap between money and other types of assets, then monetary management will become more difficult and at the same time probably less reliable.[2] All these considerations point at the difficulties which are inherent in monetary policy. Thus, according to the "real-balance effect", inflationary pressures generate forces which will ultimately bring about the disappearance of these pressures as individuals decrease expenditures in order to build up their cash balances up to the desired level after prices had risen as a result of an increase in the quantity of money; so that, in the end, real money balances have the same value as before.[3] But, this assumes that individuals are completely free of money illusion. Otherwise, they will continue to spend either too much, thereby adding fuel to the already existing inflationary pressures, or too little, thereby preventing a rise in prices in proportion to the increase in the quantity of money -- other things being equal.

The matter becomes even more complicated when expectations

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1 See, for instance, the study which has been done by Phillip Cagan on hyperinflation in six European countries, op. cit., pp. 25-117.

2 See E.C. Simmons, "The Relative Liquidity of Money and Other Things", reprinted in the American Economic Association Readings in Monetary Theory (ed. by F.A. Lutz and L.W. Mints), pp. 33-37.

3 See Don Patinkin, Money, pp. 159-160.

are introduced. In fact, an exact definition of the concept of "money illusion" must take expectations into account. This becomes obvious once it is recalled that money has a store of value function; hence, expectations count among the most critical factors which determine the demand for money and, therefore, complicate the task of monetary management. It should be added, however, that, in a period of relative stability of prices, expectations may not raise serious difficulties, most probably because the human nature is such that it will react only to changes which it considers as abnormal or unusual in comparison to what it recalls from past experience.

In conclusion, I want to stress the necessity for conducting more research in order to improve our understanding of concepts such as permanent income, or to build other meaningful theoretical constructs which are capable of being measured statistically. The future of monetary policy may rest upon the refinement or the discovery of more reliable variables which carry enough information about people's demand for money.

APPENDIX A

The purpose of this Appendix is to deal with the distinction between points that are *on* and points that are *off* supply curves. Patinkin made that distinction when he spoke of the market for labor services and of the quantities of commodities entrepreneurs would be willing to produce under different conditions.[1] In the following, we will recall briefly Patinkin's argument with respect to the market for labor services, before suggesting one other alternative.

First, let us briefly recall the argument that has been brought against the so-called Keynesian labor supply function, which may be expressed by the equation

$$W. = \alpha W_0 + \beta F^{-1}(N)P$$

where N represents aggregate employment; W, the money wage rate; P, the price level; W_0, the historically ruling wage rate -- that is, the rate at which the labor supply curve is thought to be infinitely elastic; $F^{-1}(N)P$, the inverse form of the function $N \equiv F(\frac{W}{P})$ which shows the supply of labor as a function of the real wage rate. As to α and β they are functions of N, W, P, characterized by the following properties:

$$\alpha = 1, \quad \beta = 0 \quad \text{for} \quad N \leq N_0$$

$$\alpha = 0, \quad \beta = 1 \quad \text{for} \quad N > N_0$$

where N_0 represents "full employment". The above equation tells us that the wage rate (W) is equal to W_0 until "full employment" is reached; and after this point, W becomes a variable to be determined

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1 See Don Patinkin, *Money*, *op. cit.*, pp. 220-224, 238-239.

by the system.[1] This is illustrated in Fig. A-1 (p. 188).

Patinkin criticized this labor supply function on the ground that it reflects an inhibition against seeing points off the supply curve, an inhibition that we must free ourselves of in order that "we recognize that the essence of involuntary unemployment is, indeed, being off this curve..."[2]

Patinkin's conclusion is not generally valid. There is at least one other alternative with respect to the shape of the supply curve of labor. The latter need not be single-valued, and it is permissible to represent it, instead, as specifying more than one wage-rate at which a given amount of labor services is supplied. It is preferable, I think, to argue that once a worker enters the labor market, he stands willing to supply his sevices not only at the current wage-rate which induced him to enter the market, but also at all wage-rates above this minimum which, given the level of prices, represents the marginal disutility of employment for the marginal worker -- the latter being defined as a worker who earns only his transfer price, that is, the minimum income necessary to retain him in his present occupation. If this is true, then the labor supply function will not be single-valued; but, instead, it will correspond to a "thick curve" or to a whole area the base of which is the locus of the minimum wage-rates which are necessary to attract an increasing number of workers on the market (or, the traditional supply curve of labor as we know it). Fig. A-2 on page 188 describes this function (Cf.

