# THE ROLE OF FINANCIAL MARKETS IN THE CHOICE OF INAPPROPRIATE TECHNOLOGY IN DEVELOPING COUNTRIES

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# INTRODUCTION

This research aims to explain the choice of inappropriate technology in less developed countries, which raises unemployment and retards growth.

By inappropriate technology we do not simply mean a labour-saving group of techniques, but a 'labour-saving-capital-using' one. That is, a technology which, at the time that raises the capital-labour ratio and the capital-output ratio, also lowers the rate of profit.

One would expect that the choice of a more mechanised technique would respond to its yielding a higher rate of profit, for otherwise, entrepreneurs would prefer to hire more labourers at the same degree of mechanisation. - Nevertheless, statistics reveal that firms do not always behave as profit-maximisers. This phenomenon has often been explained on the grounds of the separation of ownership from control in the modern corporation [1], and the apparent abandonment of profit maximisation as the main entrepreneurial - goal, and its replacement by others, like managements' autonomy.

It could also be explained as a temporary disequilibrium situation.

In this research, we shall endeavour to find out the reasons which account for the choice of inappropriate techniques. Although we shall be primarily concerned with this situation in less developed countries, the explanation might also hold for the industrialized ones.

Since the choice of technique is accounted for by the same variables which determine investment, in the first chapter we shall review some of the most comprehensive models (i.e. those which rest on the more realistic assumptions) which explain investment behaviour.

In order to assess the significance of cross-section data of firms when they reveal the phenomenon of inappropiate technology, in chapter 2, we shall

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1 See for instance, J. K. Galbraith, "The New Industrial State", Penguin Books, Harmondsworth 1972.

analyse the performance of alternative techniques under different assumptions concerning conditions in the labour market and technical progress. In this chapter, we aim to define the conditions under which the choice of inappropiate technology should be interpreted as a temporary disequilibrium - situation.

In chapter 3, we analyse how highly liquid financial markets affect investors' behaviour towards risk, and its consequence for the choice of technique. On the basis of our results, we build up a micro-economic model of investment behaviour, which explains the choice of technique and the distribution of income in the individual firm, as a result of the latter's maximising speculative profits at security markets.

In chapter 4, we analyse other effects of financial markets on firms' growth. We look into the economies of scale that arise from the integration of activities among a banker's customers on account of the bank's role as clearing house for its customers' mutual payments. We also consider the effects of a positive relation between price and demand for securities on security dealers' practices, and other monopolistic effects brought about by the diffusion of ownership in the joint-stock company.

On the basis of these elements, we propose a theory to explain the development of financial groups.

In chapter 5, we work out the macro-economic consequences of this theory and the micro-economic model of investment behaviour that we proposed in - chapter 3. We propose a theory which explains growth, prices and business cycles, on the basis of changes in the relative shares of the financially integrated sector of the economy and the independent sector. Finally, we contrast the propositions of this theory with those that underlie the controversy between the Keynesian and the Monetarist streams of thought.

In the last chapter, we present some empirical estimates concerning the rate of speculative profit in Mexican industrial firms. They support the hypothesis that firms maximise speculative profits at financial markets, - rather than profits from their operations in real markets, and that, for this reason, they use inappropriate technology.

In the development of these ideas, I owe much to John Craven, who supervised this work and rescued me from numerous errors and misunderstandings. I am also indebted to Anthony Thirlwall, Charles Sutcliffe, and Thea - Sinclair, for helpful comments and criticisms. Any remaining errors, however, are my sole responsibility.

I am grateful to the authorities at Direccion General de Politica de Ingresos, in Mexico, for providing the required statistical data. Also to the staff of the U.K.C Computing Laboratory for their assistance in the empirical research.

Finally, I wish to thank all my friends in Canterbury, from whom I got less academic though equally needed intellectual support.

M. G. M. B.

# Chapter 1

## THE THEORY OF INVESTMENT

Growth and choice of technique are bound together in entrepreneurial decisions. So, it is important to make clear what the growth policy objectives of entrepreneurs are, in order to know what determines their choice of technique and, eventually, the level of employment.

Economic theory has been largely concerned with capital accumulation, and the choice of technique, in response to relative factor prices. Under perfect competition, available resources are supposed to be allocated in the most efficient manner by means of appropriate commodity and factor prices, which are simultaneously determined in an interdependent system.

The concept of capital, however, has been given different interpretations in Economics. To some authors, it means finance in general, and, as such, it does not label any particular type of commodity, whereas to others, it only comprises fixed productive assets. On the other hand, differences, in the length of the period in which equilibrium prices can be reached, or more precisely, the speed at which prices approach their equilibrium levels in particular markets, has been given minor importance, under generally accepted, and certainly reassuring expectations of their convergence.

It is important, however, to know to what extent these periods of adjustment may affect capital profitability and, thereby, the choice of technology and growth itself. It is in the market for capital goods where the adjustment period is likely to be the longest, simply because the durability of these goods spaces out in time the responses from supply and demand.

In contrast to this slowness of adjustment in its "real" market, capital in financial markets is traded actively. Supply and demand interactions may take only a few seconds, as expressed in prices asked and bid at Stock Exchanges, and equilibrium prices can be approached in a shorter period of time than the one required by the most perishable commodity.

"Buyers" of capital goods do not have to wait until the end of the assets' life to know about their profitability, or to realise their profits. The development of joint-stock companies enables capitalists to abbreviate adjustment periods by buying and selling, in the space of few hours or minutes, either profitable or unprofitable undertakings. Similarly, "sellers" of capital goods are not expected to rely on the slow reactions of real markets in order to assess the profitability of capital goods for the users, and thence to fix their prices.

Simulation of commodity markets' behaviour is supposed to underlie financial markets' performance. When people buy or sell stocks, they are supposed to be trading capital assets that will yield an income stream which, if discounted at an appropriate rate of return, would equal the price of the stocks.

In this way, long run gains and losses from the operation of productive assets are capitalised in the short run. If a given concern is thought to enjoy monopoly rents in the coming years, and if, accordingly, its shares are likely to be paid higher than average dividends, the financial market will price its stock in very much the same manner as the real market for goods will price its productive assets, that is on the basis of their productivity.

Capitalisation of <u>expected</u> returns on financial assets substitutes for the lengthy adjustment period by means of which capital goods would reach equilibrium prices in line with their productivity in terms of consumer goods. Expectations in financial markets thus substitute for <u>actual</u> price changes in commodity markets.

This change in the observable measure of relative prices on which investment decisions - and the choice of technique - are to be based is of the utmost importance for economic policy. Since productive assets are long lasting, and firms cannot quickly adjust to changes in their market value as a result of changes in the state of expectations in financial markets, it becomes all the more implausible that managements rely on current relative factor prices in

real markets when committing capital to production for a number of years ahead.

Yet, this phenomenon has been given little recognition in economic literature. Economics has largely tended to look for investment determinants in commodity markets, thereby emphasising the role of relative factor prices, the level of capacity utilisation, demand conditions, etc.

In contrast, Management Science has focused attention on investors' preferences as expressed in financial markets, but it has not carried on the results of analysis at micro-level to its conclusions at macro-level. Accordingly, it has committed itself to the search for policies to minimise risks and to maximise returns from investment under given budgetary constraints.

Not until recently have efforts been made to build up a theory of investment which binds together the elements that determine the value of firms in financial markets, with the "real" elements that account for the expansion of capacity. Nevertheless, even nowadays, recognition to the interaction of real and financial markets does not go far beyond the harmonisation of traditional views with respect to the roles of the rate of interest as a constraint on fixed capital expansion, and the real return of investment (the rate of profit in product terms) as a determinant of the market value of firms. The effects of investors' behaviour towards risk on the choice of technique, and therefore on the level of economic activity, have not yet been properly surveyed.

Uncertainty, however, has been entering growth models in different ways. In order to assess the 'state of the art' - as a first step in the attempt to integrate a theory of investment and employment - , we shall analyse some of the most comprehensive models that hitherto have been proposed to explain investment behaviour.

Our selection of models was based both on the realism of their assumptions, and on the scope of their analytical framework. Accordingly, we shall refer to models which allow for imperfections either in product, or in factor markets, or in both; to models whose framework aims to explain investment at both micro

and macro-levels; and to models which explicitly consider the interaction of real and financial markets.

Each model was built up to serve particular analytical purposes, and so we analyse them in isolation. Therefore, the order in the text is largely arbitrary.

A. Traditional Theory of Finance.

Traditional theory of finance has been concerned with the determinants of investment at the micro-level. Uncertainty enters investment decisions as a risk of default on account of firms' increasing leverage[1]. Thus, leverage affects the market value of the firm[2]. It neglects firms' asset composition - and, thereby, the technique - , and focuses attention on the liability side of the balance sheet . Thus, it defines

$$V = B + S \qquad (1)$$

where V is the market value of the firm, B is the market value of its bonds (as representative of the firm's liabilities), and S is the market value of equity.

Maximisation of V, the market value of the firm, is supposed to be the main entrepreneurial objective. It involves an optimal rate of growth of equity and an optimal degree of leverage.

Market values B and S are determined by $k_b$ and $k_s$, which represent the rates of return on bonds and stocks, respectively, demanded by investors after taking into account the risks involved in the degree of leverage already attained by the firm (i.e. the ratio of liabilities to equity in book values).

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1 By leverage we mean the ratio of liabilities to equity.

2 For an extended exposition of this theory, see F.B. Renwick, "Introduction to Investments and Finance", Macmillan, New York 1971.

The firm decides on the nominal rate of interest to be paid on the book value of its bonds ($i_b$), and also on the dividend to be paid on its shares of stock (d). But is is the market which determines the "real" rates of return $k_b$ and $k_s$ through the prices of bonds and stocks, on the basis of the expected income stream and the risk of a given leverage. These relationships can be expressed in the following set of equations:

$$k_b = f_1(L/E) \tag{2}$$

$$k_s = f_2(L/E) \tag{3}$$

$$B = i_b L/k_b \tag{4}$$

$$X \equiv \pi - i_b L \tag{5}$$

$$S = (1-b)X/k_s = dX/k_s \tag{6}$$

where L and E stand for the book values of total liabilities and equity, X for net operating income, $\pi$ for gross profits, and the rest of symbols keep the meaning we had already given to them.

As a firm increases its leverage, $k_b$ and $k_s$ increase, ceteris paribus.

Net operating income (X) equals gross profits ($\pi$) minus interest paid to bondholders ($i_b L = k_b B$). Therefore, as leverage increases, interest payments rise, and net operating income rises less than proportionately to assets. Credit, i.e. increasing leverage (L/E), may increase the rate of return on equity $\left[\frac{(1-b)X}{E}\right]$, provided interest payments do not wipe out the whole of net income coming from the productive use of additional finance. That is, the rate of return on equity will rise as long as $\Delta X > \Delta i_b L$; or, in other words, provided $\frac{\partial \pi}{\partial K} > \frac{\partial k_b B}{\partial L}$.

As credit finances additional assets and, thereby, raises the expected income stream forthcoming from a share, it may raise the market value of the firm. The limit to increasing leverage comes when a further increase in liabilities raises $k_s$, the rate of return investors demand from stocks, to a larger extent than it raises net operating income. Similarly, under this

approach, increases in equity occur provided that the combined effect on the market value of the firm of a) the increase in net operating income forthcoming from the productive use of additional finance, and b) the decrease in the rate of return on stocks ($k_s$) demanded by investors - as the ratio of liabilities to equity falls - , is at least equal to the additional finance to be committed to production.

Thus, according to the traditional theory of finance, investors' preferences as expressed in their behaviour towards risk, determine the market value of firms, on the basis of a given rate of return on physical assets.

Since the rate of return, i.e. the amount of operational profit, is a datum, the technique plays no explicit role in investment decisions. It is assumed to be that which maximises operational profits at given factor prices. Investors' risk aversion, therefore, does not affect firms' asset composition, but only their financial flows.

B. Keynesian Growth Models

Keynesian models can be split into two groups: one, which assumes that monopolistic competition in commodity markets is the natural state of affairs in capitalist economies; and the other, which comprises Keynes's model itself, and which considers commodity markets' imperfections as transitory phenomenon. Both groups, however, agree on the prevalence of factor markets' imperfections, which account for wage bargaining being carried out in money terms, and for investment decisions depending upon a marginal efficiency of capital which exceeds the market rate of interest. To these latter conditions we shall refer as quasi-perfect competition.

From the former group, we have selected, as representative, J. Robinson's, Kaldor's and Kalecki's models. From the latter one, we look at Keynes's and Tobin's.

Keynes's Model

Keynes did not attempt to deal with the choice of technique. Nevertheless, the way in which he introduced uncertainty in investment decisions gives reasons to suspect that he would not have shared the beliefs of neo-classical theorists, taking for granted that entrepreneurs would choose the technique which, at the ruling factor prices maximised total profits.

In this respect, he was keen to point out his disagreement with prevailing beliefs by stressing the ambiguity involved in the concept of marginal productivity of capital when uncertainty in investment decisions is given recognition. On this matter he wrote:

..."there is the distinction between ... the increment in value obtainable by using an additional quantity of capital in the existing situation, and the series of increments it is expected to obtain over the whole life of the additional capital asset, i.e. the distinction between [the prospective yield] $Q_1$, and the complete series $Q_1$, $Q_2$, ... $Q_e$. This involves the whole question of the place of expectation in Economic Theory"[1].

In fact, the basis for his declining investment-demand schedule was that the prospective yield of a capital asset tends to decrease in time. Higher demand for a given type of asset lowers its marginal productivity at the time that it increases its price. Thus, for each type of capital, he held, one could build up a schedule showing how much investment would bring its marginal efficiency down to any given figure. One could then aggregate these schedules to provide a schedule relating the rate of aggregate investment to the marginal efficiency of capital - what he termed 'the investment demand schedule', or 'the schedule of the marginal efficiency of capital'[2].

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[1] J.M. Keynes, "The General Theory of Employment, Interest and Money", Macmillan, Cambridge University Press 1973, pp.138-139.

[2] Ibid. p.136

As the marginal efficiency of a given type of capital is thought to decline with the passage of time, so the prospective income from those assets also falls. Even though, as a result of competition, the marginal efficiency of capital must be equal for all capitals invested - that is, the average "rate of discount which would make the present value of a series of annuities given by the returns expected from the capital-asset during its life just equal to its supply price"[1] - , the yearly return on capital depends on the different life periods of the capital goods, as well as on the changes in their marginal efficiency that had been brought about by growing capital accumulation in the past.

Accordingly, Keynes concludes ... "The ordinary theory of distribution, where it is assumed that capital is getting now its marginal productivity ... is only valid in a stationary state. [In reality] The aggregate current return to capital has no direct relationship to its marginal efficiency; whilst its current return at the margin of production (i.e. the return to capital which enters into the supply price of output) is its marginal user cost, which also has no close connection with its marginal efficiency"[2].

Therefore, the marginal productivity of capital, as conceived by Keynes, involves the consideration of future changes in product and factor markets' conditions. These various elements account for what he terms "the state of long-term expectation". They comprise changes in the stock of the various types of capital-assets, in consumer preferences, in product prices, and in the wage rate, among others.

Keynes explicitly analysed the effects of inflationary expectations in shifting upwards the investment-demand schedule, and, though he did not do

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[1] Ibid. p.135

[2] Keynes uses the term marginal efficiency as synonymous with marginal productivity. User cost of capital is, by distinction, "the sacrifice the entrepreneur incurs by employing the equipment instead of leaving it idle". "General Theory ..." pp.23 and 138-139.

the same with expected rising wages, just the opposite conclusions could likewise be derived. How these expectations are formed, how they affect the 'actual' marginal efficiency of capital, and how the latter - as different from the current marginal product - influences the choice of technique at the time investment decisions are made, are issues not fully worked out in the General Theory. There are, however, some passages which reveal that Keynes was aware of the fact that poorly based expectations governing financial markets could lead to significant wastage in the use of real resources. In fact, from these statements we may infer he took for granted that investors' behaviour towards risk would affect the choice of technique quite independently from the current relationship between factor prices and marginal productivities.

Actually, Keynes was a pioneer amongst non-Marxists because he recognised that the development of the joint-stock company had changed the circumstances under with hitherto accepted Economic theory could ever apply. Lenin and other post-Marxist writers had much earlier noticed the importance of this phenomenon in the behaviour of the capitalist economy, but they were neglected by orthodox economists and their remarks considered, if at all, as heresy based on ignorance.

Perhaps in any other place in economic literature, as in the General Theory, one can come across a more dramatic expression of the far reaching consequences of the development of joint-stock companies for the efficient allocation of resources.

..."With the separation between ownership and management which prevails today, and with the development of organised investment markets [Keynes wrote] ...It is as though a farmer, having tapped his barometer after breakfast, could decide to remove his capital from the farming business between 10 and 11 in the morning and reconsider whether he should return to it later in the week"[1].

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[1] Ibid. p.151

And he added, ..."As a result of the gradual increase in the proportion of ... capital investment which is owned by persons who do not manage and have no special knowledge of the ... business in question, the element of real knowledge in the valuation of investments ... has seriously declined".

..."the market will be subject to waves of optimistic and pessimistic sentiment, which are unreasoning and yet in a sense legitimate where no solid basis exists for a reasonable calculation"

..."expert professionals, possessing judgement and knowledge beyond the average private investor ... [are] largely concerned, not with making superior long-term forecasts ... but with foreseeing changes in the conventional basis of valuation a short time ahead of the general public"[1].

From this recognition of "professional" investors' practices to its extension to managerial behaviour, there is, obviously, only a short step. Keynes, however, did not carry on his analysis that far. In a sense, he remained faithful to the neo-classical tradition in contemplating managements' behaviour as being akin to that of the traditional entrepreneur of the old days, that is, focusing attention on the difference between the marginal productivity of capital and a given rate of interest.

Having recognised the effects of speculative confidence on the price of equities, and therefore on the rate of interest, it might have been consistent to assume that physical investment would be carried out by managements in order to maximise the market value of their firms as it could be immediately realised in the Stock Exchange, rather than as it would be evaluated by a perfectly competitive real market in the long run. If so,we can then seek the technology that would maximises the market value of firms.

Once one accepts that people may expect that the future differs from the present situation, so that the marginal efficiency of capital is different from the current marginal productivity of capital, it is obvious that expected relative factor prices may also differ from actual relative prices.

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[1] Ibid. pp.153-154

The manner in which expectations are formed will determine, perhaps more strongly, than actual conditions, the decisions on the rate of investment and the choice of technique.

If expectations affecting financial markets come from people unacquainted with the technicalities of the businesses in which they have shares, it is likely, nonetheless, that managements are interested in what determines such expectations, if only to secure the finance required for the long-term growth of the firm.

But besides expectations involving technicalities, there are other, let us say 'general expectations', on which managements share opinions with unknowledgeable investors. These are by no means of negligible importance for the choice of technique, since they usually include factors which directly affect prospective profits, such as the probable evolution of wage rates, aggregate demand, consumer preferences, fiscal and monetary policies, etc. Since these expectations are reflected in investors' behaviour in financial markets, it is but logical that managements tend to look attentively to the performance of their stocks in the market, and act accordingly in order to maximise their firms' market value in the long run.

It is, thus, conceivable that, as security prices rise, investment would rise, for higher bond and stock prices would reflect a confident "state of expectations" which would shift the schedule of the marginal efficiency of capital upwards. Tobin assembles these two parts of the Keynesian analysis, and we now analyse the way in which he views the interaction between real and financial markets.

## Tobin's Model[1]

Tobin realised that it was unrealistic to suppose that the decision to invest in physical assets is independent from investments in financial assets ,

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[1] See J. Tobin, 'A Dynamic Aggregative Model', Journal of Political Economy, April 1955; and W.C. Brainard and J. Tobin, 'Pitfalls in Financial Model Building', American Economic Review, Proceedings, May 1968.

and took both as competing forms of resources allocation. Just as Keynes did, he assumed perfectly competitive product markets in the sense that price changes, in the short run, would reflect changes in the marginal productivity of labour only, with a money rate given by institutional arrangements.

In order to maximise profits, entrepreneurs (or managements) would increase employment to the point where the real marginal product of labour equalled the real wage rate. For any possible level of employment, this condition involves an equilibrium price, which would increase as labour productivity decreased.

Like Keynes, he also assumed that demand for real cash balances was a function of income. Once investment decisions have been made, on the basis of relative rates of return of real and financial assets, and assuming a given money supply, there would be an equilibrium level of prices which would bring about equality between money supply and cash balances demand at every possible level of income and employment.

With a given money wage rate and a given supply of money, therefore, there would be only one possible level of employment at which equilibrium in both, real and financial markets, could be attained. In order words, the parameters of the production function, investors' preferences, a given quantity of money and an institutionally determined money wage rate, would determine the equilibrium level of prices and employment.

Decisions to invest in physical assets depend, according to Tobin, on their prices in real markets being above or below their valuation in financial markets. Investment is fostered when real assets in financial markets are valued above their cost in commodity markets.

Differences in the speed of adjustment towards equilibrium in both markets, and mutual dependence, have thus been given recognition in Economics.

Although he allows for factor substitution in the production function and assumes that there is labour unemployment, he takes income as

given in the savings function, and refuses to consider monetary expansion as an alternative to price deflation to speed up full employment equilibrium. Thus, he propounds money wage rate cuts on the grounds that monetary expansion would reduce the rate of capital expansion, since the greater was the increase in nominal cash balances, the lower would be that remaining part of savings that would go to finance physical capital accumulation.

Tobin's model does not throw much light on the effects, on the choice of technology, that could be brought about by the relationship between financial and real markets in investment decisions.

The slopes of the curves that relate equilibrium prices to levels of employment in real and financial markets - which he terms the 'labour market balance' curve (LMB), and the 'portfolio balance' curve (PB), respectively, - are taken to be independent of each other. To a steep LMB curve, he holds, may correspond a relatively flat, or even downward sloping, PB curve and vice versa. This amounts to saying that investors may not be very sensitive to high rates of return on physical assets, and yet managements may apply labour intensive techniques, with high rates of return on the amount of capital invested, but at rapidly declining marginal labour productivity. This assumed independence between the LMB and PB curves' slopes, eventually accounts for the stability or instability of the growth path the model envisages.

With respect to the effects of different techniques on the behaviour of the model, however, it may be shown that the same technological factors which would account for a flat or a steep LMB curve would lead to a flat or steep PB curve. At the same time, it can easily be seen that the relative position of both curves, at any starting period, depends on the state of confidence. Thus, if slopes change in the same direction as the degree of mechanisation varies, and if there is any mechanism by means of which the 'state of confidence' (on which the initial relative position depends) became affected by the choice of technique, the result would be that the latter would determine the equilibrium

growth path of the model, particularly its stability or instability.

Let us analyse this two fold influence of the choice of technique in detail. To facilitate our analysis, and since to postulate different conditions would not impair the main conclusions, let us assume that the production function on which the LMB curve depends is one of the Cobb-Douglas type exhibiting constant returns to scale, as represented by

$$Q = AL^{\alpha}K^{\beta} \tag{20}$$

where $\alpha + \beta = 1$

The equilibrium real wage rate, then, should be $\frac{w'}{p} = \frac{\partial Q}{\partial L} = \alpha \frac{Q}{L}$ (21)

where w' stands for the institutionally determined money wage rate.

The level of prices at which labour market balance would be achieved is

$$p = \frac{w'}{\alpha(Q/L)} = \frac{w'L}{\alpha Q} \tag{22}$$

The slope of the LMB curve, which is given by $\partial p/\partial L$, then becomes

$$\frac{\partial p}{\partial L} = \frac{\partial}{\partial L}\left[\frac{w'L}{\alpha(AL^{\alpha}K^{\beta})}\right] \tag{23}$$

and from (23) it follows that

$$\Delta p = \frac{\partial}{\partial L}\left(\frac{w'L^{1-\alpha}}{\alpha AK^{\beta}}\right)\Delta L =$$

$$= \left[\frac{(1-\alpha)w'}{\alpha AK^{\beta}} L^{-\alpha}\right]\Delta L = \left[\frac{(1-\alpha)w'}{\alpha AL^{\alpha}K^{\beta}}\right]\Delta L$$

But since $(1-\alpha) = \beta$

$$\Delta p = \frac{\beta}{\alpha} \cdot \frac{w'}{Q} \cdot \Delta L \tag{24}$$

Substituting (21) into (24), we arrive at

$$\Delta p = \frac{\beta}{\alpha} \frac{\left(\frac{\alpha Qp}{L}\right)}{Q} \cdot \Delta L$$

so that

$$\Delta p = \beta p \frac{\Delta L}{L} \tag{25}$$

and

$$\frac{\Delta p}{p} = \beta \frac{\Delta L}{L} \tag{26}$$

That is, the percentage increase in price that is required to bring about equilibrium in the real market, is given by the capital elasticity of output times the percentage increase in employment.

As capital intensity increases, alpha rises and beta falls. Therefore, capital intensive techniques would produce less steeped LMB curves than labour intensive techniques, everything else remaining the same.

The effects of the choice of technique on portfolio balance are somewhat more complicated, but they lead to similar results. Portfolio balance, in Tobin's model, requires a price level at which existing real cash balances match demand. Real cash balances are demanded as stores of value and for transactions purposes. As stores of value, they may be substituted for physical assets, if the latter's rates of return compensate for the risks involved in committing capital to production. As a medium of exchange, demand for real cash balances depends on income.

So, the level of prices at which equilibrium in financial markets will be achieved depends on the rate of profit on capital, on the level of income, and on the supply of money. With a given amount of capital, income and the rate of profit depend on the level of employment.

Let us now work out what difference it makes to the slope of PB when capital saving or labour saving technologies are chosen.

It is obvious that any change in the price of labour will affect all labourers employed. With labour intensive techniques, changes in wage rates cause larger changes in the rate of profit compared to capital intensive techniques. Therefore, if prices are allowed to increase to compensate fully for the fall in labour productivity, this price increase would be much larger (in proportionate terms) for labour intensive techniques than for capital intensive ones.

At the same time, due to a lower labour elasticity of output (alpha) and a lower output-labour ratio, labour using technology will show lower marginal labour productivities. The additional output to be brought about by a given increase in employment is smaller for a labour intensive technique than for a capital intensive one.

If, when employment rises, the rate of return on physical capital rises faster and output grows more slowly with labour intensive techniques, the level of prices at which a given supply of money would equal demand would also be higher as compared with the case in which capital intensive techniques prevailed. In the former case, (physical) capital assets would be preferred, as stores of value, rather than cash balances, and the increase in transactions demand for cash would be sluggish.

For capital intensive techniques, the deflationary effects of increased production are stronger, while inflationary effects from increases in the rate of profit are milder. As employment increases (with constant money supply), therefore, prices will not have to increase very much for real cash demand to wipe out money supply. People, in fact, might even demand more real cash (downward sloping PB curve) as employment increased, prices thereby declining with labour saving techniques.

With capital intensive technology, therefore, the slopes of both curves, LMB and PB, decrease together. The condition for stable growth in Tobin's model, that is, the slope of PB being smaller than the slope of LMB,would then depend on the state of confidence only. The state of expectations would account for investors' desires to hold cash rather than physical assets at certain rates of profit, and thereby, for the required price increases to achieve money market equilibrium at given levels of employment.

If the degree of confidence is low, investors not being particularly interested in high rates of profit as employment increases, portfolio balance

would be achieved at low price levels, for demand for real cash balances would remain high, ceteris paribus. Contrarywise, if the degree of confidence was high, small fluctuations in the rate of profit would call forth wide price variations to compensate for a smaller demand for cash as a store of value.

If the same expectations are shared by investors and managers alike - which seems a reasonable assumption when both groups are facing the same information - , and if confidence is in any way strengthened or weakened by the technique chosen, the latter would fully determine the growth path of the model, for not only would both curves change their slopes in the same direction as shifts in the production function occurred, but also a relationship between the slopes would exist at any starting period.

If the choice of capital intensive techniques responded to low states of confidence[1], in Tobin's scheme this would mean that a relatively flat PB curve, due to a low state of confidence, would correspond to a relatively flat LMB curve, due to a labour saving technique. The extreme cases posed by him, in which a steep LMB curve co-exists with a flat PB curve, and vice versa, that is the extreme cases for stable and cyclical growth, would then be ruled out. Of course stability would still depend on the slope of PB being greater than the slope of LMB, but it would not be possible to say any longer which curve would shift downwards more as capital increased; that is, it could not be possible to state a priori whether the inflationary effects caused by a lower rate of profit would be compensated for by the deflationary effects of increased production and higher labour productivity. Thus, Tobin's argument in favour of downward flexibility in money wages would become even weaker.

In fact, Tobin eventually proposes that money wages should be allowed to vary in order to compensate for changes in expectations. He proposes to alter the only reliable data on which the model stands, that is, the LMB function.

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[1] In Chapter 2 we shall provide support to this hypothesis.

This becomes clear when he recognises that a process of price deflation would make any PB curve steeper, since investors would tend to anticipate further price declines, and this would make them demand more real cash instead of physical capital. If the parameters of the PB function are so unstable, the whole model collapses. In order to make it consistent, investors' expectations should be brought into it explicitly.

Investors' expectations will obviously depend on what they think future wage rates will be. If money wage rates were in fact allowed to fall along with a price deflation, this could lead to an even larger increase in the slope of the PB curve, which would offset the shift in the LMB curve.

Tobin did not realise that his argument for the generalisation of the 'unstable case' - the change in the slope of the PB curve during a price deflation period - and which, according to him would justify money wage rates' downward flexibility, quite paradoxically, makes the model void, for only if expectations are stable ( a stable PB curve) changes in money wage rates can be claimed to bring about changes in employment in the opposite direction.

J. Robinson's Model[1]

J. Robinson's model is also based upon the Keynesian view that the rate of accumulation determines the rate of profit, and this, in turn - through the accelerator effect - the rate of accumulation.

According to her, the typical entrepreneur wants to expand capacity as soon as his existing plant yields what he considers to be a reasonable rate of profit.

When the actual rate of profit exceeds the expected rate, entrepreneurs increase their investment outlays, up to the point where the expected and the actual rates of profit are equal. She illustrates this process with the following diagram

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[1] See "The Accumulation of Capital", Macmillan, London 1966; and "Essays in the Theory of Economic Growth", Macmillan, London 1962.

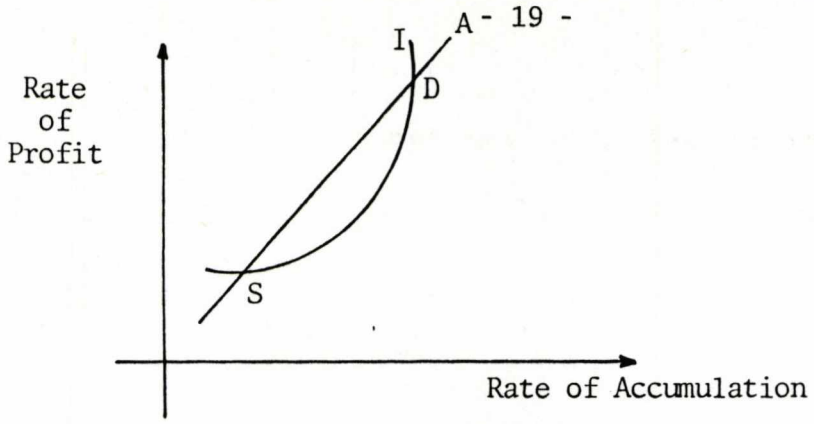


Diagram 1

Where the A line represents the actual rate of profit as a function of the rate of accumulation, which, according to Keynesian theory, lies on the 45° line. The I curve indicates the relationship between the expected rate of profit and the rate of accumulation, that is, the inducement of expected rates of profit on investment decisions.

As entrepreneurs are on the segment SD of the I curve, they are accumulating capital, for the actual rate of profit (the A line) exceeds the rate of profit that would keep them content with what they have invested. At point D, their expectations are just fulfilled; any further investment would yield a lower rate of profit than the expected rate. That point she describes as the desired rate of accumulation.

Several factores account for the shape and position of the I curve. One such factor is uncertainty, which accounts for what Keynes denominated 'animal spirits' of entrepreneurs. Another factor, and certainly one to which she attaches the greatest significance, is competition. With this respect, she writes: ... "Firms, once established, have ... an urge to resist the encroachments on their markets of others who are striving to grow, and in each generation, new men who own wealth or command credit have an urge to try their fortune. Amongst them, the overall rate of accumulation somehow emerges" [1].

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1 J. Robinson, "Essays in the Theory ...", Op. Cit. p. 15.

In her analysis, she assumes that a current stream of inventions provides entrepreneurs with superior techniques at every degree of mechanisation. Such technical progress may be neutral, or it may be biased in either direction, as capital-saving or as capital-using[1]. Under perfect competition, each type of bias would be self correcting, for if it was biased in the capital saving direction, and entrepreneurs kept their rate of accumulation (in money terms) constant, an increased demand for labour to man the enlarged stock of capital would increase the wage rate, thereby inducing a more mechanised technique. The reverse situation developing if technical progress was capital-using: capital goods, then, becoming dearer, employment shrinking, and real wages falling, thereby inducing a less mechanised technique.

Nevertheless, she observes, risks associated with technical progress naturally bring about market imperfections, which hinder full employment of labour regardless of the nature of innovations, i.e. whether capital-saving or capital-using. This happens because the increasing degree of specialisation that technical development entails, and the rise in the minimum efficient size of plant to which it often leads, call for a higher rate of profit on investment. As every individual entrepreneur aims to establish a monopoly, however, expected profits cannot be realised for all, and there is a shortening in the accumulation period previous to the attainment of the desired rate of accumulation.

Monopoly slackens effective demand in different ways. First, and this is certainly an important aspect in her model, because by reducing the fear of competition it diminishes the urge to accumulate. Secondly, because as profits increase relatively to wages, and the propensity to save out of profits is larger than the propensity to save out of wages, an increase in the degree of monopoly implies a reduction in the investment multiplier which also discourages further accumulation through the accelerator effect.

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[1] It is capital-saving when productivity in the production of capital goods rises faster than productivity in the production of consumption goods, so that the former become cheaper in terms of the latter. It is capital-using, when capital goods become dearer in terms of output.

In J. Robinson's model, as in all Keynesian models, wage bargaining is supposed to be carried out in money terms. Monetary policy, on the other hand, is assumed to play a merely passive role, keeping prices in line with costs and, only occasionally used against inflation. Therefore, real wages, under normal conditions, are determined by the rate of growth of population, the propensities to save, and the rate of accumulation.

At any moment, however, there is a limit to the ratio of investment to income beyond which a further rise of profits to wages would imply a wage-price spiral. This she calls the 'inflation barrier', and it depends very much on prevailing conditions in the labour market. Where the labour force is strongly organised and the economy operates near to full employment, the inflation barrier may appear at a high level of real wage rates. Conversely, where there is a large amount of unemployment, the inflation barrier can be encountered at the level of the real wage rate at which the efficiency of labour is impaired, long before all available labour is employed.

The first case for the inflation barrier, however, loses part of its relevance in J. Robinson's approach, as she observes that trade unions are not always conscious of the extent to which wages should rise, provided they rise at all. Accordingly, when technical progress, by lowering average costs, enables innovators to pay wages above market rates, she points out that the latter may become the allies of trade unions, even though, eventually, the degree of monopoly might rise (despite the upward trend in money wage rates)[1].

Conversely, the second case for the inflation barrier becomes more important as she considers the effects of technical progress on the degree of monopoly, and some biases towards the use of labour-saving techniques.

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[1] In this part of her analysis, J. Robinson actually anticipates dual labour market theorists. See for instance D.M. Gordon, "Theories of Poverty and Underemployment", D.C. Heath, Lexington, Mass. 1972.

According to J. Robinson, a bias towards the use of labour-saving techniques is likely to arise simply because the accelerator mechanism involves an asymmetry in the response of investment to high and low wage rates. She recalls that a situation of high wage rates occurs after the capital stock has been growing faster than population for some time. Accordingly, "entrepreneurs' animal spirits" are high, and the downward trend in the rate of profit is likely to be checked by means of higher degrees of mechanisation.

Conversely, a situation of low wage rates emerges after a period of sluggish investment, which itself results from the entrepreneurs' lack of energy, or from a deficiency of effective demand. In such circumstances, she observes, there is little hope that a low wage rate would induce investment in more labour-using techniques, for the existence of idle capacity discourages new investment projects, as would the expectations of falling prices that usually accompany a period of falling wage rates. Additionally, she points out that a downward trend in prices would tend to discourage investment by shrinking one of its most important sources of finance, since a fall in prices would rise the share of rentiers in current income (as they are paid according to past earnings), thereby reducing the amount of profits to be saved.

Another bias towards the use of labour-saving technology arises on account of the role that she gives to monetary policy. If the desired rate of accumulation entails a ratio of profits to wages which monetary authorities consider inflationary and if credit tightening policies are implemented before the real wage rate is low enough to induce a lower degree of mechanisation, the slowing down of the rate of accumulation, which means a fall in the rate of profit, would make more rather than less mechanised techniques profitable. In her view, misunderstanding of the accumulation process often drives monetary authorities to exercise control over banking credit when the desired rate of accumulation is still far from the maximum possible rate, thereby damaging accumulation, and producing even more harmful effects on employment.

Notwithstanding these remarks, in her model, as in nearly all models within the Keynesian tradition, the financial sector plays only a secondary role, because investment generates the savings that it needs. Financial markets are taken to be neutral to accumulation and choice of technique.

This amounts to assuming either that investors behave with perfect certainty with respect to conditions in real markets, or that there is no cost involved in firms' adjustment (in real markets) to price fluctuations in financial markets.

The reasons which account for increasing monopoly in Robinson's model are inconsistent with the latter assumption. Speculation in financial markets, which accounts for the independence of saving and investment decisions underlying all Keynesian models, disagrees with the former.

Nonetheless, it is interesting to notice that, even neglecting the effects of financial markets on the choice of technique, her analytical structure enables us to infer biases in the choice of technology on account of uncertainty. In fact, the mere slowing down of the urge to accumulate - due to the monopolising effect of technical progress - can provide an explanation, in terms of real variables, of a bias towards the use of labour-saving techniques. For, if a new investment of capital could reduce competition in a given commodity market and, therefore (following Keynes), prevents an otherwise faster decline in the efficiency of capital over time, it would be carried out despite its yielding a relatively low rate of profit as compared with an investment which did not so affect demand.

According to Keynes, the marginal efficiency of capital is estimated by entrepreneurs on the basis of a future stream of income which tends to decline due to the effects of competition. So

$$K' = \frac{\pi'_1}{(1+r)} + \frac{\pi'_2}{(1+r)^2} + \ldots\ldots \frac{\pi'_n}{(1+r)^n}$$

where K' is the supply price of capital (according to Keynes's definition), $\pi'$ is the distribution of expected profits over the lifetime of the asset, and r is the rate of discount at which expected profits equal the supply price of capital, that is, the marginal efficiency of capital. It follows that the faster $\pi'_1$ , $\pi'_2$ ,.....$\pi'_n$ decline, the lower the marginal efficiency of capital will be. Since r is an average rate, the difference between it and the actual rate of return on capital at the beginning and the end of the life of capital assets - that is, the current marginal productivity of capital - would be larger the faster profits declined in time[1]. Similarly, the gap between the current marginal productivity of capital, which is the observable datum, and the marginal efficiency of capital, on which investment decisions actually depend, would be smaller in cases of monopolistic concerns, where profits are thought to decline slowly.

Accordingly, if a capital-using technique slowed down the rate at which profits are thought to decline in the future(because it reduces competition), it would be preferred to others (i.e. labour-using techniques) which yielded higher current returns on capital, at least within a given range of relative factor prices.

In Chapter 2 we analyse further why capital-using techniques, as compared to labour-using techniques, are more likely to produce this effect, which accounts for an apparent irrational entrepreneurial behaviour.

Kaldor's Model and Johnson's Qualification

Kaldor developed his theory of growth together with a long-run theory of distribution[2]. He assumes that, in a growing economy, output is limited by available resources and not by effective demand, for equilibrium of steady

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1 We assume expectations are fulfilled.

2 See N. Kaldor, 'Alternative Theories of Distribution', Review of Economic Studies', 1955-1956, pp.83-100; also 'A model of Economic Growth', The Economic Journal, December 1957; and N. Kaldor and J.A. Mirrlees, 'A New Model of Economic Growth', in "Readings in the Theory of Growth", F.H. Hahn (Ed.), Macmillan Student Editions, London 1971.

growth is inconsistent with underemployment equilibrium. The principle of the multiplier, that Keynes developed to determine income and employment, is taken by him to explain the relation between prices (or profits) and wages when output and employment are given, as it is when full employment is assumed.

In his model, investment generates the amount of savings required to finance it by means of flexible profit margins and prices. Wage bargaining is supposed to be carried out in nominal terms. Therefore, the real wage rate, the share of profits in income, and the rate of profit on capital, all depend upon the relation of investment to output.

The ratio of investment to output is determined by three different sets of factors: by the willingness of entrepreneurs to invest, by technical conditions which govern the rate of growth of productivity, and by the saving propensities out of labour and capital incomes. These three forces are introduced into the model through the so-called 'investment function', the 'technical progress function', and the 'savings function', respectively.

It is assumed that factor prices and marginal productivities do not influence the choice of technique, for if changes in the ratio of profits to income made more or less-labour-intensive techniques profitable, this would itself influence the ratio of investment to income, which is supposed to determine factor shares. Thus, the model does not distinguish changes in the use of factors brought about by changes in their relative supplies, from changes induced by technical progress. To Kaldor, ... "any sharp or clear-cut distinction between the movement along a production function ... and a shift in the production function ... is arbitrary and artificial" . Accordingly, the technical progress function defines a single relationship between the growth of capital per capita (k) and the growth of productivity (y). This function corresponds to the TT' curve in Diagram 2.

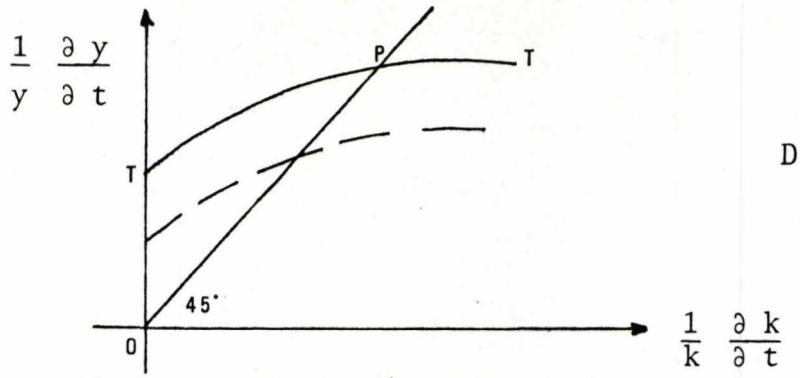


Diagram 2

Variations in the flow of new ideas would be reflected in shifts in the height of the curve.

According to Kaldor, movements in the capital/output ratio do not depend on the nature of the stream of innovations, i.e. whether the latter are labour-saving or capital-saving, but on the rate of capital accumulation. If capital accumulation is slow, with a given technical knowledge (the economy in a position to the left of point P on Diagram 2), the capital-output ratio is falling and innovations appear to be capital-saving, for output is growing faster than capital. Conversely, if the economy is in a position to the right of point P, output grows slower than capital, and innovations are considered as labour-saving.

By the same token, when inventions cause a shift of the TT' curve, the capital-output ratio falls, and technical progress appears to be capital-saving! Conversely, a drying up in the flow of ideas would cause a downward shift of the TT' curve, which, by increasing the capital-output ratio, would appear to be - labour-saving.

The investment function aims to explain the desired rate of accumulation in face of the technical possibilities defined by the above mentioned technical progress function. It is based upon four main assumptions. First, that given the expected rate of profit on capital, entrepreneurs desire to maintain a constant capital-output ratio. Second, that the desired capital-output ratio itself is an increasing function of the rate of profit on capital, so that - investments with lower turnover require a higher rate of profit on account of the greater risk of a longer period of commitment for the capital invested.

Thirdly it assumes that entrepreneurs expect output to grow as in the previous period; and, finally, it assumes that entrepreneurs also expect the margin of profit on turnover to be as in the previous period.

Investment is defined in terms of a desired capital-output ratio, and it is assumed that discrepancies between actual and desired capital stock are eliminated in a single period.

According to Kaldor, in the short run, workers' and capitalists' saving propensities and the investment function determine the distribution of income and the proportion of income saved and invested. They yield the level of profits that induces a rate of investment equal to the rate of savings arising at that particular distribution of income. Diagram 3 illustrates the adjustment mechanism.

To the left of point Q, profits are low relatively to income, investment plans exceed available savings, and prices tend to rise relatively to wages. To the right of point Q, savings exceed investment, prices tend to fall, and the share of profits in income also falls.

There are two constraints to the operation of the adjustment mechanism, and the model may fail to operate either because the resulting real wage rate is below the subsistence minimum (or the minimum acceptable to workers), or because the rate of profit on turnover is below the minimum regarded as acceptable by entrepreneurs. The upper and lower limits to the share of profits in income set by these two constraints are represented by the vertical lines in Diagram 3.

As Diagram 3 shows the process towards short-run equilibrium, so does the technical progress function (Diagram 2) illustrate the long-run equilibrium path. At every point on the TT' curve, investment equals savings, for flexible profit margins (within the limits set by the minimum real wage rate and the minimum rate of profit on turnover) secure equilibrium at whatever

desired rate of growth of capital. On the other hand, the assumptions - underlying the investment function should account for the economy gradually approaching long period equilibrium of steady growth at the intersection of the technical progress function and the 45° line, where the rate of growth of capital equals the rate of growth of output (both being equal to the sum of the rates of growth of population and labour productivity).

In the latest version of the model[1], the technical progress function refers only to the productivity of new equipment. It is expressed in terms of the marginal output-labour ratio and the marginal capital-labour ratio. The determination of the real wage bill as a residual, together with the assumption of a single wage rate (i.e. homogeneous labour), makes the latter dependent on productivity of labour operating new equipment. As equipment of different vintages accumulates, every new machine increases labour productivity, the general wage rate rises, and the profit obtained from equipment of earlier vintages diminishes. The model assumes that machines are scrapped when productivity just equals prime costs, that is, when output per worker - equals the general wage rate and profit vanishes.