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1 See F. Modigliani, op. cit., p. 188ff. or pages 119-120 of this study.

2 Don Patinkin, Money, op. cit., p. 239.

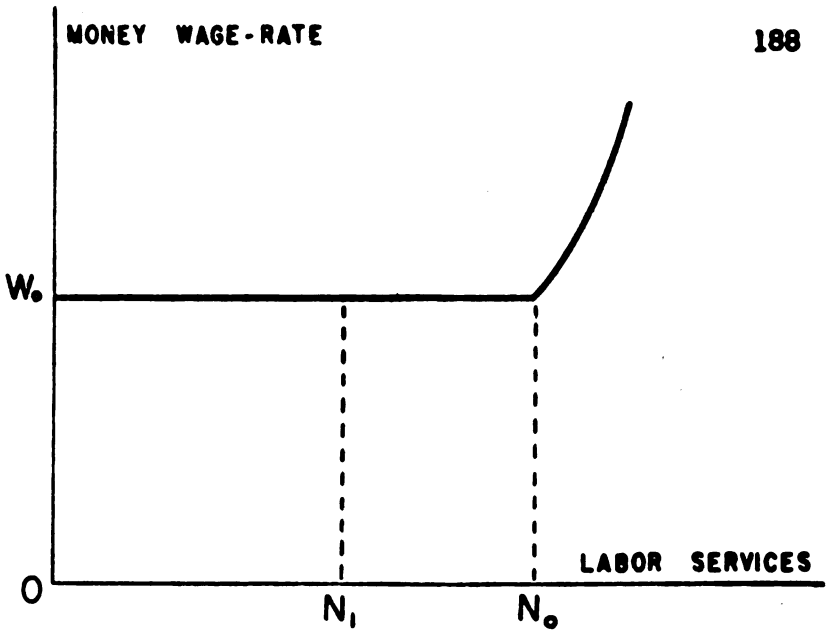

Fig. A-1

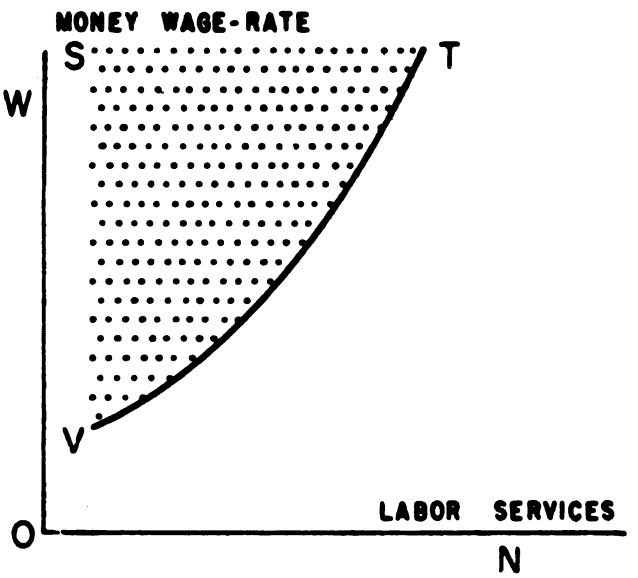

Fig. A-2

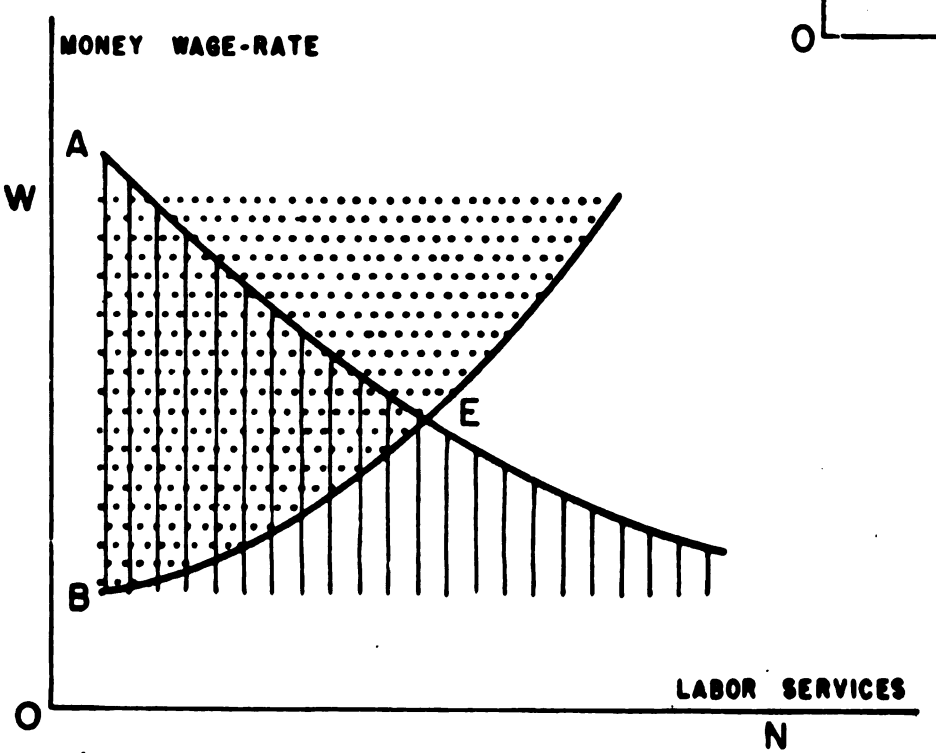

Fig. A-3

the shaded area STV).

Therefore, one should speak of points that are within or off the area; to be off the area implies that workers, or just some of them, are receiving a wage-rate which is below the marginal disutility of employment for them. On the other hand, to be within the area does not necessarily mean equilibrium in the sense that neither the wage-rate, nor the level of employment are subject to change. There may be a gap between the existing amount of employment and the amount workers would like to get in the light of the prevailing wage-rate; such a gap is, indeed, the essence of involuntary unemployment. As a matter of fact, Patinkin's argument involves a contradiction about the shape of the supply curve of labor. Patinkin said that the shape of this curve does not matter, since the essence of involuntary unemployment is being off this curve. But, if such is the essence of involuntary unemployment, then the shape of the supply curve does matter, since the latter cannot be drawn horizontal between any two points, viz. the curve which Modigliani's equation describes and which is usually drawn to represent the Keynesian supply curve of labor. (Cf. Fig. A-1). At the current wage-rate W_0 , workers are willing to provide an amount of services designated by N_0; but, this does not mean that they will succeed in selling all these services. If the avtual level of employment is N_1, involuntary unemployment to the extent $N_0 - N_1$ will then be said to exist, while workers remain on their supply curve. In this case, the essence of involuntary unemployment could not be said to being off the supply curve. It follows, therefore, that, if one accepts Patinkin's views as to what constitutes the essence of involuntary unemployment, one must reject