The rate of obsolescence in this version, therefore, has nothing to do with the average physical life time of equipment, and replacements are assumed to be due when competition forces firms to innovate in order to keep their share in the market without making a loss.

The new technical progress function leaves the concept of the rate of - profit on total capital out from investment decisions. Investment projects are assumed to be undertaken as long as the expected profit on new investment exceeds the rate of profit on new investment the entrepreneur regards as 'normal' for the economy as a whole. This, however, is a rather subjective concept, particularly since this rate cannot be directly related to the overall rate of profit on capital. The latter, for every entrepreneur (and for the economy as a whole), depends on how the stock of capital goods has been accumulated in time. It

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[1] See N. Kaldor and J. Mirrlees, Op. Cit.

follows that, even if the rate of profit on new capital happened to be the same for every producer, the rate of profit on total capital would differ amongst - them according to the age distribution of their productive assets.

Additionally, the relationship between the rate of profit and the capital-output ratio, which responds to the risks involved in the period length of capital commitment, has never been related to the minimum rate of profit on turnover - which constrains the short-run adjustment mechanism in the model.

The rate of profit on turnover and the rate of profit on capital cannot be taken to be independent from each other. They are naturally linked by the price mechanism inbuilt in the model, even though this relationship cannot be straightforwardly formulated, due to the problem involved in capital - valuation when prices and profit margins change simultaneously.

Kaldor neither provides an explanation to the minimum rate of profit on turnover, nor to the absolute level of the rate of profit on capital. He makes real wages a residual by the rather artificial device of changing the determinant of investment decisions from the rate of profit on turnover (at the extremes posed by a minimum share of profits in income and a minimum real wage rate), to the rate of profit on capital in all other cases. Obviously, the residual element could equally be the rate of profit on turnover; or the constraint to a residual theory of real wages be the rate of profit on capital.

A limiting case, where a minimum rate of profit on turnover acts as a constraint to the desired rate of profit on capital is inconsistent with a residual theory of real wages, just as much as the latter is inconsistent with a limiting case where a subsistence wage rate acts as a constraint to the rate of profit on turnover. Without an explanation for the minimum rate of profit on turnover, there are no grounds for considering real wages as a residual. Therefore, the question to be solved is why, in a one-sector model, rational entrepreneurs prefer to reduce output and employment rather than accepting a lower rate of profit on capital.

A plausible explanation may be found in H. Johnson's growth model[1], though it entails a completely different theory of distribution.

Johnson points to the fact that, in a monetary economy, wealth can be held not only in the form of physical assets, as Kaldor assumes, but also in the form of real cash balances. Accordingly, if at a given level of money wages, the desired capital-output ratio (in Kaldor's model) led to a rate of profit on turnover which involved a fall in prices, investors might prefer to hold cash balances, which would have increasing purchasing power, rather than productive assets.

As demand for real cash balances rose, investment in physical capital would shrink, and employment and wages would fall, until eventually, the rate of return on physical capital exceeded again the rate of fall of prices.

Recognition of the fact that cash balances yield a rate of return which is the negative of the rate of inflation, leads us to accept the non-neutrality of money in the growth process, and reverses the laws governing income distribution. For under these circumstances, investment cannot any longer be taken to determine prices, income distribution and savings, but rather it would be determined by saving decisions, which would depend on monetary policy, on the forces that govern the rate of growth of productivity, and of course, on investors' preferences and their behaviour towards risk. In fact, with this qualification, Kaldor's model would come very close to Tobin's.

C. Kalecki's Model

Kalecki's approach to economic dynamics[2] involves a theory of prices, a theory of income and employment, and a theory of growth. He stresses the monopolistic nature of capitalism, though he does not provide an argument, in

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[1] See H.G. Johnson, 'Money in a Neo-Classical One-Sector Model', in "Selected Essays in Monetary Economics", George Allen and Unwin, London 1979.

[2] See M. Kalecki, "Theory of Economic Dynamics: An Essay on Cyclical and Long-run Changes in Capitalist Economy", Unwin University Books, London 1965

terms of economic variables, to explain this behaviour. Thus, the constancy in the 'degree of monopoly', on which he largely relies to explain income and employment, is, as Kaldor has put it, an hypothesis that cannot be affirmed or rejected[1].

In fact, his theory of prices rests on a concept of monopoly price which cannot be supported by the foundations of micro-economic theory for it does not necessarily lead to the individual firm's profit maximisation. As one substitutes generally accepted theory of pricing under monopolistic competition for his theory of prices, constancy of his measure of the degree of monopoly becomes only a special case, whereas other cases may arise which would largely qualify his theory of income and employment. This is not to say that the latter, as such, is impaired, but rather that it may lead to quite different results - as regards the level of income and its distribution - when one allows for prices being determined by profit maximising firms under monopolistic competition.

Kalecki's approach to the investment function, which supports his theory of business cycles, should also be qualified by a general theory of pricing under monopolistic competition. Under such circumstances, the falling rate of profit (as capital accumulates) on which it rests does not necessarily follow, particularly when technical progress is contemplated as "a part and parcel of 'ordinary' investment".

In the following pages, we shall analyse separately Kalecki's three theories already mentioned, that is, his theory of prices, his model of income determination, and the theory of business cycles embodied in his investment function.

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[1] N. Kaldor, "Alternative Theories of Distribution", Op. Cit. pp.92-93.

a) Theory of Prices

Kalecki makes a distinction between demand-determined and cost-determined prices. According to him, unprocessed materials, such as agricultural products, tend to be determined by the level of demand, because their supply is usually inelastic in the short-run. This is not the case with manufactures. Assuming conditions of monopolistic competition, their supply, most of the time, is elastic, and prices are cost-determined.

He assumes that, in the short-run, unit prime costs, i.e. material costs and wages per unit of output, are constant and overhead costs remain stable as output varies. The individual producer is supposed to fix his price according to his unit prime costs and taking into account the average market price, for any increase above the latter would drive his customers to buy from his competitors. Therefore, the price equation for the individual firm is

$$p = mu + n\bar{p}$$

where u stands for unit prime cost, $\bar{p}$ for the average market price, and m and n are constants reflecting the degree of monopoly of the firm. For the industry as a whole, the price equation becomes

$$p = \frac{\bar{m}}{1 - \bar{n}} \bar{u}$$

where $\bar{m}$, $\bar{n}$, and $\bar{u}$, are weighted averages. Dividing both sides of the above equation by $\bar{u}$, we have

$$\frac{\bar{p}}{\bar{u}} = \frac{\bar{m}}{1 - \bar{n}}$$

Thus, the ratio of prices to unit prime costs, which is the same thing as the ratio of total proceeds in industry to total prime costs, is an increasing function of the 'degree of monopoly'.

The degree of monopoly, therefore, is taken to be fairly stable in the short-run. The factors which, according to Kalecki, account for its changes, all tend to operate in the long-run rather than in the short-period. These factors are, first, the concentration of industry in few giant firms, which by influencing $\bar{p}$ lead smaller firms to follow their price policy.

Second, the development of sales promotion, which substitutes selling campaigns for price competition, thereby raising overheads instead of prime costs. A third factor, which produces similar effects on m/(1-n) is increasing capital intensity, for higher degrees of mechanisation usually involve higher overheads relatively to prime costs.

Finally, the degree of monopoly is assumed to be affected by the power of trade unions, which may take advantage of rising profit margins to strengthen their bargaining position.

The assumed constancy in the degree of monopoly and in unit prime costs, enable Kalecki to formulate a short-run theory of distribution in which the share of wages in income is a decreasing function of the degree of monopoly and the ratio of materials prices to unit wage costs.

Constancy in the degree of monopoly, however, implies a theory of prices which does not necessarily lead to profit maximisation.

Let us use Diagram 3 to analyse the implications of Kalecki's assumptions.

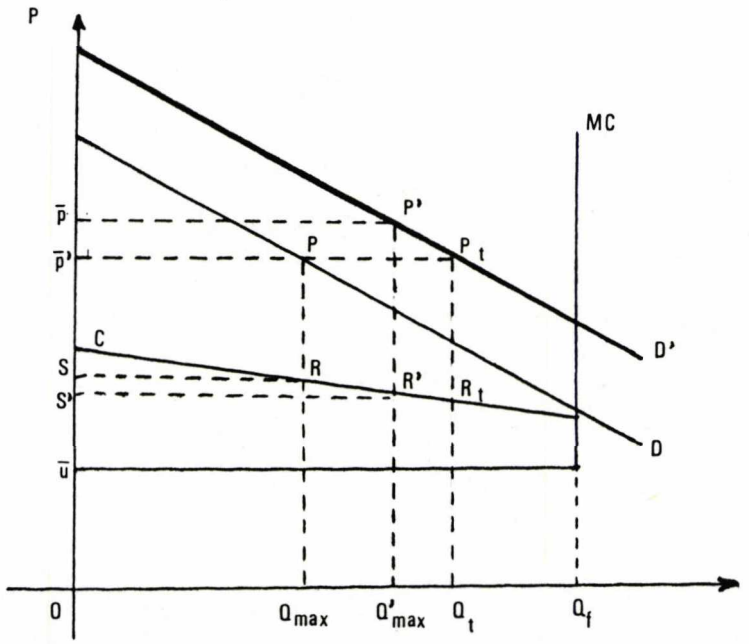


Diagram 3

On it, the marginal cost curve MC, which is an L inverted, reflects the assumed constancy in unit prime costs. Curve C is the average cost curve; it is downward sloped thus reflecting the effect of constant overheads. Curve D stands for an initial demand schedule.

We may assume that at P, profits are maximised, so that the area $\bar{p}PRS$ corresponds to the largest rectangle that can be inscribed between curves D and C. In that position, the market price is $\bar{p}$ and the quantity produced is $Q_{max}$. Unit prime costs (which are equal to marginal prime costs) are $O\bar{u}$, average overheads are $\bar{u}S$, average profit is $S\bar{p}$ and the degree of monopoly is given by $\bar{p}/\bar{u}$. At this point, idle capacity amounts $Q_f - Q_{max}$.

Now let us assume that by whatever reason an upward shift in demand occurs, the new schedule being represented by Curve D'. According to generally accepted theory of monopoly pricing, the price would rise and so would do the quantity produced, up to the point where the total amount of profits is maximised. That is to the point where the revenue obtainable from a further rise in price does not compensate for the revenue lost by the shrinkage in sales. Let us assume this is point P' in the above diagram, so that the area $\bar{p}'P'R'S'$ corresponds to the largest possible rectangle between the new demand curve and the average cost curve. At this point, the quantity produced is $Q'_{max}$ and idle capacity amounts Qf - $Q'_{max}$.

Nevertheless, the degree of monopoly in this new position has increased from $\bar{p}/\bar{u}$ to $\bar{p}'/\bar{u}$, and this is not allowed to happen in the short run in Kalecki's model. Kalecki's argument implies a constant price $\bar{p}$, so that the whole adjustment would come about through changes in the quantity produced. $Q_t$ instead of $Q'_{max}$ would be the volume of sales.

There is only one case in which a constant degree of monopoly would bring about profit maximisation. To make this clear, let us analyse profit maximisation within Kalecki's model in mathematical terms[1].

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[1] I am grateful to José Sacal-Hop for his assistance in this part.

Assuming, as he does, stable unit prime costs and a constant volume of overheads, so that the average cost curve is downward sloping over the 'relevant range of output', the problem of profit maximisation can be stated in terms of the maximisation of a rectangle between the demand curve and the average cost curve, as it is shown in Diagram 4. The vertical distance c between the curves is the average profit, and the horizontal distance b is the optimum quantity to be produced. Let us denote the demand curve by

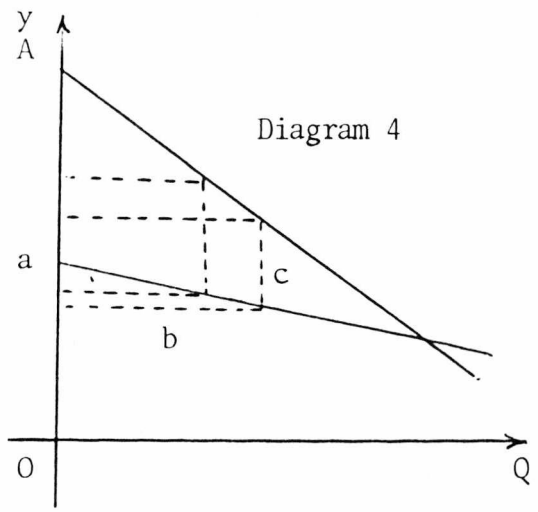


Diagram 4

$$y_1 = A - m_1 Q$$

and the average cost curve by

$$y_2 = a - m_2 Q \quad .$$

The distance c corresponding to the optimum quantity is thus defined by

$$c = (A - m_1 b) - (a - m_2 b),$$

and the rectangle area P is given by

$$P = bc = b\,(A - a - m_1 b + m_2 b)$$

so that

$$P = bA - ba - b^2 m_1 + b^2 m_2 \quad .$$

In order to maximise P, let us make

$$\frac{\partial P}{\partial b} = A - a - 2bm_1 + 2bm_2 = 0 \ .$$

Then

$$b(-2m_1 + 2m_2) = -A + a$$

so that

$$b = \frac{A - a}{2(m_1 - m_2)} \quad .$$

In the diagram on page 33 , $Q'_{max}$ is supposed to fulfill the above condition with respect to the new demand curve D', so that by definition

$$\bar{p}' P' R'S' > \bar{p}P_t R_t o_t \quad .$$

The only case in which profit maximisation would yield a constant degree of monopoly in this model would be when $Q'_{max} = Q_t$ . Since

$$Q_t = \frac{A' - \bar{p}}{m'_1} \quad ,$$

Kalecki's theory of price is supported by orthodox microeconomic theory only when the parameters of the new demand curve are such that

$$\frac{A' - a}{2(m'_1 - m_2)} = \frac{A' - \bar{p}}{m'_1} \quad .$$

As a matter of fact, Kalecki himself did not continue to assume constancy in the degree of monopoly even in the short-run. When he analyses the business cycle, he allows this ratio to vary inversely with changes in demand determined prices, thereby rising in the slump and falling in the boom.

b) Theory of Income

Kalecki's assumption of imperfect competition implies that idle capacity exists in such an amount as to enable real output to increase in response to a rise in demand.

He carries to the income model the same assumptions about stable unit prime costs and constant overheads he dealt with to explain his price theory. These two elements determine the shape of the wage and salary bill function (V) in terms of output (Y), which is expressed as

$$V = \alpha Y + B \qquad (1)$$

where $\alpha$ reflects the constant wage rate, and B, the overhead character of salaries.

Since V is equal to output (Y) minus profits (P), if we substitute (Y-P) for V in (1), and divide both sides of the equation by Y, we have the following expression for the share of wages and salaries in income

$$\frac{Y-P}{Y} = \alpha + \frac{B}{Y} \qquad (2)$$

From this we can derive a functional relationship for income in terms of total profits and the "distribution factors"

$$Y = \frac{P+B}{1-\alpha} \qquad (3)$$

For the sake of simplicity, Kalecki assumes that workers do not save, therefore capitalists' decisions on consumption and investment explain total profits, and these, together with distribution factors' determine workers' income, and thus, total output and employment.

He assumes that 'real' capitalists' consumption consists of a stable part A, which only changes in the long run, and a part proportionate to past real profits

$$C_t = q\, P_{t-\lambda} + A \qquad (4)$$

Since total profits are equal to capitalists' consumption plus investment

$$P = I + C \qquad (5)$$

by substituting (4) in (5) we can express profits at t as:

$$P_t = I_{t+q}\, P_{t-\lambda} + A \qquad (6)$$

that is, profits at t are determined by current investment and profits obtained at an earlier period $t-\lambda$. But profits at $t-\lambda$ were also a function of current investment at $t-\lambda$ and profits at $t-2\lambda$. Thus, we have that profits at any time are determined by current investment and investment in the near past. Profits, therefore, follow investment with a time lag, and Kalecki expresses

them as

$$P_t = f(I_{t-w}) \tag{7}$$

where w is the time lag involved.

Since these equations should be fulfilled whatever the values of investment, they should also hold when investment is maintained at a stable level, so that $I_t = I_{t-w}$, etc.

Therefore, from (6) and (7) we derive:

$$f(I_t) = I_t * qf(I_t) + A$$

so that

$$f(I_t) = \frac{I_t + A}{1-q} \tag{8}$$

It follows from (7) and (8) that

$$P_t = \frac{I_{t-w} + A}{1-q} \tag{9}$$

In the short run, A and B may be taken as constants. Therefore, from (9) and (3) we have that a rise in profits will be fully determined by a rise in investment

$$\Delta P_t = \frac{\Delta I_{t-w}}{1-q} \tag{10}$$

and so will be the growth in income

$$\Delta Y_t = \frac{\Delta I_{t-w}}{(1-\alpha)(1-q)} \tag{11}$$

From (3) and (9) he concludes that investment being given, income will be pushed up to the point where profits out of it generate the necessary savings to finance investment.

If we assume that the condition for a constant degree of monopoly is fulfilled, so that profit maximisation is achieved with constant prices - a very unlikely situation, though - investment in real terms would be realised, for real profits would increase to generate the required amount of real

savings. However, if profit maximisation drives prices up, but the money wage rate remains stable, the degree of monopoly would rise. Since profits are determined by investment decisions made in the past, an increase in the degree of monopoly would imply a reduction in output, because a rise in the ratio of profits to wages would entail a lower level of real output to generate the necessary savings to finance investment.

Investment projects in real terms would be carried out only if real consumption out of profits increases to compensate for the loss of consumption due to the fall in real wages. However, this is impossible, for capitalists' consumption increases less than profits due to the constant term A in equation (4). Thus, a higher degree of monopoly entails, ceteris paribus, a lower rate of growth of output.

If the implicit assumption of an unlimited supply of labour is removed, and we allow for rising wage rates as employment rises, we might have a constant degree of monopoly at a higher price, but the result in terms of real output cannot be straightforwardly determined, for it would depend on the new elasticities of the cost and demand curves as a result of a change in money wage rates.

These few examples only serve to illustrate the many qualifications that a general theory of prices introduces in Kalecki's analysis. From these results, we can see that, unless we know the particular conditions in which a rise in demand occurs (i.e. the elasticities of the cost and demand functions), we cannot infer what its effects will be on the levels of real output and prices.

c) Theory of Growth.

Kalecki's theory of business cycles arises out of the particular shape of his investment function.

(i) The Investment Function

Investment in a given period is assumed to be the result of decisions made in the past. Two main factors determine firms' new investment decisions: the level of gross savings and changes in the rate of profit.

Gross savings limit firms' expansion because they determine their borrowing capacity. To Kalecki, a firm cannot raise funds above a conventional degree of leverage, even if it is willing to pay a higher rate of interest, for the latter itself would raise misgivings among investors about the firm's future solvency[1].

In order to analyse the effects of changes in the rate of profit on investment decisions, Kalecki divides this element into its two components: the rate of change of profits, and the rate of change of the capital stock. The former is supposed to affect investment positively, and the latter negatively.

Letting $D_t$ stand for investment decisions at time t, and S and K for savings and capital, respectively; and assuming, for the time being that there are no changes in inventories, so that decisions to invest at t determine fixed investment (F) at $t + \tau$, where $\tau$ stands for the time lag involved, we have the investment function expressed as

$$F_{t+\tau} = D_t = aS + b\frac{\Delta P}{\Delta t} - c\frac{\Delta K}{\Delta t} + d \qquad (12)$$

where d is a constant subject to long-run changes, which include the effects of innovations.

Increases in the stock of capital goods will be equal to investment in fixed capital net of depreciation. That is,

$$\frac{\Delta K}{\Delta t} = F - \sigma \qquad (13)$$

where $\sigma$ stands for depreciation. Substituting (13) into (12) we have

$$F_{t+\tau} = aS_t + b\frac{\Delta P_t}{\Delta t} - c(F_{t-\sigma}) + d$$

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[1] Despite his considering the firm's savings as a gear for getting outside finance, Kalecki later resorts on a kind of flow of funds theory of investment which accounts for the parameter of past savings in his investment function being less than one.

By transferring $(-cF_t)$ from the right to the left hand side of the equation and dividing both sides by $(1+c)$, we arrive at

$$\frac{F_{t+\tau} + cF_t}{1+c} = \frac{a}{1+c} S_t + \frac{b}{1+c} \frac{\Delta P_t}{\Delta t} - \frac{c\sigma + d}{1+c}$$

which, according to Kalecki is the expression for a weighted average of $F_t$ between $t$ and $t+\tau$. Representing by $F_{t+\theta}$ this value, where $\theta$ is taken to be an average time lag (lower than $\tau$) he arrives at

$$F_{t+\theta} = \frac{a}{1+c} S_t + \frac{b}{1+c} \frac{\Delta P_t}{\Delta t} + \frac{c\sigma + d}{1+c} \quad .$$

Thus, the negative effect of a falling rate of profit, as a consequence of increases in the capital stock, is introduced into the equation through proportionate reductions in the parameters affecting the rest of independent variables. By denoting

$$\frac{b}{1+c} = b' \quad \text{and} \quad \frac{c\sigma + d}{1+c} = d'$$

we arrive at the simplified fixed investment function

$$F_{t+\theta} = \frac{a}{1+c} S_t + b' \frac{\Delta P_t}{\Delta t} + d' \qquad (14)$$

Investment in inventories is introduced by Kalecki into his model, assuming these follow changes in output with a time lag. For simplicity, the time lag is taken to be the same as that which separates investment decisions from actual investments $(\theta)$, so that the general investment function becomes

$$I_{t+\theta} = \frac{a}{1+c} S_t + b' \frac{\Delta P_t}{\Delta t} + e \frac{\Delta Y_t}{\Delta t} + d' \qquad (15)$$

Since $S_t$ depends on the level of economic activity at t while $\frac{\Delta P_t}{\Delta t}$ depends on its rate of change, investment is determined by both the level and the growth of economic activity at an earlier date. But, as we have seen from the income determination model, economic activity, in turn, depends on investment. Therefore, investment is a function of the level and the rate of change of investment in the recent past.

Taking $S_t = I_t$, and substituting equations (10) and (11) into (15) we get

$$I_{t+\theta} = \frac{a}{1+c} I_t + \frac{1}{1-q} (b' + \frac{e}{1-\alpha}) \frac{\Delta I_{t-w}}{\Delta t} + d'$$

and by denoting

$$\frac{1}{1-q} (b' + \frac{e}{1-\alpha}) = \mu$$

we arrive at Kalecki's simplified expression for the investment function

$$I_{t+\theta} = \frac{a}{1+c} I_t + \mu \frac{\Delta I_{t-w}}{\Delta t} + d' \qquad (16)$$

ii) Money Markets and the Business Cycle.

Kalecki claims that the above expression involves a cyclical growth path, for coefficient $a/(1+c)$ is less than one. He points out two facts to support this contention. First, that most probably not all savings are reinvested, so that a is likely to be lower than one; and secondly, that c (the negative effect of the rate of growth of the capital stock on the rate of profit) is also likely to be significantly different from zero.

The argument for a being less than unity, however, is rather weak since corporate savings are assumed to gear credit to financial investment. Under conditions of monopolistic competition (i.e. firms operating below capacity), it should depend on the rate of profits retained being lower than the 'normal' degree of leverage, since corporate savings would gear credit to finance investment[1]. Nevertheless, he does not explain why this should be so.

Since the rate of profits retained is simply the residual after capitalists' consumption, we may concentrate on the analysis of the determinants of the degree of leverage.

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[1] Denoting by P total profits, by b the rate of profits retained, and by $\mu$ the reciprocal of the degree of leverage corresponding to what Kalecki terms the 'normal' borrowing capacity, the increase in the amount of capital a firm can command is given by $\Delta K = bP/\mu$. For a to be less than one, $\Delta K$ must be lower than P. Therefore, $b/\mu$ must be less than one; and from this, it follows that b must be lower than $\mu$.

At one point, Kalecki assumes that investors' demand for financial assets depends on a 'conventional' degree of leverage, and is rather inelastic to interest rates. At another point, however, he explains the long-term interest rate on the grounds of investors' expectations concerning the future of the short-term rate and the risk of financial assets depreciation[1]. Finally, he explains the short-term rate of interest as a function of the value of transactions that investment generates and the supply of money by banks. Denoting by T the value of transactions, by Ms the money supply, and by $\rho$ the short-term rate of interest, he defines

$$\frac{T}{Ms} = V(\rho)$$

so that, velocity of circulation (V) becomes the functional explanation of the short-term rate of interest.

From these statements, it follows that the actual degree of leverage would depend on investors' behaviour towards risk, as expressed in the long-term interest rate function; on physical investment decisions, which are made on the basis of past levels of interest rates; and on the supply of money.

Kalecki did not make any particular assumption concerning the goals of monetary policy, though at different times he suggested it was likely to be committed to a stable short-term interest rate, thereby inducing changes in Ms to follow changes in the level of transactions. It is conceivable, therefore, that a sort of conventional degree of leverage arises from these relationships. Nevertheless, nothing can be said, a priori, either about its absolute level, or about its being higher or lower than capitalists' propensity to consume.

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[1] Op. Cit. p.73

iii) The Rate of Profit under Monopolistic Competition.

As to the second element which accounts for the cyclical pattern in Kalecki's model, that is, the falling rate of profit which makes coefficient c different from zero, it obviously depends on the relative elasticities of the cost and demand curves as capital accumulates.

Kalecki did not attempt to relate factor prices to relative scarcities, neither did he link the latter to the choice of technique. To him, ..."the relations between prices and unit prime costs can be affected by changes in equipment and technique only to the extent to which they influence the degree of monopoly"[1]. Thus, when he refers to the workers' bargaining power as a source of changes in the degree of monopoly, he does not relate it to relative supplies, but rather he leaves it to be explained by what would be considered as 'reasonable profits' by workers and entrepreneurs[2]. Without this linkage, he leaves a rising capital-output ratio and a falling rate of profit unexplained.

In order to illustrate the negative effect of new investment on the rate of profit, he puts the example of a monopoly which is broken by new enterprises entering the field, and thereby rendering investment plans of established firms less attractive. Thus, an increase in the stock of capital involves a change in the position of the established firm's demand curve, which leads to a fall in the rate of profit either because the degree of monopoly falls, or because the quantity produced decreases. The latter effect is similar to a rise in the capital-output ratio.

Recognition of short-run changes in the degree of monopoly due to changes in demand impair both his theory of prices and his theory of income, for 'distributive factors' cannot any more be taken as constant, and there is no guarantee that real investment decisions bring about the required real savings to finance them. In fact, the assumption of the price and income models do not allow for a falling rate of profit. It is evident that Kalecki, himself,

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[1] Op. Cit. p.19

[2] Ibid. Chap. 1

found it difficult to work out the growth model on such assumption. He often recognises actual variations in the degree of monopoly during the business cycle, and rigidity in the degree of capacity utilisation as a result of the increasing monopolistic nature of capitalism. Nevertheless, his awareness of these facts did not lead him to introduce the necessary qualifications into his model. When he allows for the degree of monopoly to rise in the slump and fall in the boom, he takes into account only the effect of demand determined prices of raw materials - which tend to increase unit prime costs in the boom and to lower them in the slump, but he does not put into question his theory of price. Similarly, when he attributes to increasing monopoly the slowing down of the rate of technical progress in advanced capitalist countries, he does not work out its effects on real income determination and its distribution. In other words, he leaves unexplained the realisation of profits under monopolistic competition.

D. Schumpeter's Model

Schumpeter's conception of the development process[1] involves a theory of growth and a theory of distribution. His model can easily be misclassified as a Keynesian model in so far as the rate of accumulation calls forth the necessary resources to finance itself. However, in this model it is the banking system which, by creating additional media of exchange, increases the demand for productive services, thus starting the cumulative process of income generation. Nevertheless, the mechanism is different in nature, as is the interpretation of social relations of production.

a) Factors and Incomes.

By classifying goods in 'orders' according to their distance from final consumption, Schumpeter defines two ultimate elements in production; these are labour and land. Produced means of production receive their value from

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[1] See J.A. Schumpeter, "The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle", Oxford University Press, New York 1974.

the value of consumption goods, and so the services of labour and land through their marginal productivities.

He dispossesses entrepreneurs from the character of a third factor of production. In his view, being an entrepreneur is neither a profession nor a lasting condition. Only when the producer decides to carry out a 'new combination' of means of production, he performs that function. Otherwise, his work is not essentially different from that of any other labourer. He does not even have to create or to find new possibilities, for they are always present. Therefore, it is only by his willingness to carry out a new combination that he becomes an entrepreneur.

The value of this leadership function is determined by imputation, and is equal to the value of the new product minus the value which would be obtained had the productive factors been employed in producing the former product; land and labour inputs reckoned at their hitherto prevailing prices.

According to Schumpeter, there is always a monopoly element in profit, because whenever a new product enters the market, lack of competitors enables the entrepreneur to fix its price according to monopoly principles. However, once a new combination is carried out, the entrepreneur leadership is not any more necessary, and competition between labourers and landlords will gradually wipe out the profit, until the value of the product is exhausted by wages and rent.

Since profit comes from monopoly pricing, and such a source of monopoly is not usually a permanent one, Schumpeter sees no reason why there should be a tendency towards equalisation of profits. In his opinion, profit, like rent, are net returns, and should not be linked to any stock value[1]. Rather, the 'capital value' of land and other sources of permanent income (like a permanent monopoly) are derived once the rate of interest is known. Rent and (permanent) monopoly revenue should stand to land and the monopoly source of income in the same relationship as the interest rate stands to financial capital.

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[1] Op. Cit. pp.152-153

These assertions bring Schumpeter very close to Kaldor and Mirrlees. When he states ... "The individual industrial business is not a permanent source of any other income than wages and rent ...",[1] he is saying no more than they do when they describe the fall in profit coming out of machines of earlier vintages, that is, when the general wage rate increases as a result of the rise in labour productivity brought about by newer machines.

Nevertheless, Schumpeter was not as keen as they were to perceive the influence of a falling degree of monopoly on the rate of accumulation[2]. Had he incorporated this element into his theory of the business cycle, it would provided a much better explanation to recovery following depression.

b) Credit and Development.

To explain his development theory, Schumpeter starts from a full equilibrium situation. Under these conditions, established businesses finance their activity out of retained profits, but the entrepreneur who does not possess any disposable property and wishes to carry out a new combination, must resort to credit.

Since productive factors are fully employed, this entrepreneur must outbid the producers in the market in order to acquire the required goods and services needed to produce. He needs credit as a temporary transfer of purchasing power to produce at all, because he creates a new demand before creating a new supply.

From this, it follows that no justification exists for calling 'capital' only the amount spent on long-lived produced means of production. Thus, he states, capital ... "stands as a third agent necessary to production in an exchange economy between the entrepreneur and the world of goods ..."[3].

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[1] Ibid. p.208

[2] By speeding up of the rate of obsolescence.

[3] Op. Cit. p.117

According to this definition, only means of payment are capital, and not even all means of payment the part of the media of exchange which constitutes the technical means to carry out transactions must be excluded.

In line with his theory of distribution, interest is neither a 'net return' (i.e. a windfall profit), nor a surplus value adhered to particular goods. It is not a net return, because it depends on the value of capital; and it cannot be a surplus value, for surplus values are non-permanent by nature, and interest is a 'permanent phenomenon'. Accordingly, he defines interest as "a premium on present over future purchasing power", which arises simply because "the control of present purchasing power means more future purchasing power to the borrower"[1]. Interest being, thus, something akin to a "tax on profits".

If credit came out of resources from the circular flow of income, he points out, a theory of abstinence would explain the interest rate as the valuation of the marginal sacrifice to the lender of postponing present consumption. Nevertheless, since credit comes out of media of exchange created ad hoc to be used by entrepreneurs, the interest rate must depend upon the factors governing the supply of credit by the banks.

To him, two main factors determine the supply of means of payment: first, the risk involved in the new 'combinations' of productive factors that credit is to finance; and second, the depreciation of the total amount of means of payment that additional credit is likely to produce[2].

c) The Business Cycle.

In Schumpeter's theory of the business cycle there is not an endogenous explanation for the carrying out of innovations, as there is in Robinsons' and Kaldor's models. According to him, new combinations are carried out discontinously, in groups ...."Exclusively because the appearance of one or

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[1] Ibid. p.189. Italics in original.

[2] Ibid. p.195

a few entrepreneurs facilitates the appearance of others, and these the appearance of more, in ever increasing numbers ..."[1]. To support this view, he has recourse to the fact that every normal boom starts in one or a few branches of industry, and from there it radiates to the rest of the economy, partly because innovations can be applied to other sectors, and partly because the increase of demand stimulates other sectors as well.

His analysis of the business cycle, therefore, begins when entrepreneurs, for whatever reason, are willing to carry out new combinations. To this purpose they demand credit to the bankers, but since this credit does not simultaneously increase the quantity of productive services, it causes a rise in prices.

He makes a distinction between this type of inflation and the inflation caused by credit to finance consumption, because in the latter case, once the goods are consumed the means of payment remain in circulation, so that the rise in prices lasts for ever. In contrast in the former case, once the process of production ends up, the supply of goods increases, and this increase in production outweighs the total amount of credit granted, since the value of output includes entrepreneurial profit. "Hence, the equivalence between the money and commodity streams is more than restored, the credit inflation more than eliminated, the effect upon prices more than compensated for, so that it may be said that there is no credit inflation at all in this case - rather deflation - but only a non-synchronous appearance of purchasing power and of the commodities corresponding to it, which temporarily produces the semblance of inflation"[2]. To him, the transition from boom to depression comes when the products of new activities appear in the market, thereby causing a fall in prices.

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[1] Ibid. p.228

[2] Ibid. p.110

Since at the same time products go to the market, entrepreneurs pay off their debts, there is a credit deflation. The disappearance of purchasing power - just when its corresponding stream of goods comes into the market - aggravates the fall in prices[1], and may lead to a crisis. Meanwhile, the fall in entrepreneurial activity after the boom reduces the demand in investment industries, which causes a fall in employment and consumption, and thereby a further shrinkage in demand.

There are many obscure points in the above argument which require careful analysis before any conclusion may be derived about what determines the path of economic activity.

It is particularly difficult to examine the working of this model, because real and monetary effects are often blurred in the analysis. This problem arises from the fact that Schumpeter develops a sort of surplus theory of distribution, at the time that he accepts a utility theory of value.

Besides, the micro-foundations of his theory of development are only weakly linked to the macro-economic aspects of his theory of prices. In fact, the model was not worked out to throw light on the employment and income determination processes.

In spite of these shortcomings, we shall try to disentangle the micro- and macro-processes involved in the business cycle theory envisaged by Schumpeter, in order to find out the elements that would eventually explain investment, income and prices.

We start at the point where entrepreneurs, who have decided to undertake new activities, bid up the market to get the required means of production. Since Schumpeter assumes full employment prevails, and there is a lag before the product of new activities go to the market, increased demand will have to be furnished with goods produced in the previous period. Therefore, real supply will remain unchanged, and we may assume for simplicity that a proportionate rise in prices and costs occurs.

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[1] Ibid. p.233

It is not until the following period that he surplus over costs on new activities is therefore realised. Then demand for other goods falls and those producers who make losses (the marginal - producers) will retire from the market -unless they decide to borrow from the banks in order to undertake new activities which allow them to enter their competitors'markets. Thus, if we assume wages respond immediately to an increased demand for labour, while some time elapses before the products of new activities go to the market, at the time the latter are sold, at least one - part of what the innovators gain is at the expense of what the marginal producers lose.

New activities usually involve higher labour productivity. Therefore, the real effect of new combinations on production will eventually depend upon differences in the elasticities of the cost curves of innovators and former producers (mainly marginal producers), and differences in their elasticities of demand. Let us follow the process through.

We assumed that additional credit means of payment increase all prices proportionately, since demand is met from production of the previous period. In real terms, labour is likely to be released from marginal producers, who cannot, or are afraid to pay higher wages because their profit margins are already low.

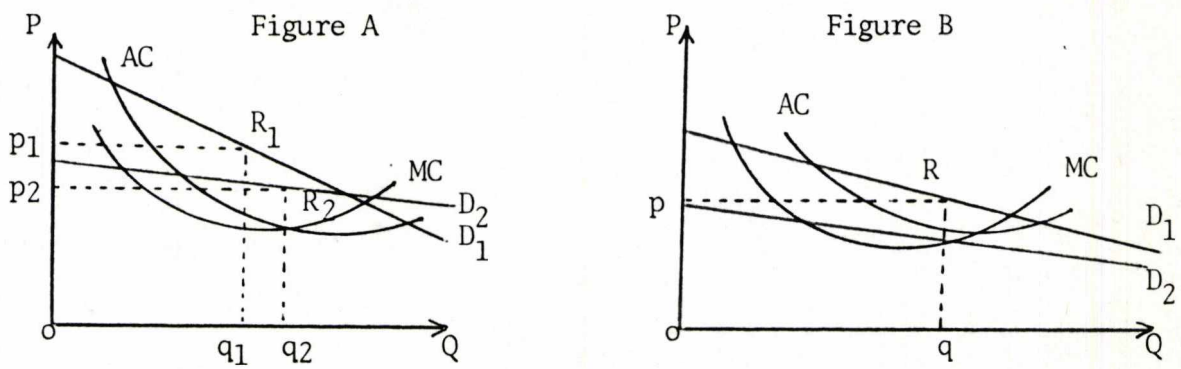
At the end of the period, the products of the new activities enter the market. Let us continue to assume new activities - involve both better products and in greater amounts than those formerly produced by the marginal producers. That is, new - activities entail higher labour productivity not only arising from higher commodity prices, but also from lower labour inputs per unit of product.

The effect on the marginal producer of the enlarged supply will thus be twofold: he will face a downward shift in his demand curve by the 'real-productivity' effect, and a decrease in its slope by the 'differentiation' effect.

In the case of standard products, a larger supply of goods with the same means of payment would lead to a general fall in prices. But this is not the case in Schumpeter's model. Every new activity may entail a new product, and its effect upon the demand for existing products will depend upon its degree of differentiation, substitutability, etc. These factors will affect distinctly the position and the slope of every existing producer's demand curve. They will also determine the slope of the innovator's demand curve, on which he relies to realise the surplus over costs which will constitute his profit.

A lower, and less steep demand curve will lead the 'general producer'[1] to increase the quantity sold and to reduce the price, if he aims to maximise his profit. This is illustrated in Diagram 5 by a change in the equilibrium position from $R_1$ to $R_2$ in Figure A.

Diagram 5




[1] 'General producer' means every producer in the economy, who unlike the marginal producer, still enjoys a considerable degree of monopoly, fruit of innovations carried out in the past. We assume, according to Schumpeter's argument, that the individual degree of monopoly decreases as time goes by.

For the marginal producer (Figure B), the new demand curve may lie below the average cost curve, so that any amount he decided to produce would imply a loss. His customers will distribute themselves amongst his former competitors and the innovator, thereby causing secondary minor upward shifts and changes in the slope of their respective demand curves.

To the extent that labour is released from marginal producers and labour productivity is increased by innovating firms, available manpower will also be ready to increase the quantity produced by 'general producers'. Therefore, at some time in the operation of such an economy, there may be unemployment, and the new demand for factors by the innovator may not cause a rise in their prices.

Schumpeter neither analyses the implications of long-lived equipment nor the distortions that biased progress introduces in the development of a capitalist economy. These aspects of technical progress that occupy a central core in Robinson's and Kaldor's theories of growth are completely absent in Schumpeter's theory. It was perhaps by fear of causing a confusion of thought between the meaning of capital as finance - to which he attaches the capability of rendering a profit - and the meaning of capital as a stock of durable producer goods, which in his analysis are not different in nature to other produced inputs, that he does not stress the role of embodied technical progress in the carrying out of new activities. To him, technical progress is just new combinations of already existing resources. Nonetheless, these new combinations involve changes in the demand for productive factors (land and labour) which may affect differently the evolution of profits.

To summarise we may say that, as 'general producers' are able to increase the quantity produced and lower their prices, the economy, in general, may experience 'real' economic growth in addition to the increase in 'real' productivity brought about by the innovating firm. But, at this stage, nothing else can be said about the real growth of the economy. Everything

will depend on how incomes are spent and what the banks' credit policies happen to be. Though Schumpeter never seemed to realise this shortcoming, we know that if profits are not spent surpluses cannot be realised. However, let us assume retained profits are kept unspent as demand deposits at the banks. With these 'real' resources the banker may 'produce' new purchasing power, so that nominal demand exceeds production and prices would go on rising.

As new activities are being thus financed, the share of profits in output increases and the process repeats itself in a cumulative way.

Growing idle capacity arising out of the increasing degree of monopoly, and inflation, both put a brake on accumulation; the former affects the demand for credit, and the latter affects the banks' supply.

The effect of inflation on the banks' supply is likely to be the stronger for several reasons. First, because it will appear earlier. The bankers' sensitivity to inflation is usually high, since they are well aware that there is a limit to means of payment depreciation beyond which the whole financial system collapses. Second, because when inflation is moderate, it operates as a further stimulus to accumulation. The expectation of a growing demand encourages entrepreneurs to undertake new combinations, so that their demand for credit rises. If inflation accelerates despite the efforts of the bankers to keep it low, speculative demand for funds to accumulate stocks will also lead producers to increase their demand for credit. Purchasing power to serve as working capital will be demanded instead of purchasing power to acquire fixed assets, but this difference would be meaningless to Schumpeter's concept of 'capital'. Therefore, tight credit policies are likely to be implemented when credit demand is still strong.

If in face of a fall in demand, monopolists (general producers and innovators) try to maintain prices, the downward trend in demand will be worsened, since by reducing the quantity produced they will demand a lesser

amount of means of production. Only when marginal producers are driven out of the market and capacity has thus shrunk, is there scope for recovery to take place. Then fresh demand for credit would arise and a new cycle would begin.

In this 'version' of Schumpeter's model, as in the earlier Keynesian models, it is the existence of a limit to the ratio of profits to wages (and rents, in the former case) that puts a brake to accumulation. This 'inflation barrier', however, operates in a different way within this model than it did in Robinson's or Kaldor's.

Schumpeter, as we stated above, was not explicit about the evolution of employment and real wage rates in his analysis of development. Therefore, at any time, within this model, labour surpluses may arise which prevent labour unions from being powerful enough to force entrepreneurs to share the surplus. Therefore, it is the rigidity of profit margins, and not a minimum real wage rate, that accounts for the inflation barrier. Thus, growing idle capacity, and not a labour shortage, puts an end to the boom and starts depression.

There are still two loose ends in our version of Schumpeter's model, which may be tied up to explain the rate of accumulation and, therefrom, evolution from slump to recovery. These concern the critical level of inflation that disrupts the banking system, and the critical level of the rate of profit that keeps entrepreneurs in business. Nevertheless, we shall not elaborate on these points until later in chapter 5 , when we enlarge the analytical structure of the model to take into account demand and supply elasticities in financial markets.

## E. Marx's Model

In "Capital", Marx states two theories of distribution, which entail two different explanations of the growth process. One is supposed to hold in the long-run, whereas the other concerns the business cycle.

a) Long-run Theory of Distribution

Marx's long-run theory of distribution rests on three main elements: a historically determined rate of surplus value, the technically fixed organic composition of capital in each sphere of activity, and free competition among capitalists that brings about the equalisation of the rate of profit. His insistence on prices following labour values and on a constant rate of exploitation, however, prevented a satisfactory explanation of a uniform rate of profit among spheres of production with different organic composition of capital.

In an attempt to solve this so-called 'transformation problem' in Marxian economics, that is, the transformation of values into prices, Bortkiewicz[1] developed a model of simultaneous price determination, which keeps from the original Marxist model a constant rate of exploitation in (labour) value terms, and a uniform rate of profit in price terms, allowing for different organic composition of capitals in the various spheres of production.

According to Bortkiewicz, Marx could not solve the transformation problem because, although he allowed prices of production to differ from values (i.e. in cases of capitals with different from average organic composition), he did not make the necessary price adjustments to the elements of constant and variable capital in the determination of cost prices, but, conversely, he kept considering them in labour value terms, so that he went only "half-way" in the transformation process.

Though Bortkiewicz's contributions solves the mathematical aspect of the transformation problem, there is no doubt that it impairs a more essential point in Marx's argument. This concerns the origin of profit. Bortkiewicz's solution, as he himself pointed out, leads to a "deduction theory of profit" very similar to Smith's or Ricardo's theories. He introduced the conditions

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[1] See P. Sweezy, "The Theory of Capitalist Development", Monthly Review Press, New York 1964, Chap. Vii.

for simple reproduction as a constraint, thereby making profits dependent upon the conditions of production of wage goods and investment goods, that is, upon the organic composition of capitals committed to their production. Marx would have hardly agreed with such a solution, for it implies that profit rests on a 'natural' or technical basis, rather than on a social relationship, this apparently being the reason why he so emphatically rejected Ricardo's theory of differential rent[1], and why he so much tried to prove that the rate of profit was first determined in industry.

In his short-run theory of distribution, Marx gets rid of most of the limiting assumptions that underlie his long-run analysis. His approach to the business cycle brings him closer to orthodoxy, and definitely places him as a forerunner of modern economics.

b) Short-Run Theory of Distribution.

In the short-run, Marx allows for a flexible rate of exploitation, and a fluctuating (average) rate of profit. He also accepts a quantity theory of money.

In order to explain crises, he abandons the assumption of prices following labour values. What governs prices, that is, the conditions for the realisation of surplus value, he admits, differ from those of their production ..."They diverge not only in place and time, but also logically. The former are only limited by the productive power of society, the latter by the proportional relation of the various branches of production and the consumer power of society. But this last-named is not determined either by the absolute production power, or by the absolute consumer power; but by the consumer power based on antagonistic conditions of distribution which reduce the consumption of the bulk of society to a minimum" ...[2].

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[1] See K. Marx, "Capital", Vol. III, F. Engels (Ed.), Lawrence and Wishart, London 1977, Part VI.