the supply curve represented in Fig. A-1. At the same time, however, the supply curve of labor need not have the shape which the Keynesians usually attribute it. According to our own proposition, this curve need be neither single-valued, nor multi-valued in the sense that it specifies more than one amount of employment at a given wage-rate (the Keynesian labor supply curve); it may be regarded, instead, as specifying more than one wage-rate at which a given amount of employment is supplied, on the ground that any worker who enters the labor market is willing to supply his services at all wage-rates above the one he considers as the minimum to induce him to offer his sevices, in which case, it would rather correspond to an area.

But, in order to show that a point within the area does not necessarily imply that a position of equilibrium has been reached, we need consider the demand side of the market.

Given a fixed stock of capital and constant prices, the usual demand curve for labor is the curve which shows the marginal value product of labor services as more and more labor is applied to an unchanged stock of capital. If it is assumed that we are operating under diminishing returns, this curve will be downward sloping, thereby indicating a larger and larger quantity of labor demanded as the money wage-rate diminishes. However, the quantity of labor demanded need not correspond to the quantity actually employed, for the latter depends on the level of effective demand; in other words, entrepreneurs will hire that quantity of labor the output of which will be entirely sold on the market. On the other hand, they will not hire labor beyond the point at which the wage-rate is equal to the marginal value product of labor. This amount to say that each point on the curve