[2] Op. Cit. Vol. III, p.244

When he analyses the necessary conditions for prices to follow values, he also points out the difficulties that it entails, since ..."the balance can be maintained only on the assumption that in amount the value of the one-sided purchases and that of the one-sided sales tally"..., and this is by no means an automatic outcome of capitalist production. In contrast, ..."the fact that the production of commodities is the general form of capitalist production ... engenders conditions of normal exchange ... conditions which change into so many conditions of abnormal movement, into so many possibilities of crises, since a balance is itself an accident owing to the spontaneous nature of their production".[1].

In Marx's scheme of simple reproduction, the realisation of surplus values is constrained by the equivalence between constant capital used up in consumption goods production and "gross output" (variable capital plus surplus value) in the production of capital goods. Since he assumes workers do not save and capitalists spend the whole of the surplus in unproductive consumption, realisation of surplus values depends solely upon the stability of the industrial structure to furnish mutual demands.

Under extended reproduction, that is allowing for net investment, the conditions for realisation of surplus values become more complex. Besides the technically determined organic composition of capitals, the propensity to save out of profits also plays a role in the process. The enlarged demand for elements of constant capital to be used up in production of consumption goods must now equal the enlarged variable capital in capital goods production, plus capitalists' unproductive consumption; that is, what is left of the surplus after accumulation has taken place.

In his long-run theory of distribution, Marx did not attempt to explain the desire for accumulation. As long as any profit at all is obtainable (the absolute level and the falling trend of the rate of profit were immaterial),

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[1] K. Marx, "Capital", Vol. II, F. Engels (Ed.), Lawrence and Wishart, London 1974, p.499.

accumulation of capital proceeds. In the short-run, however, he abandons this assumption, and postulates an investment function in terms of the average rate of profit, which allows for a supply price of capital, thereby leading, ultimately, to a cost of production theory of prices.

As accumulation speeds up, and the reserve army of unemployed diminishes, wage rates rise and the rate of surplus value falls, thereby lowering the rate of profit. If additional capital could not lead to an increase in the mass of surplus value, because, as Marx states, there would be an absolute over-production of capital,...."there would be a steep and sudden fall in the general rate of profit, but this time due to a change in the composition of capital not caused by the development of the productive forces, but rather by a rise in the money value of the variable capital (because of increased wages) and the corresponding reduction in the proportion of surplus labour to necessary labour"[1].

Marx refused to accept, as Ricardo did, Malthus's theory of population to explain subsistence wages. Instead, he postulated labour-saving technology as an instrument by which capitalists regulate the reserve army of unemployed and exert control over the wage rate.

A shrinkage in the rate of profit due to higher wages either puts a brake on net investment or accelerates the use of labour-saving techniques. Both reactions operate in the direction of increasing the reserve army, and thereby lead to a fall in wages which causes the rate of profit to rise again. Thus, he states, ..."It is no contradiction that ... overproduction of capital is accompanied by more or less considerable relative overpopulation. The circumstances which increased the productiveness of labour, augmented the mass of produced commodities, expanded markets, accelerated accumulation of capital ... and lowered the rate of profit, these same circumstances have also created, and continuously create, a relative over-population, an overpopulation of labourers not employed by the surplus capital owing to the low degree of

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[1] Op. Cit. Vol. III, pp.251-252

exploitation at which alone they could be employed, or at least owing to the low rate of profit which they would yield at the given degree of exploitation"[1]. This supply price of capital, however, is not explained by Marx.

The change in the theory of prices underlying Marx's short-run analysis - as compared to the labour theory of value he used to support his long-run theory of distribution - qualifies the role of underconsumption in his explanation of the business cycle. In the long-run, when prices follow values, there is no place for underconsumption except to the extent of capitalists' hoarding, when net investment is below the amount of wear and tear provisions. Workers' consumption and production of wage goods should be equal by definition. As he abandons this theory of prices, underconsumption may also arise from a shrinkage in the purchasing power of the labour force. Nevertheless, he emphatically rejects the possibility that crises can be overcome by increasing wages, and recalls that a period of relatively high wages always precedes crises.

These remarks, as also his belief that labourers' consumption could be reduced by capitalists' increased desire for accumulation, suggest that he had in mind a model of income distribution akin to Kaldor's, with a rate of exploitation dependent upon investment decisions which, in turn, arise from shifts in what Kaldor would call the 'technical progress' function. These ideas are summarised in the following passage: ..."It [the consuming power of the bulk of society] is furthermore restricted by the tendency to accumulate, the drive to expand capital and produce surplus-value in an extended scale. This is law for capitalist production, imposed by incessant revolutions in the methods of production themselves, by the depreciation of existing capital always bound to them, by the general competitive struggle and the need to improve production and expand its scale merely as a means of self-preservation and under penalty of ruin"[2]. Accordingly, one would expect

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[1] Ibid. p.256

[2] Ibid. pp.244-245

he believed increases in money wages would call forth even higher price increases. And, actually, nothing but this can be derived from his assertion that ..."The incomes of the unproductive classes and of those who live on fixed incomes remain in the main stationary during the inflation of prices that goes hand in hand with over-production and over-speculation. Hence their consuming capacity diminishes relatively, and with it their ability to replace that portion of the total reproduction which would normally enter into their consumption"[1].

In the case of over-production of capital, part of the existing capital must remain idle or be destroyed for the rate of exploitation to rise again, thereby stimulating further production and accumulation. This 'capital destruction' concerns money-capital. It takes the form of a fall in prices, which turns commodity capital saleable only at loss, and depreciates existing constant capital[2]. "On the eve of a crisis [Marx writes], and during it, commodity-capital in its capacity as potential money-capital, is contracted [due to the fall in prices]. It represents less money-capital for its owner and his creditors (as well as security for bills of exchange and loans) than it did at the time when it was bought and when the discounts and mortgages based on it were transacted ... Such a collapse in prices merely balances out their earlier inflation"[3].

Marx, however, did not contemplate underconsumption as the main cause of the fall in the rate of profit, but rather as a result of it. It has been his followers who have worked out an underconsumption theory of crises. Actually, they have inverted the direction of causality, and have postulated underconsumption as the main source of crises, and a falling rate of profit as its

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[1] Ibid. P.491

[2] Ibid. p.253

[3] Ibid. p.491

outcome[1]. In Marx's approach, the increasing organic composition of capital leads straightforwardly to the fall in the rate of profit and, thereby, to the stoppage of net investment. So, underconsumption appears mainly as a result of capitalists' increased hoarding.

Nevertheless, Marx does not explain why, at a certain time, with relative overpopulation, it is more profitable for capitalists to speculate than to invest. In other words, he does not disentangle the relationship between the rate of interest and the rate of profit, which at the end of prosperity drives capitalists to hoard. He points out a low rate of profit may account for it[2], but he does not explicitly show that, at the time the rate of profit falls and hoarding takes place, there could not be an even lower rate of interest. Yet, his short-run analysis of price changes, money flows, and the rate of interest may provide a coherent explanation of cash balances and physical capital as competing forms of investment.

Let us analyse the financial sector in Marx's model in order to find out this link.

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[1] On this basis P. Sweezy, for instance, built up his theory of depressions. According to him. a falling propensity to consume out of profits, and a rising organic composition of capital, account for a steady decline in the ratio of the rate of growth of consumption to the rate of growth of means of production. On the other hand, he points out, in the long-run the ratio of the rate of growth of output of consumption goods to the rate of growth of means of production has proved to be fairly stable. As a result of these two forces, he concludes, the ratio of the growth of consumption to the rate of growth of output of consumption goods has an inherent tendency to decline, and ..."this tendency may express itself either in crises, or in stagnation, or in both". See P. Sweezy, Op. Cit. p.183.

[2] Assumedly, in a case where total surplus value could still be increased by further additions of capital.

c) The Rate of Interest and the Money Market.

In line with his labour theory of value, in his long-run theory of distribution Marx states the rate of interest tends to equal the rate of profit. In the short-run, however, he concedes the latter only puts an upper limit to the former; below this limit, the rate of interest depends on the supply of and demand for money-capital.

Marx repeatedly pointed out an exhaustive analysis of the credit system "and of the instruments which it creates for its own use (credit-money, etc.)" was beyond his plan for "Capital", for there he was concerned with the study of the laws governing the long-run development of capitalism. Accordingly, the financial system he dealt with was extremely simple: currency was supposed to consist of metallic money with intrinsic value, credit flew to and from industrial capitalists themselves, and bankers were nothing but middlemen between money-capitalists and industrial-capitalists.

Marx distinguishes money as currency for the circulation of consumption goods (revenue), from money as currency for the circulation of producers' goods (capital). He assumes the money form of revenues has a constant velocity of circulation, and, therefore, such demand for money tends to conform positively to the cycle. The amount of money required for the circulation of capital, on the other hand, varies inversely to the state of credit among industrial capitalists, and therefore, tends to conform negatively to the cycle. In the average, the latter influence dominates, and velocity conforms negatively to the cycle, commodity prices rising and falling with the level of economic activity[1].

The supply of money-capital in Marx's model depends on hoarding decisions and international bullion flows. Demand for capital in money-form, on the other hand, depends on the rate of profit being above the rate of interest - a concept akin to Keynes's marginal efficiency of capital - . From this, it follows that there is not an absolute level of the rate of profit which accounts for hoarding decisions, because the rate of profit might be high,

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[1] Op. Cit. Vol. III, p.448

and yet hoarding takes place, e.g. if there is a bullion outflow which drives the rate of interest up to the level of the rate of profit. Likewise, a low rate of profit might encourage investment, only provided that the rate of interest is still lower.

Accordingly, the absolute level of the rate of interest should also be irrelevant to investment decisions. Certainly, Marx was aware of this when he stated ..."The phase wherein a low rate of interest but above the minimum, coincides with the 'improvement' and growing confidence after a crisis, and particularly the phase wherein the rate of interest reaches its average level, exactly midway between its minimum and maximum, are the only two periods during which an abundance of loan capital is available simultaneously with a great expansion of industrial capital. But at the beginning of the industrial cycle, a low rate of interest coincides with a contraction, and at the end of the industrial cycle, a high rate of interest coincides with super-abundance of industrial [commodity] capital"[1].

To him, the rate of interest was only a price for liquidity, and as such, it could not by itself explain demand for productive assets. "In times of stringency [he wrote] the demand for loan capital is a demand for means of payment and nothing else ...Those who say that there is merely a lack of capital, are ... just quibbling about words, since precisely at such times there is a mass of inconvertible capital as a result of over-imports and over-production"[2].

Bullion flows, in Marx's analysis, behave very much in accordance to prices. "An import of precious metal takes place [he writes] mainly during two periods. On the one hand it takes place in the first phase of a low interest rate, which follows upon a crisis and reflects a restriction of production; and in the second phase, when the interest rate rises, but

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[1] Ibid. p.489

[2] Ibid. p.515. Italics in original

before it attains its average level. This is the phase during which returns come quickly, commercial credit is abundant, and therefore the demand for loan capital does not grow in proportion to the expansion of production"[1]. Similarly, ..."a drain ... of precious metal takes place as soon as returns no longer flow, markets are over-stocked, and an illusory prosperity is maintained only by means of credit; in other words, as soon as a greatly increased demand for loan capital exists and the interest rate, therefore, has reached at least its average level ... [then, there is a] withdrawal of capital ... as loanable money-capital ... [which has] a direct influence on the interest rate. But instead of restricting credit transactions, the rise in the rate of interest extends them and leads to an over-straining of all their resources. This period ... precedes the crash"[2].

As prices rise, and the rate of profit falls, therefore, the rate of interest soars. Eventually, it is conceivable that the latter puts a (lower) limit to the rate of profit and not the other way round, since, in the process, commodity prices actually rise above their labour values.

Marx did not analyse the effect of changes in commodity prices on the exchange value of money - and thereby, on hoarding decisions - , even though he considered some of the effects they produce on the exchange value of physical capital, and therefrom on the rate of profit and investment. Obviously, once prices differ from values, capital gains (or losses) may arise not only from productive assets appreciation (or depreciation), but also from changes in the purchasing power of hoards; and these net capital gains are but likely to be considered by capitalists, in addition to the rate of profit and the rate of interest, when assessing the profitability hoarding <u>vis a vis</u> profits reinvestment.

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[1] Ibid. p.570

[2] Ibid. p.571

From this, it follows that, in a monetary economy like the one Marx envisaged, cash balances and productive assets are competing forms of investment; and also that, in such an economy, the business cycle turning points are determined by capitalists' maximisation of revenue from both forms of holding wealth.

F. Post Marxist Models.

Marx relied on the prevalence of competition in the developmemt of capitalism. Despite he recognised that economies of large-scale production call forth a process of concentration of capitals, he believed such process would operate fostering the development of productive forces. This is a source of differences between him and his followers. Post-Marxist writers state concentration, by erecting monopolies, tends to depress the rate of accumulation; first, through restrictions to output growth, and second, by slowing down the rate of technical innovations.

a) Theory of Monopoly Capitalism.

Even though these preliminary remarks suggest there is agreement among post-Marxist writers about the factors which account for the development of monopoly capitalism, this is not so. But if not every writer attaches to these elements the same value in the explanation, they all point out transition from competitive capitalism into monopoly capitalism took place simultaneously to the massive formation of joint-stock companies, the development of the banking system, and a revolution in the methods of industrial production.

They also agree the big commitments of capital that technical progress required, first led to the formation of monopolistic joint-stock companies, and thereon, market imperfections tended to be self-sustained by the reinvestment of surplus values, either in the same field (i.e. increasing concentration), or in other fields (i.e. enlarging the power of controlling groups).

Early this century, Marxist writers denounced the so-called 'holding' procedure was an effective means for controlling a sphere of industry[1], since thanks to this practice ..."the big capitalist who can command a large block of shares in one or more corporations is able to bring under his control an amount of capital several times what he owns"[2].

They too, unanimously condemned the huge profits bankers were making from the issue of securities when acting as 'promoters' in the transformation of individual enterprises into joint-stock companies and pointed out the many ways in which banks were speeding up concentration of capitals and strengthening monopolies.

Indeed, there is a great deal of consensus among them as to the factors which accounted for the merger of industrial and banking capital - which gave birth to the so-called finance capital - , and its effects on limiting competition. Lenin explains this process as a result of the concentration of loanable funds at banks, and the information the latter occasionally possess about their customers' economic position[3]. To Hilferding, this link takes the form of a 'personal union', for ..."there is formed a circle of persons who, thanks to their own possession of capital or as representatives of other people's capital (bank directors), sit upon the governing boards of a large number of corporations. There thus arises a kind of personal union, on the one hand between the different corporations themselves, on the other between the latter and the banks, a circumstance which must be of the greatest importance for the policy of these institutions since among them there has

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[1] Lenin quotes H.G. Heymann, in 1904, as probably the first to call attention to this phenomenon, and he also refers to R. Liefmann, in 1909, for pointing out no more than 40 per cent ownership could be enough to exercise such control. See N. Lenin, "Imperialism, the Highest Stage of Capitalism", Progress Publishers, Moscow 1978, p.47.

[2] P. Sweezy, Op. Cit. p.260

[3] N. Lenin, Op. Cit. p.40

arisen a community of interests"[1]. They, both, together with Sweezy and Mandel, contemplate credit as a means to compel firms to subject to a cartel, so that ..."The more extensive the connexions of a bank ... the more effectively is it able to pursue its aim of eliminating competition and erecting monopolies"[2].

Post-Marxist writers, too, tend to underestimate the role of bankers after the transition period, that is, once monopoly capitalism is on its way.

According to Mandel, self-financing through accumulated reserves has reduced the dependence of monpolistic enterprises from bank credit, the latter being still important only to small and medium sized firms. Trusts, he states, are no longer controlled by banks through investment credit, but rather they "create their own banks, in order to ensure that their available surpluses bring a 'return'"[3].

Similarly, Baran and Sweezy remark corporate self-financing has freed firms from financial institutions. In clear support to Galbraith's theory of capitalist development[4], they state that big corporations have also become independent from stock-holders, and have ceased to be subordinate to the interests of a group. To them, presently, ..."the relevant line-ups are determined not by ties to outside control centers, but by the rational calculations of inside management"[5].

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[1] R. Hilferding, "El Capital Financiero", Edicion Revolucionaria, Instituto Cubano del Libro, Cuba 1971, p.126. English translation of the passage taken from P. Sweezy, Op. Cit. p.261

[2] P. Sweezy, Op. Cit. p.266

[3] E. Mandel, "Marxist Economic Theory", Merlin Press, London 1977, p.512

[4] J.K. Galbraith, "The New Industrial State", Penguin Books, Harmondsworth, England 1978

[5] P.A. Baran and P.M. Sweezy, "Monopoly Capital", Penguin Books, Harmondsworth, England 1977, p.33

According to Sweezy, there is a limit to centralisation, and this determines the only temporary leadership of the banking system. But ... "Once the spectre of cutthroat competition has vanished and a modus vivendi for the most general and necessary monopolistic ends has been discovered, further combinations occur less frequently and may soon cease altogether.... When this stage has been reached [he states] the position of the banks undergoes a sharp change. The function of issuing new securities, on which their power was originally founded, becomes much less important. The large monopolistic corporations find themselves in possession of internal sources of funds, not only in the form of profits which can be accumulated instead of being distributed as dividends to shareholders, but also in the form of depreciation, depletion, obsolescence, and other so-called 'reserve' accounts which are to an ever increasing extent turned to the purposes of accumulation. With these internal sources of additional capital at their disposal, corporate managements are to a greater or less degree freed from the dependence on the market for new securities as a source of capital, and by the same token they are freed from their dependence on bankers"[1].

Indeed, Sweezy does not take into consideration that cartels cannot be stable, because technical progress and the process of accumulation within member firms cause continuous shifts in the balance of forces which call forth new combinations[2].

Not even Hilferding, despite his remarks about a personal union between the industrial capitalist and the banker, foresaw a permanent leadership of bankers in the development of monopoly capitalism. Indeed, he assumed that the cartelised industry, on the one side, and the banks, on the other, would undergo independent concentration processes. Thus, he expected that,

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[1] P. Sweezy, Op. Cit. p.267

[2] For an exposition of this theory, see E. Mandel, Op. Cit. p.436; also R. Hilferding, Op. Cit. Chaps. XIII and XV.

eventually, a capitalist economy would develop into a huge industrial cartel, on the one hand, and a monopoly bank, on the other[1].

b) Permanent Nature of Promoters' Profits

Notwithstanding their unanimous condemnation of promoters' profits, Marxist writers have paid little attention to the factors, particularly the institutional framework, which enabled the bankers to appropriate such capital gains. As they were concerned with social relations of production, they tended to focus attention on real markets, thereby neglecting the role of financial markets in the growth process.

Marx dismissed the whole concept of share-capital as 'imaginary money-wealth', without regard to its actual marketability at stock exchanges.

Even Mandel, who accurately defined the promoter's profit as the capitalisation of "the future difference between the average profit and the rate of interest"[2], seems to ignore the fact that security markets grant promoters' profits a permanent nature. If promoters' profits are permanent, and bankers carry out the underwriting of new negotiable debt and new equity issues, the growing importance of corporate self-finance should by no means be taken to represent a decline in bankers' power. In fact, it could equally have the opposite meaning, i.e. that bankers have got control over industrial production and expansion, in the process of maximising their own (speculative) profits.

Hilferding ruled out the possibility of overcapitalisation of stock companies at macro-economic level, by considering the supply of loan capital as being composed of real savings only, that is, of surplus values which remained idle either in the form of potential money-capital in the hands of industrial capitalists, or as savings of unproductive classes. The banker, in his scheme, only acts as a middleman, who gets the average rate of profit,

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[1] R. Hilferding, Op. Cit. p.264

[2] E. Mandel, Op. Cit. p.232

for otherwise more capital would flow to the banking activity until the rate of profit reached the average level. His analysis, however, suggests different conclusions, as we shall presently see.

Hilferding states that banks can 'save' currency for transactions, and increase velocity of circulation, by acting as clearing houses for industrial firms' pay settlements. He, also, points out credit raises the rate of profit on equity of industrial firms, on account of the difference that exists between the rate of interest and the average rate of profit. Actually, these two statements suffice to explain a monopolistic barrier to entry for every bank, which would prevent bankers' profits from falling. This is so, first, because at least part of each banker's profits would be depending upon the particular way in which his customers traded with each other and settled payments at the bank; in other words, each banker's profits would depend upon the peculiar integration of his customers' activities, which enabled him to save currency and expand credit. And second, because as these customers got more credit from their bank than they would get from any other bank - on account of the currency savings that their borrowing entails to the banker - , they would keep attached to the latter.

If the banker himself is committed to underwrite the new equity issues of industrial firms (as Hilferding assumes), and he also allocates credit among them, it would be but logical that he endeavoured to use these factors to his advantage. Accordingly, it would not take very long for bankers to appropriate the speculative profit from new security issues, and to lead the growth process of industrial cartels, particularly if they kept some of the latter's stock as a part of the promoter's profit.

Thus, as we carry on Hilferding's analysis, the development of a single industrial cartel, on one side, and a monopoly bank, on the other, seems unrealistic. His statements rather suggest oligopolistic financial groups would develop, each one comprising its own banks and industrial firms. These ideas will be worked out further in Chapter 4.

G. Concluding Remarks

So far, our review of macroeconomic theories shows that the effects of financial markets in investment decisions have been taken into consideration in different ways both in Economics and Management Science, but none has hitherto analysed their role in the choice of technique.

Some authors point out that the valuation of firms in financial markets determines real investment decisions, but they assume maximisation of real operating income also brings about maximisation of the market value of firms, so that financial markets are neutral to the choice of technique. By contrast, other authors have taken into account the effects of investors'risk aversion on the market value of firms, but they have not yet analysed the performance of different techniques in relation to investors'preferences.

Similarly, some writers have observed the monopolising effects of financial markets, as a result of their favouring capital concentration, and also the changes in income distribution that result from speculation, but they have not worked out how such monopoly rents and speculative profits affect the choice of technique. Others have analysed the effects of uncertainty and monopoly in real investment decisions (and the choice of technique), but they have neglected the role of financial markets in the distribution of income.

We would like to see a theory which combines all these elements to explain investment and employment; namely, a micro-economic theory of investment which explains the choice of technique based on speculative profits and investors' behaviour towards risk in financial markets. We also want a macro-economic theory which works out the effects of such relationships, and also the effects of financial markets on monopolies, for the economy as a whole,i.e. on the levels of income, prices and employment.

In chapter 3, we shall try to develop such micro-economic theory. In chapter 4, we shall qualify it with the effects of financial markets on the

process of the integration of firms into financial groups. Finally, in chapter 5, we shall work out its consequences at macro-economic level.

First, in chapter 2, we shall put some boundary lines to our research, in order to focus attention on a particular case of unemployment, which has become a pressing problem in developing countries, and concerns the choice of capital-using technology.

# Chapter 2.

## INAPPROPRIATE TECHNOLOGY AND SIGNIFICANCE OF CROSS SECTION DATA

In this chapter, we shall attempt to clarify the concept of inappropriate technology for developing countries, and to distinguish it from temporary disequilibrium situations, as both phenomena may appear in cross-section data of firms, when the latter are ranked according to size value of productive assets.

### A. Inappropriate Technology for Developing Countries.

Since developing countries suffer from a shortfall of productive capital which keeps their abundant labour force employed at low productivity levels, an inappropriate technology may be defined as the one which, at the time that raised the required amount of capital per labourer, yielded less output per unit of capital. Even though such technology may increase labour productivity, it would require increasing amounts of capital per unit of output, and from this point of view, it should be substituted for by less mechanised techniques.