which expresses the marginal value product of labor is equivalent to a restraint upon the amount of employment that will be given in the light of the prevailing wage rate; then the demand curve for labor is made of a series of such points and constitutes, as a whole, an additional restraint which, besides the marginal disutility of employment, must be taken into account when one speaks of the maximum level of employment that may at any time prevail in the economy. As in the case of labor, we can argue that, once an entrepreneur hires a worker at the current wage-rate, this means that this entrepreneur will continue to buy the services of that worker at any wage-rate below the latter's marginal value product. If all the entrepreneurs behave in that way, then the demand curve for labor will not be single-valued; it will specify, instead, more than one wage-rate at which a given amount of employment is offered and will correspond, therefore, to an area the upper limit of which is the marginal value product of labor (i.e., the usual single-valued demand curve for labor). Thus, in both cases (supply of and demand for labor), we obtain what may be called a "thick" curve; and, since the limit of this "thick curve" is upward sloping in one case (supply), and downward sloping in the other case (demand), it follows that, by drawing both "thick" curves on a diagram, we will get an area which will be common to the demand and the supply sides in the labor services market; this area is the one that is formed by the usual single-valued demand and supply curves for labor to the left of the point of intersection between these two curves (Cf. the area AEB in Fig. A-3, p. 188). Under these conditions, the essence of perfect competition in the labor services market will be to determine which wage-rate will prevail at a given

level of employment, subject to the two restraints imposed by the marginal value product of labor, on the one hand, and by the marginal disutility of employment, on the other. Put differently, a point within the common area will indicate a given amount of employment provided at a certain money wage-rate; since the level of employment depends on the level of effective demand, then given the latter, fluctuations in the wage-rate will not lead to changes in the level of employment but will reflect, instead, the efforts of entrepreneurs, on the one side, and of workers, on the other, to push the wage-rate to the most profitable limit in the light of their own individual interests. In other words, given the level of employment, entrepreneurs will be induced to pay the minimum wages acceptable to workers, that is, to reduce the wage-rate until it comes into equality with the marginal disutility of employment; whereas workers will seek to obtain the maximum wages acceptable to entrepreneurs, that is, they will ask to be paid a wage-rate that is equal to the marginal value product of labor. Equilibrium obtains, therefore, when both entrepreneurs and workers are both satisfied; that is, when entrepreneurs are actually paying the minimum wages acceptable to workers and that these minimum wages are in turn equal to the highest wages entrepreneurs would be willing to pay under the prevailing conditions in the market. Such a situation exists only at the point at which the area common to the demand and the supply sides of the labor market comes to an end (Cf. point E in Fig. A-3). At this point, there is no further inducement to increase or to decrease the wage-rate on the part of either the entrepreneurs or the workers. For, given the current wage-rate, entrepreneurs will be the more induced to decrease

money wages, the larger the existing excess supply of labor (that is, the larger the difference between the total quantity of labor supplied at a given wage-rate and the quantity actually employed). Similarly, the inducement for workers to demand higher money wages will be the stronger, the larger the excess demand for labor (that is, the greater the difference between the quantity of labor services demanded and the quantity actually employed at the prevailing wage-rate). The net effect upon the wage-rate will depend, of course, on the respective magnitudes of these excesses; money wages will go up if the excess demand is greater than the excess supply, and vice versa. If the excess demand is equal to the excess supply, then the wage-rate will have reached an "equilibrium" position since, under these conditions, there will be no forces to push it effectively either upwards or downwards. In this case, however, involuntary unemployment will be said to exist to the extent of the excess supply of labor, or of its equivalent, i.e., the excess demand for labor. Thus, the essence of involuntary unemployment is not being off a single-valued supply curve, but rather the fact that both the aggregate supply of labor willing to work for the current money-wage and the aggregate demand for it at that wage are greater than the existing volume of employment. Another definition of involuntary unemployment would be the following; men are involuntarily unemployed as long as there is room either for entrepreneurs or for workers to improve their position, the former by reducing the wage-rate until the minimum acceptable to workers, and the latter by raising it until the highest level acceptable to entrepreneurs. This is the definition that can be drawn from the approach which we have suggested in this Appendix.