Our definition of inappropriate technology can be illustrated by means of Diagram 2 (page 26), which shows Kaldor's technical progress function. Every point on the TT curve represents a technique with different degree of mechanisation. Points to the left of P, where output per labourer rises faster than capital per labourer, would represent appropriate techniques for less developed countries. Points to the right of P, illustrate inappropriate techniques.

In Kaldor's analysis, increasing mechanisation at falling rates of profit can only occur when the capital-output ratio falls and, thus, the risk of a long period of capital commitment diminishes. That is, when the economy moves rightwards on the TT function, but before it reaches point P. On the other hand, increasing mechanisation with a rising capital output ratio (i.e. points to the right of point P) can only occur when a rising rate of profit compensates

for the longer period of capital commitment involved. Finally more mechanised techniques, entailing lower rate of profit and higher capital-output ratios as compared with less mechanised techniques, are not expected to be used, unless the real wage rate has risen high enough to make the latter unprofitable, in spite of their yielding higher output per unit of capital.

B. A General Case of Inappropriate Technology.

The choice of inappropriate technology in developing countries may be accounted for by inadequate pricing of productive factors, in the sense that relative factor prices do not reflect relative scarcities, thereby making more- rather than less-mechanised techniques profitable. In other words, market distortions may explain firms in positions to the right of point P in Diagram 2.

In our analysis of inappropriate technology, however, we shall not be concerned with such market imperfections. Instead, we shall focus attention on a more obvious case, a certainly puzzling one, in which increasingly mechanised techniques involving falling rates of profit are used, when, at prevailing wage rates, other less mechanised techniques available would have yielded more output per unit of capital and high rates of profit.

This case, which apparently contradicts rational (i.e. profit maximising) entrepreneural behaviour, is by no means peculiar to industry in developing countries. Rather, it seems to characterise the growth pattern of big corporations, and, as such, it has been given wide recognition in modern economic literature[1]. Its, importance increases, however, as it appears under conditions of relative population and capital scarcity, as it is in developing countries.

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[1] Explanations hitherto put forward, however, tend to rely on non-economic variables, such as the shift of control from stockholders to managements, and the abandonment of profit maximisation as the main entrepreneurial objective. See, for instance, J.K. Galbraith, Op. Cit. Chap. 15.

C. Significance of Cross-Section Data in the Analysis of Inappropriate Technology.

Since capital goods are long-lasting, at any time the industrial structure of a country, as revealed by cross-section data, will show firms operating at different degrees of mechanisation, which were assumedly chosen in response to past levels of relative factor prices. Disequilibrium situations, therefore, will appear together with the long-run trend of mechanisation.

This may suggest that the case of inappropriate technology we are committed to analyse might be only a temporary phenomenon. In what follows we shall demonstrate, however, that the latter cannot be explained generally as a case of disequilibrium, for in such situations the sign of the elasticity of the rate of profit with respect to the capital-labour ratio does not change, it is always positive, even though the absolute value of the elasticity varies; whereas in the case of inappropriate technology we are concerned with, the elasticity turns out to be negative.

In order to assess the significance of this negative sign in cross-section analysis, we shall work out the effects of temporary disequilibrium situations on the data, under different assumptions concerning labour market conditions and technical progress.

a) Homogeneous Labour and Constant Technology.

Assuming constant technology (i.e. no shifts of the TT curve) and homogeneous labour, as the real wage rate increased over time, more mechanised techniques would be used by profit maximising entrepreneurs. At any time (after a period of rising real wage rates), therefore, firms exhibiting the lowest degrees of mechanisation might also report the lowest rates of profit, for they would be operating labour intensive methods of production - chosen when wage rates were low - at the already higher real wage rate.

This effect of increasing real wage rates, however, may only be enough to offset the comparative advantage of low degrees of mechanisation with respect to the level of the rate of profit, since less mechanised techniques yield higher rates of return on capital, the net outcome of rising wage rates on the rate of profit eventually depending on the shape of the production function. Following Craven[1], we may use efficiency curves to illustrate these two effects.

Accordingly, let us assume that T1, T2, and T3, in Diagram 6, represent the spectrum of techniques entrepreneurs are confronted with at any given time. T1 is a capital intensive technique; it does not yield very high rates of profit, but variations in the wage rate (w) do not greatly affect the level of its profit rate (r).

T2, on the other hand, is a labour intensive technique. It is more sensitive to wage rates (i.e. small variations in w cause wide responsiveness in r); at low wage rates, it yields very high rates of profit, but at high wages it is unprofitable.

Finally, T3, which is an intermediate technique, would be advisable at intermediate levels of wage rates, for between w1 and w3 it yields the highest rates of profit[2].

As the real wage rates rose, firms would tend to shift from T2 to T3, and finally to T1. The technical progress function depicted by cross-section data, thus, would show increasing capital-labour ratios with either constant or rising (but certainly not falling) rates of profit.

Temporary disequilibrium of firms using T2 and T3 would show in rising capital-labour ratios which, at first sight, would not be fully explained by

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[1] J. Craven, "The distribution of the Product", George Allen & Unwin, Studies in Economics 16, London 1979, Chap. 2.

[2] Since we are concerned with the choice of technique at micro-level, and prices of capital goods are a datum for the individual entrepreneur, we shall neglect the possibility of non-linear technologies and represent efficiency curves as straight lines.

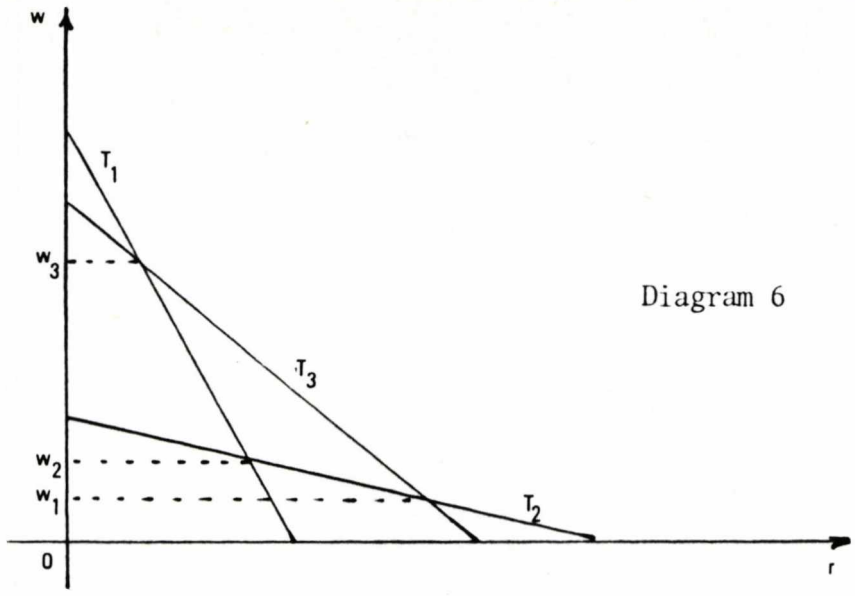


Diagram 6

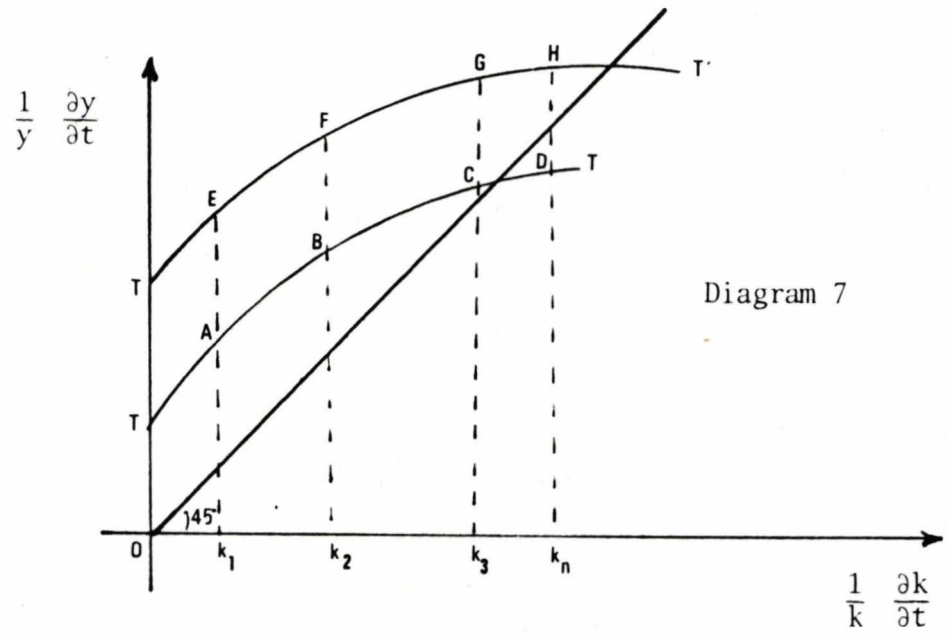


Diagram 7

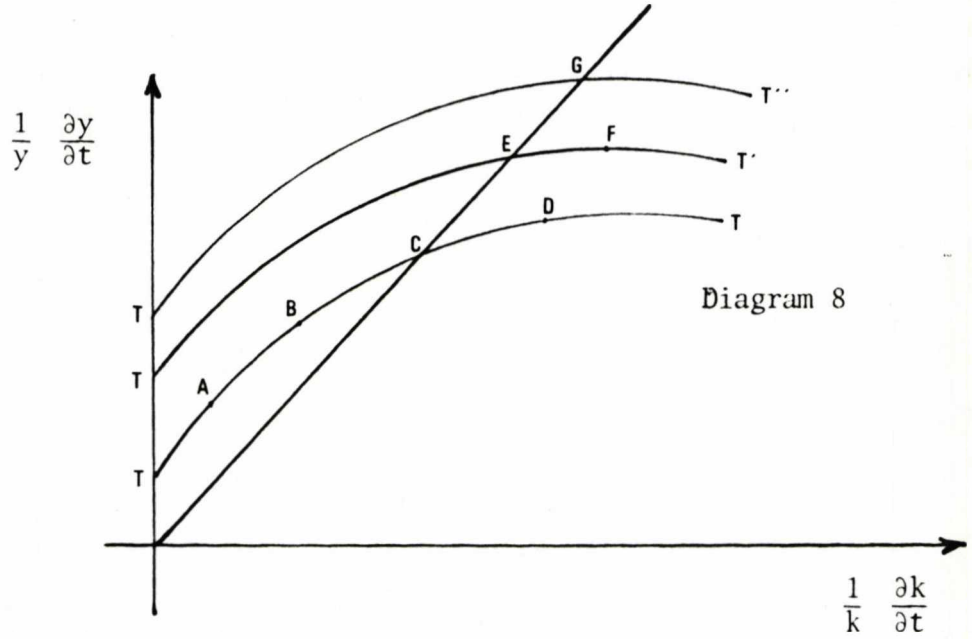


Diagram 8

changes in the rate of profit (or, conversely, by changes in the real wage rate); but they could not account for falling rates of profit as mechanisation increased, for firms would not have shifted from T2 to T3, etc., unless the new technique had offered a higher rate of profit.

If, on the basis of cross-section data, a regression equation was estimated for the capital-labour ratio in terms of the rate of profit, such cases would increase the variance, but they would not change the sign of the functional relationship.

b) Homogeneous Labour and Technical Progress.

Let us now consider a situation where technical progress has been going on for a period of time equal to the expected life of productive assets, so that at every level of mechanisation superior and inferior techniques may be found[1].

In Kaldor's diagram, superior techniques involve upward shifts of the technical progress function, as the one depicted in Diagram 7.

If labour were a homogeneous factor, movements of firms to the right of C on the TT curve in that diagram, involving increasing mechanisation with a rising capital-output ratio and a falling rate of profit (i.e. our case of inappropriate technology), could only be explained by increases in the real wage rate. Under these circumstances, a shift of the TT function - assuming neutral technical progress - could not lead firms in the last position to the right of the curve to lower their degree of mechanisation when shifting to the new technical progress function, for at the relatively high level of real wages already attained, there would not be any less mechanised technique that yielded a higher rate of profit. A shift of the TT curve, therefore, would drive firms to positions vertically above and to the right of the equilibrium positions

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[1] A superior technique, following J. Robinson, would be one which, at every possible level of wage rates, yielded a higher profit rate as compared to another (inferior) technique.

already attained in the former curve. Assuming cross-section data showed firms in positions as represented in Diagram 7, a shift of TT to TT' would lead firms in D to move to the right of H, while firms in A, B, and C positions, which were supposedly out of equilibrium, would also be led to invest in the new technique, at the $k_n$ degree of mechanisation.

It follows that, if labour were a homogeneous factor, and there had been technical progress, cross-section data would show a fairly stable wage rate among firms with different capital-labour ratios, and the rate of profit increasing with the degree of mechanisation. Under these assumptions, whatever the number of vintages of capital goods, cross-section data would show a positive relationship between the rate of profit and the degree of mechanisation. Superior techniques, as those depicted by points E, F, and G on Diagram 8, would increase dispersion in a regression line, but they would not change the sign of the relationship.

c) Non-Homogeneous Labour and Constant Technology.

Let us now consider what the results of cross-section data analysis are likely to be, in case labour were not a homogeneous factor, but rather higher degrees of mechanisation demanded higher skills.

In order to isolate the effects of segmented labour markets on the shape of cross-section data, we shall keep for some time the assumption of constant technology.

Under these conditions, wage rates among firms would differ, but more important than this, it is the fact that firms' movements beyond point C, along the TT curve in Diagram 7, could not be straightforwardly explained in terms of the exhaustion of the unemployed labour force (i.e. the increase of a single real wage rate), as it was the case with homogeneous labour.

i) Perfectly Competitive Labour Markets.

If the labour market is segmented, but within each segment perfect competition prevails, firms may move along the TT curve in either direction, going rightwards when highly skilled labour becomes cheaper relative to unskilled labour, and leftwards when skilled labour becomes dearer. Movements along the TT curve, therefore, would not be explained solely by the rate at which returns decrease at each degree of mechanisation, but also by the relationship between real wage rates at different skill levels. This situation is illustrated in Diagrams 9, 10 and 11.

In Diagram 9, TA stands for a labour-using technology, and TB for a capital-using one. At any time, real wages for unskilled and skilled labour may be $w_a$ and $w_b$, respectively; and entrepreneurs would choose from TA and TB, the one which, at such labour prices, yielded the higher rate of profit.

Let us work out the effects of changes in relative prices on the choice of technique, in order to derive movements of firms along the TT curve. A segmented labour market is represented by three scales of wages in the vertical axis of Diagram 10. $Ow_b$ is the maximum feasible wage rate for unskilled labour, distance $w_bw_d$ is the feasible range of medium-skilled labour prices, and distance $w_dw_e$ is the range of wages for highly-skilled workers. Let us take a firm in equilibrium at position B, which operates with an intermediate degree of mechanisation, employing medium-skilled labourers at a real wage rate that falls in the middle of the feasible range of semi-skilled labour prices. The rate of profit of this firm would be $r_3$, and it would be equal to the rate of profit that more mechanised firms would get, were the real wage rate of highly skilled labour at its minimum feasible level, $w_d$. Both types of firms, under these conditions, would be as profitable as firms using labour intensive technique T2, were the real wage rate for unskilled labour equal to $w_a$ (position E on efficiency curve T2).

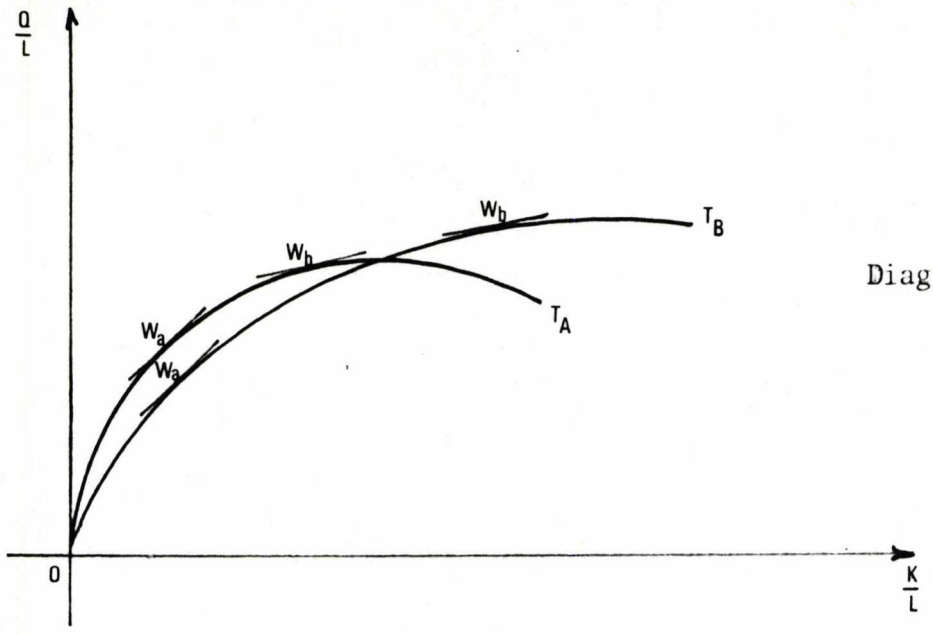


Diagram 9

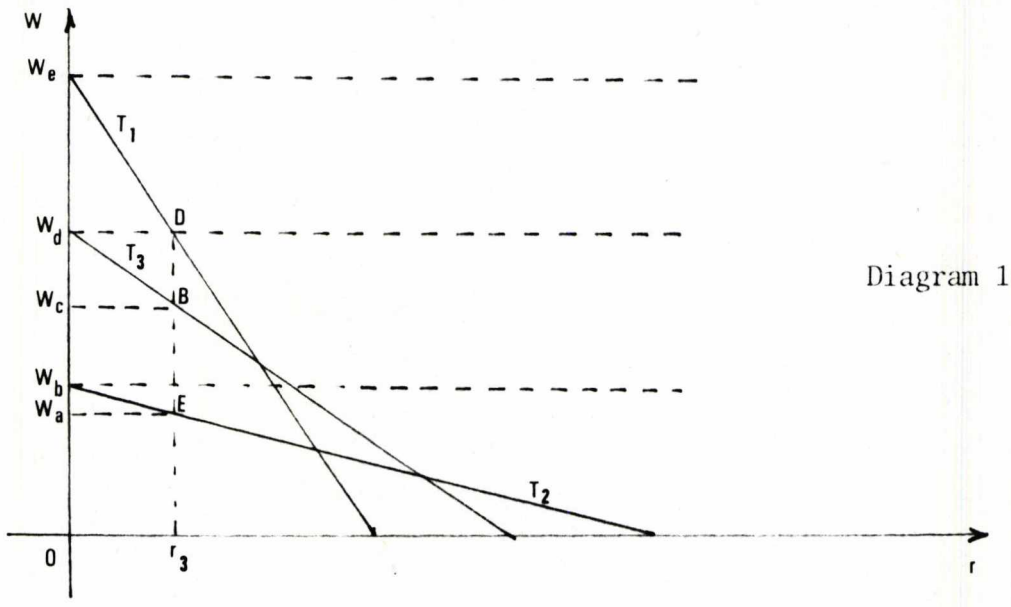


Diagram 10

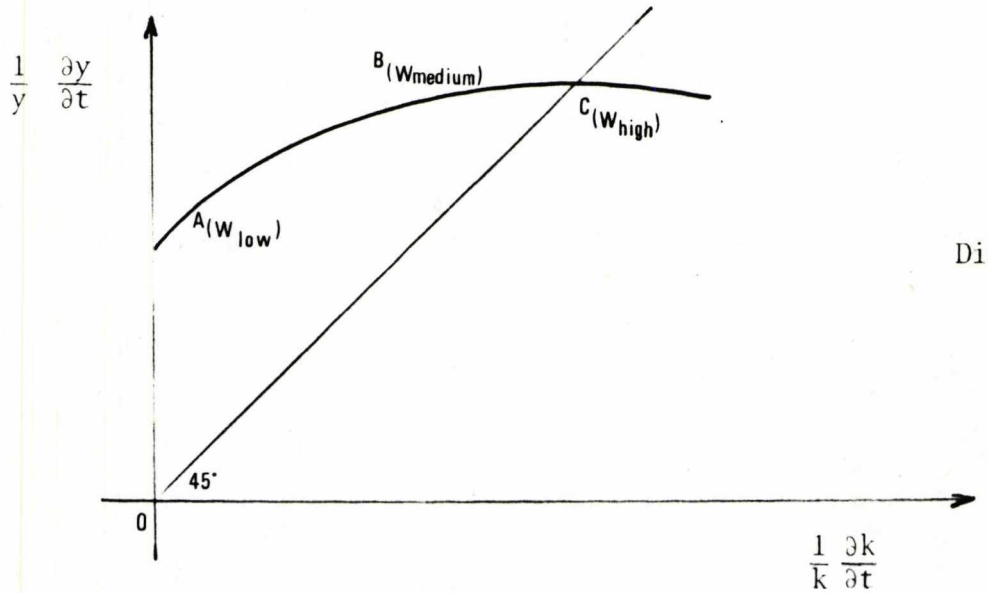


Diagram 11

If wages for semi-skilled labour tended to rise relatively to both, those of highly skilled and unskilled workers, firms using technique T3, when considering new investment projects, would prefer either technique T1 or technique T2; the final choice between these two depending upon their relative slopes (labour and capital input requirements), and the expected movements in the prices of highly skilled and unskilled labour.

In the above example of firms in position B, were the price of unskilled labour thought to increase beyond $w_a$, while that of highly skilled labour to remain at its lowest level, firms in B would tend to invest on technique T1, moving towards position D. Conversely, were unskilled labour wage rates falling below $w_a$, firms in position B would tend to shift to the least mechanised technique, T2.

Thus, if the supply of labour in each segment of the labour market adjusts to demand only in the very long-run, so that, for any practical purposes, labour supplies at each level of skills must be taken as given, and labour price in one segment does not affect other labour prices, movements between A, B, and C, on Diagram 11, might take place in either direction. In this case, the long-run equilibrium path would not necessarily involve a positive relationship between the capital-labour ratio and the rate of profit. Moreover, there need not be any significant relationship between these variables at all. We may wonder, however, to what extent it is reasonable to assume independent labour markets in a developing country, where there is a permanent surplus of unskilled labour.

ii) Excess Supplies of Labour.

It is obvious that a relationship must exist between training costs and wage rates, in case the supply of skilled labour falls short of demand. This would cause labour of lower skills to be upgraded, most probably through training-on-the-job, to catch up with the required qualifications from higher skill levels.

The possibility of withdrawing labour from medium skill levels and adding it to the supply of highly skilled labour, would make both wage rates interdependent, and a similar phenomenon would be likely to occur between low- and medium-skill labour prices.

If there were excess supplies of labour at every skill level, a similar phenomenon of 'pegged wage rates' would arise, provided minimum (i.e. 'subsistence') wages for every category of labour were established, and these differential rates were defined in terms of the wage at the lowest skill level.

If either of these two cases held in reality, and wage differentials were relatively constant over time, then firms would only move rightwards on the TT curve, for any movement leftwards would imply a lower rate of profit. Let us analyse how this conclusion is derived.