APPENDIX B

This Appendix will deal with a third indictment which has been launched against Keynes' General Theory, by Patinkin, namely that Keynes overlooked the Supply side of the market in his analysis of the fluctuations in the levels of employment and income. According to Patinkin, the Keynesian "diagonal-cross" diagram has to be abandoned, because it "takes account neither of the supply side of the commodity market nor of the real-balance effect which its excess over the demand side generates."[1] In analyzing this charge, two points will be considered: in the first place, a comprehensive survey of the controversy surrounding the Supply side of the Keynesian theory will be made; secondly, we will attempt to demonstrate that Keynes did not fail to consider the possibility of an excess of supply over demand in the commodity market.

The controversy around the Supply side of the Keynesian theory is not yet over. In his "Involuntary Unemployment and the Keynesian Supply Function",[2] Patinkin complained that Keynes failed to take into account the supply side of the market, which prompted F.D. de Jong, a Dutch economist, to reply in a paper in which he formulated three main propositions, to wit:

Proposition II: Patinkin's complaint that the supply side of the system would have been neglected in traditional Keynesian economics is not legitimate. In the first place, Keynes himself combined

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1 D. Patinkin, op. cit., p. 237.

2 Economic Journal, LIX (1949), pp. 360-83.

an "Aggregate Supply Function" Z (N) with his "Aggregate Demand Function" D (N); and their point of intersection -- which is the point at which the entrepreneurs' expectation of profits will be maximized -- is the point of effective demand, giving the volume of employment.

Proposition XI: Keynes' analysis in pp. 24-25, as depicted in our Fig. 5 comes exactly to the same thing as the nowadays widely known graphical analysis by means of the 45° line, as shown in our Fig. 1.

Proposition XII: Keynes' General Theory implies the Familiar Supply Function: this is the second reason why Patinkin's complaint that the supply side of the traditional Keynesian economics is not legitimate.[1]

Sir R.G. Hawtrey, for his part, remarked that "Keynes" Supply Function, in terms of effective demand, does not differ materially from the "familiar" supply function in terms of price.[2] This statement also met the approval of Sir D.H. Robertson who, in addition,

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1 F.G. de Jong, "Supply Functions in Keynesian Economics", Economic Journal, LXIV (1954), pp. 3-24, especially pp. 9, 19-24, henceforth referred to as "de Jong (1954)". -It is surprising, indeed, that not a greater place has been reserved in Patinkin's book, to de Jong's article, but the last part of a note at the end of the book; and to crown it all, Patinkin warns us that he is going to refer "briefly" to the article. Yet, the conclusions of the latter may seriously impair the argument of the Patinkinian model, and, for this reason, it should have been allocated a much proper place, particularly in the Unemployment Model.

2 "Keynes and Supply Functions", Economic Journal, LXIV (1954), p.837; also see, P. Wells, "Keynes' Aggregate Supply Function", Economic Journal, Vol. LXX (1960), pp. 536-38.

offered further evidence based upon Keynes' own writings: "D is the sale-proceeds for which it is expected that the output from employing N men can be sold. D' is the sale-proceeds the expectation of which will cause the output from employing N men to be produced. It is simply the age-old Supply Function. "And a little farther on Keynes spoke again of D' as "only a re-concoction of our friend the Supply Function."[1]

These interpretations are surely in accordance with Keynes' own definition of the Aggregate Supply price for a given amount of employment, to wit: "... the aggregate supply price of the output of a given amount of employment is the expectation of proceeds which will just make it worth the while of entrepreneurs to give that employment."[2]

Furthermore, if we take into account the point made by Keynes to the effect that "For the nation as a whole, leaving on one side transactions with foreigners, its income is exactly equal to its expenditures (including in expenditure both consumption-expenditure and new capital-expenditure, but excluding intermediate exchanges from one hand to another); the two being simply different names for the

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1 D.H. Robertson, "Keynes and Supply Functions", Economic Journal, LXV (1955), p. 474.