If in the former case, when training-on-the-job enabled labour supply to catch up with demand, a movement leftwards led to a higher rate of profit, it would imply that training expenditure to upgrade the labour force was carried out to the disadvantage of the entrepreneur, since wages at the higher skill level were still too high to compete with less mechanised techniques. If rational (i.e. profit maximising) entrepreneural behaviour determines wage differentials when there is a shortage of labour in a given segment of the labour market, we should rule out the possibility of a leftward movement along the TT curve, for it would be the characteristics of the more mechanised technique which, in this case, would determine skilled labour real wage rate, and not the other way round. Accordingly, the more mechanised technique, in order to be chosen at all, should secure a higher rate of profit than any other less mechanised technique.

In the second case, wage differentials established by custom - and, very likely, affected by the distribution of wealth in the community - , would

operate on the choice of technique in very much the same manner as a single wage rate would do, preventing a leftward movement along the TT curve. Let us assume, first, that these wage differentials are constant in <u>absolute</u> terms, and equal to distance PQ on Diagram 12, for semi-skilled as compared to unskilled labourers. At point P, technique T2, which is the least mechanised available one, is as profitable as technique T3, which is of an intermediate degree of mechanisation and employs semi-skilled workers at wage rate $w_c$. From this point, technique T3 will yield higher returns on capital ($r_3$) than technique T2 as wage rates increase, for the higher slope of the former secures that any future change in unskilled labour wage rates - which are directly transmitted to the semi-skilled labour market - will bring about larger shrinkages in $r_2$ than in $r_3$. It can be seen, at the extreme case, that when unskilled labour wage rate reaches $w_b$, which is the maximum feasible rate for that category of labour, the rate of profit with technique T2 is zero, while the rate of profit with technique T3 is $r_3'$; the wage rate for semi-skilled labour being $w_d$, which is equal to $w_b$ plus the constant absolute wage differential (RS=PQ).

This is rather an obvious result, since constant absolute wage differentials imply decreasing relative prices of skilled labour as compared to unskilled.

With constant relative prices for different sorts of labour, the more mechanised techniques will be chosen when, at conventional wage differentials, and at the ruling wage rate for unskilled labour in which the latter are expressed, these techniques yield the same rate of profit as the less mechanised techniques. Diagram 13 illustrates the choice of technique under such conditions.

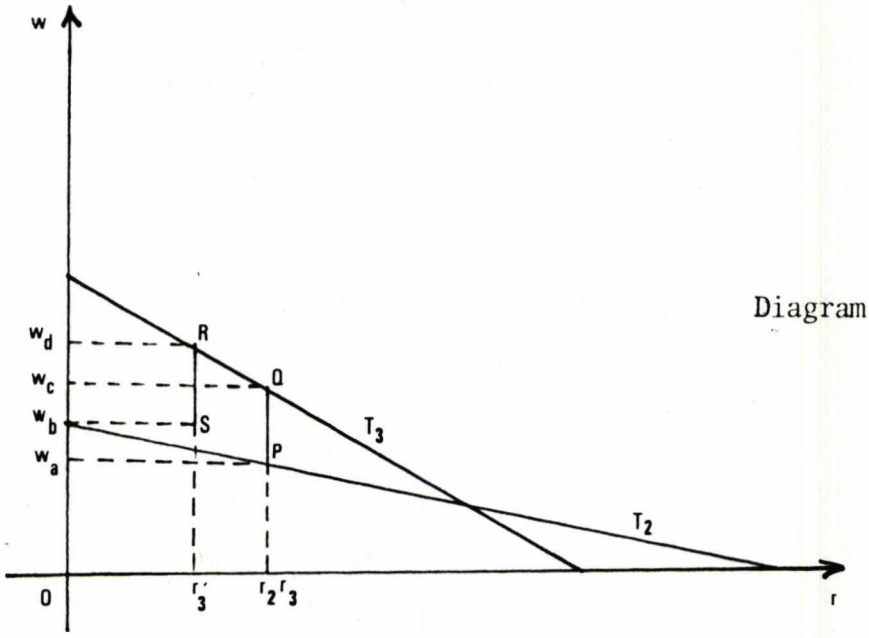


Diagram 12

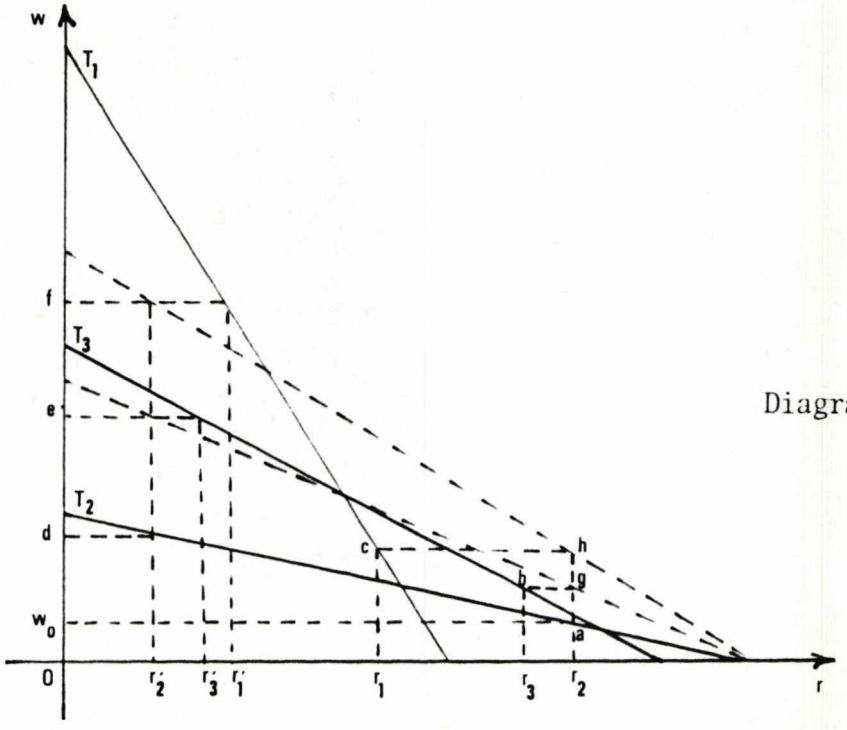


Diagram 13

At the lowest feasible wage for unskilled labour ($Ow_0 = r_2a$), the wage rate for semi-skilled labour would be $r_2g = r_3b$, and the wage rate for skilled labour would be $r_2h = r_1c$. The rate of profit, using the least mechanised technique, would compare favourably with the rates of profit under the other two alternatives ($r_1 < r_3 < r_2$) and, therefore, technique T2 would be chosen.

As unskilled-labour wage rates rose, however, the more labour-intensive techniques would quickly lose their comparative advantage, for the sensitivity of their profit rates to the wage rate is high. Despite skilled and semi-skilled labour wage rates also rising due to constant relative wage differentials, more mechanised techniques would perform better, because their labour inputs are relatively smaller (their efficiency curves are steeper). At unskilled labour wage rate Od, technique T2 (the most labour-intensive one) would yield the lowest profit rate ($r_2'$). Technique T3, at an intermediate level of mechanisation, would yield profit rate $r_3'$ (with semi-skilled labour wage rate equal to Oe, according to the constant wage differential); and technique T1, the most mechanised one, would exhibit the highest rate of profit, $r_1'$, despite facing a skilled labour wage rate as high as Of.

From this, it follows that, when either constant absolute wage differentials, or constant relative wage differentials prevail, and technology is constant, firms would only move rightwards along the TT curve as unskilled labour became more expensive. The relationship between the capital-labour ratios and the rates of profit in cross-section data, therefore, is expected to be positive, there being no grounds for inappropriate technology to be chosen by rational (profit maximising) entrepreneurs. As in previous cases, disequilibrium situations would only increase variance in a regression equation, but they could not account for a negative elasticity.

Let us now consider what the results could be when superior techniques, at different degrees of mechanisation, appear.

d) Non-Homogeneous Labour, Imperfect Labour Markets and Technical Progress.

With a segmented labour market, constant wage differentials (either absolute or relative), and technical progress, shifts of firms from one technical progress function TT, to another TT' exhibiting superior techniques at every level of mechanisation, may take place in either direction, from left to right as well as from right to left. In contrast with earlier cases, shifts from one technique to another may occur even when wage rates are constant. Let us analyse these two types of movements.

First, let us consider a 'normal' rightwards shift. Let us assume that a new, highly mechanised technique T1' appears, which is superior to technique T1 at every level of wage rates. These two techniques, which demand skilled labour, are represented by the parallel lines in Diagram 14-A. Let us assume that another, less mechanised, technique T2 is also available; this can be carried out by unskilled labourers who are paid significantly lower wage rates as compared with skilled workers. Assuming constant relative wage differentials prevail for skilled and unskilled workers, every possible unskilled labour wage rate considered in T2, would have a corresponding rate for skilled labour vertically above, on curve SS. At unskilled labour wage rate Od and skilled labour Oe, the less mechanised technique T2 would be preferred to the more mechanised technique T1; but once the more mechanised technique T1' became available at the same level of wage rates, this would be preferred, for it would yield a profit rate $r_1'$, which is higher than $r_2$ and $r_1$. On Diagram 14-C, this switch of technique would be represented by a rightward change from position D to position G.

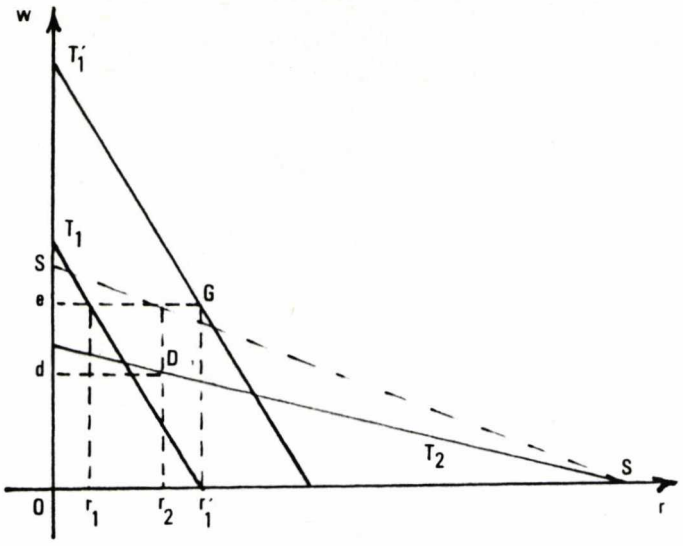


Diagram 14-A

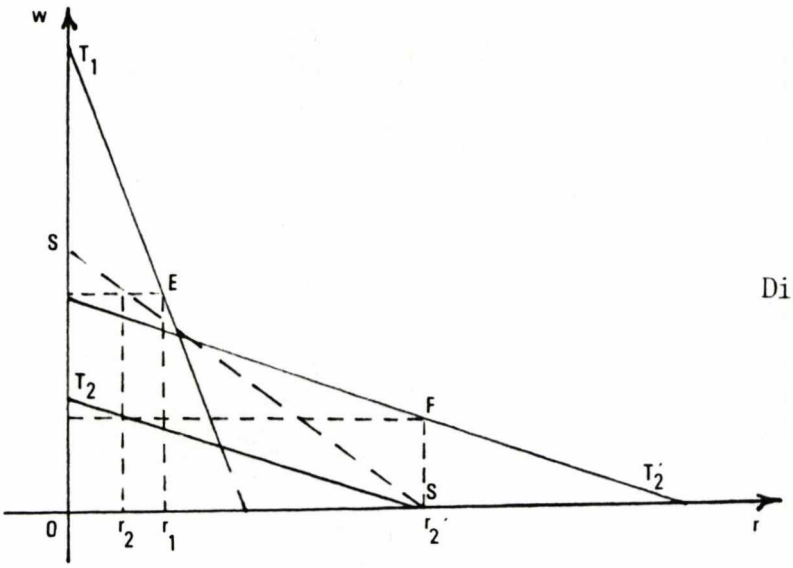


Diagram 14-B

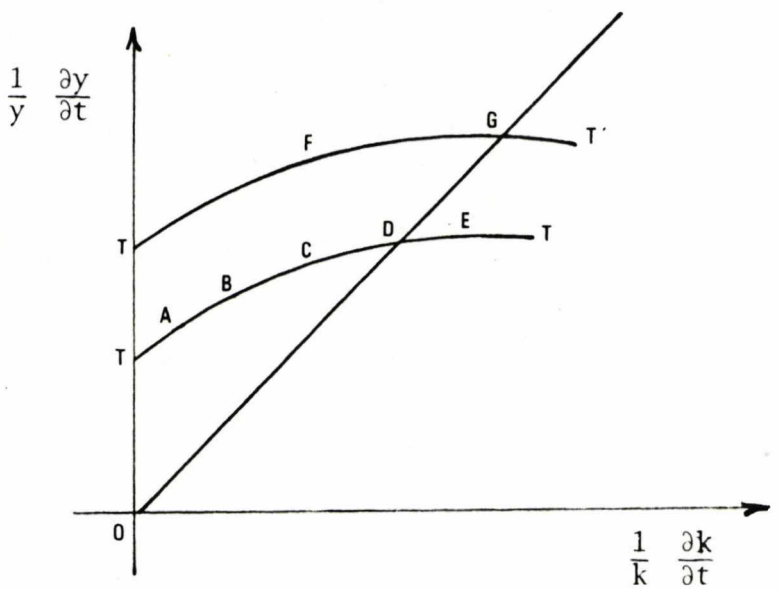


Diagram 14-C

A leftwards shift should occur in quite a similar way. Thus, Diagram 14-B illustrates a change from a more mechanised technique T1, to a superior less mechanised one, T2', when both, unskilled labour wage rate Od, and skilled labour wage rate Oe, remain constant. This change from position E to position F in Diagram 14-B, would correspond to the leftward shift, in Diagram 14-C, from point E on the old TT curve, to point F on the new, superior, TT' function.

From this, it follows that, if cross-section data is taken to represent the TT curve for a period of time equal to the expected life of productive assets, and during this period superior techniques have appeared at different degrees of mechanisation, biased technical progress might explain the apparently irrational entrepreneurial behaviour involved in the case of inappropriate technology we are analysing.

Nevertheless, if we take either that technical progress is likely to be neutral, or that the effects of biased technical progress, in a period of time as short as the expected life of productive assets, are negligible, our case of inappropriate technology could not be explained as a simple example of temporary disequilibrium.

D. Uncertainty and the Choice of Inappropriate Technology.

We may rule out the possibility of inappropriate technology being a disequilibrium situation, not only on the grounds of the above two assumptions, but rather on account of the plausible role of uncertainty in the choice of technique.

It is obvious that, when unskilled labour wage rates are not expected to vary widely, labour intensive techniques are more advantageous, for their rates of return are the highest. Nevertheless, if labour legislation is expected to raise minimum wages in the future, or simply, if there is this

possibility, entrepreneurs may not risk using a labour-intensive technique, unless the feasible range of the minimum wage rate variation still secures a higher rate of profit, as compared to a more mechanised technique.

Since productive equipment usually lasts for a time span larger than the foreseeable horizon of wage policies, an unqualified maximisation of the rate of profit - on the basis of short-term conditions -seems very unlikely to underlie entrepreneurial behaviour. On the other hand, because wage policies determine to a large extent the profitability of investment, it is conceivable that, under rational entrepreneurial behaviour, a stable rate of profit is pursued, rather than the highest profit rate attainable in the short-run.

A more mechanised technique, yields a lower profit rate, but its return varies less in response to changes in the wage rate. This is particularly so, when constant absolute or relative wage differentials prevail, for the slope of the efficiency curve of the more mechanised technique is, by necessity, greater than the slope of the line of feasible unskilled labour wage rates[1]. It can be seen, from Diagram 15, that when constant relative wage differentials prevail, percentage increases in the wage rates of skilled and unskilled workers are equal, but percentage decreases in the rates of profit differ, being always lower for the more mechanised technique.

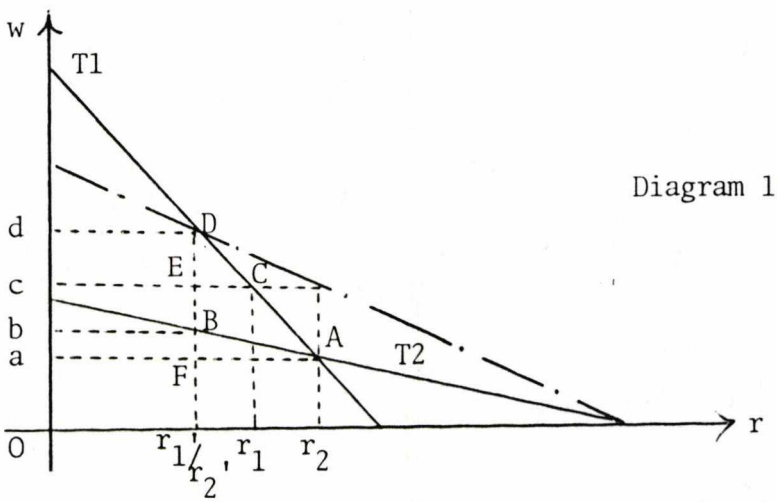


Diagram 15.

[1] The slope of the line of unskilled workers' feasible wage rates may be taken to be equal to the slope of the efficiency curve of the less mechanised technique, since in diagrams we have been relating the rate of profit of the least mechanised technique to the feasible range of variation of unskilled labour wage rates.

In fact, when percentage increase of unskilled labour wage rate is ab/Oa (from position A to position B on the efficiency curve of the less mechanised technique T2), and percentage increase in skilled labour wage rate is cd/Oc (from position C to position D on T1), percentage decrease in the rate of profit of the more mechanised technique is Ec/cC, while percentage decrease in the rate of profit of the less mechanised one is FA/aA. Thus, while constant relative wage differentials make $\frac{cd}{Oc} = \frac{ab}{Oa}$, a steeper T1 curve (with respect to T2) makes $\frac{EC}{cC} < \frac{AF}{aA}$.

E. Concluding Remarks.

Our analysis shows that cases of inappropriate technique which may appear in cross-section data of firms - where the capital-output ratio and the labour-ratio rise, whereas the rate of profit falls - , cannot correspond to temporary disequilibrium situations but in a very particular case. Namely, when technical progress has been significantly biased, in the labour-saving direction, for a period of time equal to the life of productive assets.

By contrast, uncertainty in physical investment decisions may account for cases of inappropriate technique as long-run equilibrium situations. This may be so, regardless of the nature of technical progress (whether labour-saving or capital-saving), when entrepreneurs aim at maximising profits over a time span larger than the foreseeable future of wage rates; particularly, when conditions in the labour market bring about constant wage differentials for different categories of labour.

# Chapter 3

## A NEW APPROACH TO THE INVESTMENT FUNCTION OF THE INDIVIDUAL FIRM

The analysis of the profitability of alternative techniques (as wage rates rise), that we carried out in Chapter 2, gave us reasons to believe that the cases of firms using inappropriate technologies in developing countries correspond to long-term equilibrium situations in which entrepeneurs maximise profits under conditions of uncertainty. In other words, it showed that uncertainty in real markets, particularly with respect to the future wage rate, was likely to bring about biases towards the use of labour saving techniques.

In this chapter, we shall analyse how uncertainty in financial markets has similar effects on the choice of technique, and why it is likely to account for a stronger bias towards the use of inappropriate technology.

We shall begin by analysing how security markets, by shortening the period of time in which capital assets reach equilibrium prices, and due to their high liquidity, call forth stable rates of profit in the economy, so that they become a spur to the use of capital intensive technology.

Secondly, we shall build up a micro-economic model of investment behaviour, which will attempt to explain the choice of technique and the distribution of income in the individual firm, as a result of the latter's maximising speculative profits at security markets.

A. The Role of Security Markets' Liquidity.

Security markets enable entrepeneurs to capitalise any increase in profits by issuing new equity. As they sell their stocks, they get an amount of money several times the absolute increase in profits, for what they are placing on the market is the capitalised value of the prospective income stream. Similarly, as profits shrink,stock prices fall, and capital losses amount several times the absolute decrease in profits. The high speed at which security markets reach equilibrium prices, therefore,amplifies the effects of firms' profitability on the amount of finance available to them.

Changes in the value of equity usually call forth changes in the same direction in the amount of loan capital available to the firm, since equity operates as a lever to bring outside finance to it. Thus, when profits rise, the firm gets additional resources both from new equity, and from increased borrowing. When profits shrink, stockholders, as individuals, suffer the capital losses from the fall in the value of equity, but the firm also faces a shrinkage in the amount of finance available as the supply of loan capital to it decreases.

Securities are demanded both as a source of income, and as stores of value. In order to fulfil the latter function, they must bear stable returns. Due to the high degree of liquidity attained in financial markets, it is conceivable that investors preferred a lower though stable return (which would keep security prices stable), rather than a higher unstable one, which would force them to keep unwanted securities in their portfolios until prices were favourable, thereby foregoing other, perhaps more profitable, opportunities for investment. In other words, it is conceivable that investors' demand for securities showed a trade-off between the level of the rate of return and its dispersion which reflected the price they were willing to pay for liquidity.

Abundant empirical research on investors' preferences strongly supports this hypothesis[1]. It shows that, in the long-run, securities of lower grades (according to financial risk) yield higher rates of return than securities of higher grades.

Grading of securities according to financial risk, is usually carried out by professional investors and security dealers on the basis of the stability and growth of prices and yields, the absolute size of the yield becoming second in importance. It is mainly the reliability of the future income stream, the probability of its realisation at all, what matters for securities' quality assessment[2].

A secular decline in the real rate of return on equity[3], if stock prices are stable and the firm is growing, does not impair the latter's high grading. This is observable from the way in which investments are assessed by professional investors, who often relate income flows at current prices to equity values at constant prices, thereby causing an overestimation of absolute profitability (e.g. when they reckon earnings per share as an indicator of a firm's performance, or when they use stock values at purchasing prices to assess the profitability of a given portfolio)[4].

As investors discriminate against unstable securities, by demanding lower rates of return from the stable ones, they induce managements to choose the techniques which minimise profits dispersion. A lower rate of return demanded by investors from a given security means that, as profits increased, the issuer would be able to raise a larger capitalised value for the prospective income stream.

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1. See, for instance, F.B.Renwick, op. cit., Chaps.8 and 11. Also H. Sauvain, "Investment Management", Prentice-Hall, Englewood Cliffs, 1967, Chap.5.
2. H.Sauvain, op. cit., p.134
3. The ratio of profit in product terms to the market value of equity.
4. H. Sauvain, op. cit.

If the technique which minimised profits dispersion yielded a rate of profit (in product terms) on physical investment below the maximum, the shrinkage in the market value of the firm, due to the lower profit, could be compensated for by a lower rate of discount that investors used when capitalising the prospective income stream. Therefore, the market value of the firm, and the speculative profit that results from new security issues, would not necessarily follow changes in the physical productivity of capital assets.

In Chapter 2, we pointed out that, with constant wage rates, capital intensive techniques yield lower rates of profit than labour intensive ones, ceteris paribus; but we observed that as wage rates rose, profitability of the latter fell more quickly, whereas profit rates dispersion in the former was lower, due to their relatively smaller labour inputs.