2 Italics are mine. See the General Theory, p. 24. This is in fact what D.H. Robertson wants to stress when, upon commenting de Jong's article, he notices: "first, he (de Jong) surely leads us astray in saying that for any given volume of output the intercept between the 45° line and the curve of aggregate factor costs "indicates entrepreneurs expected profits"; what it indicates is the profits which, if they were (italics his) expected, would suffice to elicit (italics mine) that volume of output." D.H. Robertson, loc. cit., p. 475.

same thing, my expenditure being your income".[1] the fact is that, as Robertson rightly pointed out, we have three choices as to what to plot along the horizontal axis -(i) real output, (ii) the money value of real output, (iii) numbers employed; and two choices as to what to plot along the vertical axis, (a) money sales proceeds, (b) the real value of money proceeds."[2]

Thus the shape of the Supply Function depends on which of the preceding combinations we choose; under (ii) (a) and (i) (b) -- respectively Dillard's and de Jong's combinations -- we get in each case a mere 45° line expressing the Supply Function; whereas under (iii) (b), the function will be concave to the horizontal axis (e.g., Fig. 4, quadrant II, p. 107). The shape of the Function then depends on the manner in which one envisages the conditions under which various levels of output will be marketed. We usually think in terms of price and output, thus we say that at higher prices, more will be supplied (combination (i) (a)), so that we get a positively sloping curve. However, we could also say that larger quantities are supplied for larger proceeds, viewing the phenomenon from the seller's standpoint. Both statements describe the same thing, since they both describe the same movement along a given supply curve. This is what Keynes meant in the General Theory when he wrote:

$$p = \frac{\partial r}{\partial r} = \frac{\phi_r(N_r)}{\psi_r(N_r)}$$ [3]

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1 J.M. Keynes, The Means to Prosperity, (1933), p. 12; also the General Theory, Chapter VI, especially p. 62ff.; and R.G. Hawtrey, loc. cit., p. 838.

2 See D.H. Robertson, loc. cit., p. 475; and also Dillard's Economics of John Maynard Keynes, pp. 30, 34; and de Jong, op. cit., Fig. 7, p. 13.

3 J.M. Keynes, General Theory, p. 44.

that is, the price level, p, is equal to the expectation of proceeds, Z_r, "which will just make it worth while for entrepreneurs to give" the amount of employment N_r, divided by the total output, O_r, resulting from that amount of employment. $Z_r = \phi r(N_r)$ is the Aggregate Supply Function, and $O_r = \psi r(N_r)$ the expression of the relationship between employment and output. This explains why Keynes pointed out that the sale proceeds the expectation of which will cause the output from the employment of N men to be produced is "only a reconcoction of our friend the Supply Function."[1]

It seems equally unrealistic to contend that the 45° line does not take into account the limitations of the productive capacity of the economy. The falsity of this assertion is demonstrated when the line is properly interpreted, and still further when we recognize that Keynes did not altogether threw over the sedond classical postulate -- namely, "the utility of the wage when a given volume of labor is employed is equal to the marginal disutility of that amount of employment."[2] Thus he said:

> (5) Hence the volume of employment in equilibrium depends on (i) the aggregate supply-function, (ii) the

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1 D.H. Robertson, Loc. cit., p. 474.

2 General Theory, p. 5, and pp. 30, 284. - Keynes was in fact defining full employment in the sense that workers are on their behaviour equations, or their supply curves, when he spoke of the equality between real wage and the marginal disutility of a given amount of employment. However, at an other place in his book, Keynes offered another definition for full employment: "An alternative, though equivalent, criterion is that at which we have now arrived, namely a situation in which aggregate employment inelastic in response to an increase in the effective demand for its output." General Theory, p. 26. We may say that the latter definition corresponds rather to a 'quantitative' definition; whereas the former, in terms of labor, is rather 'qualitative', that is, it helps distinguish between voluntary and involuntary unemployment.

> propensity to consume, and (iii) the volume of investment, D. This is the essence of the General Theory of Employment.
>
> (6) For every value of N there is a corresponding marginal productivity of labour in the wage-goods industries; and it is this which determines the real wage (the first fundamental classical postulate). (5) is, therefore, subject to the condition that N cannot exceed (italics his) the value which reduces the real wage to equality with the marginal disutility of labour ...[1]

Thus what seems to have spread confusion is the fact that Keynes did not express his Supply Function in terms of a relationship between output and price, as it is familiar to us, but rather in terms of effective demand. Therefore, we cannot agree with Patinkin when he says that Keynes overlooked the supply side of the market, at least until he shows -- as indeed he hopes to do -- that de Jong's propositions are irrelevant to his argument.[2]

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1 Italics are mine. General Theory, p. 29.

2 See what has also been said about the consistency between Keynes' assumptions and his conclusions, on page 127 ff. above.

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