If investor's aversion to fluctuating returns is strong, so that it accounts for a significant fall in the rate of return demanded from stable securities, it may eventually compensate for the difference in the rates of profit (in product terms) on physical assets to be yielded by a labour intensive technique vis a vis a capital intensive one. Therefore, security markets, by shortening the period in which equilibrium prices of capital assets are reached, and due to their high liquidity, may account for a bias towards the use of labour-saving techniques, which could eventually explain the choice of inappropriate technology.

B. Investors' Risk Aversion and Efficiency

We may now contrast these results with what orthodox microeconomic theory of investment holds, with respect to efficiency in the allocation of resources.

We leave aside, for the moment, the effects that capital intensity

may have on the rate of profit through its strengthening of monopolistic positions, and concentrate on the effects of investors' behaviour towards risk on the choice of technique. We assume that physical capital is homogeneous, and consider output as determined by the amount of fixed capital invested and the degree of mechanisation of technique, which is expressed as a capital-output ratio (v)[1].

According to orthodox micro-economic theory the market value of a firm's equity (pKs), under certainty conditions, would be given by the capital income it yielded, ($\pi$) and the rate of return investors demanded on it (k), so that

$$pKs = \frac{\pi}{k} \qquad (1)$$

Since the rate of discount(k) at which profits are capitalised is the same for all firms, maximisation of $\pi$ would secure maximisation of the market value of the firm as well.

Conversely, in our approach, a negative relationship between k and the capital-output ratio (v) does not secure that maximisation of $\pi$ simultaneously maximises the market value of the firm. Eventually, the latter will depend on the relative extent to which a rising capital-output ratio causes $\pi$ and k to decrease altogether.

Let us define k as

$$k = f_2(v) \qquad (2)$$

where $f_2' < 0$ due to investors' risk aversion, and

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1. Since we are mostly concerned with the choice of inappropriate techniques, that is, with situations where the capital-output ratio rises with the capital-labour ratio (at constant wages), we shall be using the capital-output ratio as a measure for the degree of mechanisation. Our analysis, however, should also apply to other situations, namely to those cases to the left of point P on Kaldor's technical progress function (Diagram 2, page 26 ), where the capital-output ratio falls as mechanisation increases, provided the capital-labour ratio substitutes for the capital-output ratio as the measure for mechanisation.

$$\pi = f_3(Q) \qquad (3)$$

$$Q = \frac{1}{v} K_f \qquad (4)$$

where Q and $K_f$ stand for output and fixed capital, respectively.

Since both, $\pi$ and K, are functions of the capital-output ratio, the technique which secures the maximum market value of equity will be given by the v which makes $\frac{\partial(pKs)}{\partial v} = 0$. Thus, the optimal technique is not the one which maximises $\pi$, but also the one which minimises k.

From this,it follows that unemployment may exist, at any given time, in spite of labour prices being equilibrium prices according to conditions in real (commodity and labour) markets [1].

For the time being, let us neglect the effects of different techniques on income distribution and assume that the share of profits in income is constant, so that

$$f_3(Q) = \rho Q \qquad (3a)$$

C. The Supply of Loan Capital to the Firm

The firm is expected to borrow in order to bridge the gap between its receipts and its disbursements. Therefore, in a firm's accounts, the total amount of liabilities (Li) is expected to keep a relationship to the total amount of proceeds (Q). This relationship may vary from one activity to the other, according to a great variety of factors, e.g. the monopolistic and monopsonistic positions of the firm -which may either compel it to grant credit to customers in order to realise sales, or conversely, may enable it to get finance from suppliers-, the length of the production period, the need to keep stocks of raw materials or - -

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1 Later on, we shall analyse how an excess supply of labour, which could be so generated, would add further advantages to capital deepening - -by leading to decreasing wage differentials-, thereby generating a selfsustaining process of increasing mechanisation with growing unem--ployment.

finished products according to varying marketing schedules, etc.

On the other hand, competition for the limited amount of financial resources may be assumed to exert some influence on the standardisation of the credit function, either in relation to the volume of sales, or to any other indicator of the solvency of firms (e.g. equity capital, tangible assets, etc.).

Since investors dislike unstable returns, we are entitled to assume that, as the fixed capital-output ratio increased and the rate of profit dispersion decreased, the ratio of liabilities to output (Li/Q) would tend to rise. Accordingly, we postulate

$$\frac{Li}{Q} = f_5(v) \qquad (5)$$

where $f_5' > 0$.

Provided that the rate of interest is below the rate of profit, and the amount of working capital to fixed capital does not increase as v rises[1], an increase in the ratio of liabilities to output, as firms used capital-intensive techniques, would also tend to compensate for the fall in the rate of profit (in product terms) on fixed assets that such techniques would bring about. This can be seen from the accounting identity

$$K_f + K_c \equiv Li + Ks$$

which leads to

$$\frac{Ks}{Q} = \frac{Kf}{Q} + \frac{Kc}{Q} - \frac{Li}{Q} \qquad (6)$$

If Kf/Q (the fixed capital-output ratio) and Kc/Q (the ratio of working capital to output) increase in the same proportion, and Li/Q increases in a greater proportion, Ks/Q should, by necessity, increase in a lower

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1. This allows for the ratio of working capital to output to increase in the same proportion as the fixed capital-output ratio rose.

proportion[1]. Therefore, as the rate of profit on fixed capital shrank with a rising capital-output ratio ($\frac{Kf}{Q} = v$), the rate of profit on equity may also shrink, but to a lesser extent. Again, the net effect on the amount of speculative profit that firms could realise from new stock issues at security markets, would depend upon the relative size of the elasticities of the rate of profit (in product terms) on fixed assets, and the ratio of liabilities to output, with respect to the capital-output ratio.

D. Working Capital and Mechanisation

We have not yet made any assumption concerning the behaviour of working capital (Kc) as the degree of mechanisation increases. To do so, we may divide it into three broad components: stocks (St), either of raw materials or of finished products awaiting for sale; liquid assets (Cb), which comprise cash, demand deposits and investments in securities; and, lastly, credit loans granted by the firm either to customers or to suppliers. We assume that the first two compnents (St + Cb) depend on the volume of sales. Though they may vary from one activity to the other, according to the length of the production period, seasonal factors affecting supplies and deliveries, etc., they are not expected to vary widely in response to changes in the degree of mechanisation. Therefore, we postulate $\frac{St + Cb}{Q}$ is a constant.

As the firm becomes more mechanised and gets a larger credit inflow per unit of output (Li/Q), it may be in a position to ease, in turn, its credit outflows. In fact, credit could also be used as a device to secure greater stability in supplies and proceeds, thereby reducing the dispersion of the rate of profit. Thus, we may postulate that, through the third component, working capital would be affected by changes in the technique

1. Since the rate of growth of Kf/Q and Kc/Q would be the weighted average of the rates of growth of Kc/Q and Li/Q.

used. Accordingly, we add

$$\frac{Kc}{Q} = f_7(v) \qquad (7)$$

where $f_7' > 0$.

E. The 'Supply' Rate of Return on Equity

We have pointed out that managements, backed by stockholders, aim to maximise the market value of their firms, and that this enables the latter to realise speculative profits ($\pi e$) at the stock market.

The market value of a firm is given by the market value of its debt outstanding plus the market value of its stock, so that

$$V = pKs + p_i Li$$

where $p_i$ represents the market value of 'bonds', which we take as representative of the firm's liabilities. In order to facilitate the analysis of income distribution within the model, however, let us assume for the time being, that only stocks are traded in security markets, so that firms borrow directly, either from banks or from other non-financial enterprises.[1] Accordingly, managements and stockholders will be concerned with the maximisation of pks only. In this process , however, the nominal value of liabilities will also be maximised, for provided the rate of interest is below the rate of return that investors demand on stocks (and this in turn is smaller than the rate of return on physical assets), it will always pay to increase liabilities to finance physical capital, since it will increase the absolute amount of profits and, thereby, the market value of the stock.

As fixed capital accumulates, and/or the degree of mechanisation increases, liabilities increase, but equity must also increase to fill the

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1 We shall remove this assumption later in this chapter, when we analyse the effects of interest rates on speculative profits.

financial gap between the additions to fixed and working capital,on the one hand, and the increased amount of liabilities on the other, as in equation (6). Therefore, as fixed capital accumulates and/or mechanisation increases, a rate of return on equity ($\hat{k}$) will result, which will depend on the profitability of the new physical investment and the volume of new stock that needs to be issued in order to finance it. Thus,

$$\hat{k} = \frac{\pi}{Kf + Kc - Li} \tag{8}$$

Multiplying and dividing by Q the righthand side of equation (8), and substituting equations (5) and (7) for Li/Q and Kc/Q, respectively, we arrive at

$$\hat{k} = \frac{\rho}{v + f_7(v) - f_5(v)} \tag{8a}$$

which is, so to speak, the 'supply' rate of return on equity.

F. Equilibrium Conditions

We have hitherto assumed that, as fixed capital increases with constant technique, output increases by a fixed amount determined by the capital-output ratio which characterises that technique. Since we have also assumed a constant share of profits in income, it follows that the supply rate of return on equity is not affected by changes in fixed capital intensity. This becomes clear as we transform equations (5) and (7) into

$$Li = f_5(v)\frac{K_f}{v} \tag{5a}$$

$$K_c = f_7(v)\frac{K_f}{v} \tag{7a}$$

and substitute them into equation (6), so that

$$K_s = K_f \left[ \frac{v+f_7(v)-f_5(v)}{v} \right] \qquad (6a)$$

Since we assumed a constant share of profits in income

$$\pi = \frac{\rho K_f}{v}$$

it follows that

$$\hat{k} = \frac{\pi}{K_s} = \frac{\rho \frac{K_f}{v}}{[v+f_7(v)-f_5(v)]\frac{K_f}{v}} \qquad (9)$$

Therefore, as fixed capital accumulates (with constant technique), both the numerator and the denominator in (9) increase at the same rate, and $\hat{K}$ remains unaltered.

Under these assumptions, equilibrium is reached when $\hat{k}$ is just equal to the rate of return demanded by investors - to which equation (2) refers -; that is, when

$$f_2(v) = \frac{\rho}{[v+f_7(v)-f_5(v)]} \qquad (10)$$

Alternatively, we may derive equilibrium conditions from entrepeneurs' speculative profit maximisation. The speculative profit entrepeneurs aim to maximise[1] can be expressed as

$$\pi e = pKs - Ks \qquad (11)$$

If the market value of the stock of a firm (pKs) is above its cost (Ks), which is equal to the difference between the firm's assets and liabilities, new investment in physical assets will take place.

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1 We are assuming that bonds cannot be traded in security markets.

Rising stock prices mean that the rate of return investors demand (k) is below the actual ('supply') rate of return ($\hat{k}$), so that

$$\left( pKs = \frac{\pi}{k} \right) < \left( \frac{\pi}{\hat{k}} = Ks \right)$$

Fixed capital accumulation will proceed at increasing degrees of mechanisation, provided $\frac{\partial pKs}{\partial v} > 0$. From (11) we get

$$\frac{\partial \pi e}{\partial v} = \frac{\partial pKs}{\partial v} - \frac{\partial Ks}{\partial v} \qquad (12)$$

The accounting identity in equation (6) secures $\frac{\partial Ks}{\partial v}$ will always be positive, for increases in the capital-output ratio will have to be financed out of equity issues in whatever amount is necessary after allowing for the maximum feasible increase in liabilities. Thus, from the supply side, we assume that Ks will increase whenever the capital-output ratio rises, even though the trade-off is a declining rate of return on equity ($\hat{k}$). Accordingly, from (6a) we get

$$\frac{\partial Ks}{\partial v} = \left[ \frac{vf_7'(v) - vf_5'(v) - f_7(v) + f_5(v)}{v^2} \right] K_f \qquad (13)$$

However, from (2) and (3) we cannot know, <u>a priori</u>, whether $\frac{\partial pKs}{\partial v}$ will be positive or negative at a given time, because it depends on the degree of mechanisation already attained. Eventually, it will depend on the extent to which further mechanisation lowers the absolute level of profits (in product terms) to be obtained from a given amount of fixed capital, and the extent to which it lowers the rate of return demanded by investors (k). Since $pKs = \frac{\pi}{K}$, and both $\pi$ and k are functions of v,

$$\frac{\partial (pKs)}{\partial v} = \left[ \frac{\alpha \pi}{\partial v} \cdot \frac{1}{K} \right] - \left[ \frac{\pi}{K^2} \cdot \frac{\partial k}{\partial v} \right]$$

From (2), (3a) and (4) we get

$$\frac{\partial(pKs)}{\partial v} = \frac{-\frac{\rho K_f}{v^2}}{f_2(v)} + f_2'(v)\frac{\frac{\rho K_f}{v}}{f_2^2(v)}$$

from which we arrive at

$$\frac{\partial(pKs)}{\partial v} = \frac{f_2'(v) - f_2(v)}{v f_2^2(v)} \rho K_f \qquad (14)$$

Substituting (13) and (14) into (12), we get

$$\frac{\partial \pi e}{\partial v} = K_f \left[ \frac{(f_2'(v)-f_2(v))\rho}{v f_2^2(v)} - \frac{f_7'(v)-f_5'(v)}{v} + \frac{f_7(v)-f_5(v)}{v^2} \right] \qquad (15)$$

Since different values of v may satisfy the condition $\frac{\partial \pi e}{\partial v} = 0$ in equation (15), it follows that long-run equilibrium may be attained at different degrees of mechanisation. This multiple solution to (15) also gives scope for the choice of inappropriate technology. At every value of v which makes (15) equal to zero, price of stocks equal nominal values,so that pKs = Ks, and $k = \hat{k}$.

G. Flexible Factor Shares

The parameters of the model, up to now, involve three types of data: investors' preferences, as depicted by equations (2) and (5) , capital requirements in production, which depend on the technique used and are defined by equations (3) and (7) , and, finally, the income distribution parameter ($\rho$) .

Let us remove the assumption of constancy in income distribution, and anlyse the behaviour of the model under some hypothetical labour market conditions.

Earlier in this chapter, we concluded that investors' preferences may account for increasing mechanisation, in spite of there existing unemployment and wages being at equilibrium levels. We have also pointed out that an excess supply of labour may account for constant, or even decreasing, relative wage differentials in segmented labour markets, and that these, either constant or decreasing differentials would bring about even greater stability in profit rates when using capital-intensive techniques than when using labour-intensive ones. If this is so, unemployment in any modern capitalist economy may be the outcome of a selfsustaining process of mechanisation which arises from speculative profit maximisation.

Therefore, let us formally introduce labour surplus conditions in our model, besides the non-homogeneous labour assumptions concerning skilled and unskilled workers. As we did earlier, let us assume that an increasing degree of mechanisation calls for higher skills, so that average wage rates tend to increase as the capital-output ratio rises. For the sake of completeness, and following convention, let us assume that labour differentiation also exists within the firm, as between the so-called blue- and white-collar activities[1]. Since it is mainly convention what accounts for this distinction, we may assume wage differentials between occupations (within the individual firm) are governed by standards based upon the distribution of wealth in the community. In other words, if white collar activities are generally considered to deserve higher pay than blue collar activities - e.g. because they have been traditionally carried out by labourers coming from wealthier strata, so that their 'subsistence income' was higher , or because, in the past, when labour markets were perhaps more competitive, they were in any way

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1. This distinction roughly corresponds to shop-floor workers and administrative workers.

tied up to certain higher 'costs of production', training and education costs included -, a difference will exist between these two rates. This difference, however, need not be an operational one based upon relative productivities, or even relative supplies, as it is among blue collar activities at different degrees of mechanisation. Instead, it may represent a symbolic mark up above the blue-collar rate. Under these assumptions, we may postulate the following equations for blue- and white-collar wage rates, respectively:

$$w_b = f_{16}(v) \tag{16}$$

$$w_w = f_{17}(v) \tag{17}$$

where $f'_{16} > 0$ and $f'_{17} > 0$.

As the degree of mechanisation increases, labour inputs per unit of output ($L_b/Q$, $L_w/Q$) decrease. Therefore, we may postulate

$$\frac{L_b}{Q} = f_{18}(v) \tag{18}$$

where $f'_{18} < 0$

$$\frac{L_w}{Q} = f_{19}(v) \tag{19}$$

where $f'_{19} < 0$

Substituting (4) into (18) and (19) we get

$$L_b = f_{18}(v) \frac{K_f}{v} \tag{18a}$$

$$L_w = f_{19}(v) \frac{K_f}{v} \tag{19a}$$

so that the total wage bills for blue- and white-collar workers become,

respectively

$$W_b = L_b w_b = f_{16}(v) f_{18}(v) \frac{k_f}{v} \tag{18b}$$

$$W_w = L_w w_w = f_{17}(v) f_{19}(v) \frac{k_f}{v} \tag{19b}$$

The final effect of an increase in the capital-output ratio on the absolute level of profits ($\pi$), thus, will depend on the relative shrinkage in the volume of labour demanded, on the one hand, and on the increase in wage rates due to higher training costs, on the other. Accordingly, we may substitute the following expression for our former equation (3a), which assumed constant factor shares:

$$\pi = \frac{K_f}{v} - W_b - W_w - i * Li \tag{20}$$

where i* stands for the rate of interest paid on liabilities, which, for the time being, we take as exogeneously determined.

The technique that maximises speculative profit, that is, the one which makes

$$\frac{\partial \pi e}{\partial v} = \frac{\partial (pKs)}{\partial v} - \frac{\partial Ks}{\partial v} = 0$$

will now obviously depend upon the wage and labour input parameters. These affect the absolute level of profits to be obtained from a given amount of physical capital as the degree of mechanisation varies, thereby causing pKs to vary. Thus, we have

$$\frac{\partial \pi}{\partial v} = \frac{\partial}{\partial v}\left(\frac{K_f}{v}\right) - \frac{\partial}{\partial v} W_b - \frac{\partial}{\partial v} W_w - \frac{\partial}{\partial v} (i^* Li)$$

From (18b), (19b), and (5a), we get

$$\frac{\partial \pi}{\partial v} = f_{21}(v, i^*, K_f) \tag{21}$$

Since $pKs = \frac{\pi}{k}$, and $\frac{\partial pK_s}{\partial v} = \frac{\frac{\partial \pi}{\partial v}}{k} - \frac{\pi}{k^2}\frac{\partial k}{\partial v}$; from (2), (5a), (18b), (19b), (20) and (21), we get

$$\frac{\partial pKs}{\partial v} = f_{22}(v, i^*, K_f) \qquad (22)$$

Substituting (13) and (22) into (12), we finally arrive at the derivative of speculative profits with respect to the degree of mechanisation

$$\frac{\partial \pi_e}{\partial v} = f_{21}(v, i^*, K_f) - f_{22}(v, K_f) \qquad (14a)$$

H. The Rate of Return on Equity and the Degree of Leverage

Sepculative profit may arise either from stock appreciation or from bond appreciation. Up to now, however, we have been assuming that bonds are not traded in security markets, so that no speculative profit can be obtained from them. Though this is an oversimplification, let us keep this assumption for a while in order to analyse other effects of a falling demand rate of return on stocks (as mechanisation increases) on credit market equilibrium conditions.

We have pointed out that competition for the limited amount of financial resources available leads to the standardisation of the degree of leverage amongst firms, at the same time that it levels out the rates of interest. Therefore, long-run equilibrium should involve a single degree of leverage and a unique market interest rate. Indeed, if competition was perfect, no individual entrepeneur would outbid his competitors for additional liabilities, since the additional profit he would make with those resources would be lower than the interest he would have to pay for them.

If financial markets were perfect in the sense that they brought about a single rate of return on stocks, without any differentiation with respect to the degree of mechanisation of firms, a single rate of interest and a standard degree of leverage would also result from maximisation of speculative profit. Nevertheless, when uncertainty causes discrimination between firms, and there arises stock differentiation which accounts for different rates of return on equity, firms will reach equilibrium at different rates of interest and different degrees of leverage, ceteris paribus.

Let us assume that entrepeneurs maximise speculative profit, so that any additional profits from production, generated by additional liabilities, are immediately capitalised as new stock issues which are placed on the stock market. Let us further assume that higher mechanisation suits investors' preferences in such a way that it lowers the rate of return they demand on stocks. In this case, as additional liabilities were obtained by outbidding at the credit market, a rising rate of interest on liabilities would be compensated for by a falling demand rate of return on equity. It follows that, when the least mechanised firms had reached the equilibrium degree of leverage at a given rate of interest, the more mechanised ones would still be in a position to profit from additional liabilities at a higher rate of interest. Since the value of equity would be maximised in both types of firms, because that is how speculative profits are realised, and the rate of discount at which more mechanised firms' profits are capitalised is lower, a given increase in absolute profit (in product terms) would involve a larger increase in equity for the more mechanised firms as compared to the less mechanised ones. Therefore, the increase in equity would more than compensate for the increase in liabilities, so that the degree of leverage would tend to fall, and so would the rate of interest that they would have to pay on

liabilities according to a given supply of credit schedule.

Thus, as the rate of return on equity demanded by investors from more mechanised firms fell, the latter's equilibrium degree of leverage and equilibrium rate of interest would also decrease.

I. Speculative Profit from Negotiable Debt.

Let us now remove the assumption concerning bonds' unmarketability, and consider, instead, speculative profit as consisting of both stock and bond appreciation.

The prices of securities that yield a fixed return, unlike stock prices, are not very much affected by changes in the rate of profit of the issuer. Even though its variability is usually considered as an indicator when assessing the degree of risk of default - in much the same way as in the case of common stocks -, the market price of bonds depends more directly on the amount of income they yield and the market rate of interest.[1]

In fact, the greatest risk bondholders are confronted with is not, usually, the risk of default, or 'financial' risk, but rather the risk of changes in the market rate of interest, which may lead to losses of principal in case they decide to redeem their bonds before maturity. The longer the period of the loan and/or the lower the rate of interest - within the feasible range of variation , the greater will be the risk of loss of principal due to changes in market interest rates.

Prices of bonds, accordingly, will depend first, on the coupon rate (i*), that is, on the rate of interest the issuer agrees to pay on the nominal value of the bond; second, on the current rate of interest and on the expectations as to its future trend; and third, on the length of the loan period.

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1. H. Sauvain, op.cit.

At a time when market interest rates are high and, accordingly, expectations of a future fall prevail, short-term debt instruments are likely to be preferred by entrepreneurs. Conversely, if an upward trend in interest rates is expected, long term bonds are likely to be issued. A sound policy for minimisation of risk of interest rate changes, however, would conceivably lead entrepreneurs to diversify the term structure of their liabilities. At any given time, therefore, if financial markets were competitive, we could assume that the average coupon rate for every firm would tend to be the same, though the term structure of their liabilities may vary among them according to the past evolution of market interest rates, and the growth path of each firm [1].

J. Total Speculative Profit Maximisation and Income Distribution

In order to assess the joint effects of the coupon rate of interest on bonds (i*) and the degree of mechanisation (v) on speculative profit maximisation, let us re-state equation (11) in the following terms

$$\pi e = pKs - Ks + p_i Li - Li \qquad (11a)$$

and let us define the market value of bonds as

$$p_i Li = \frac{i^*}{i} Li \qquad (23)$$

Speculative profit is now determined by the difference between the market value of stocks and bonds, and their respective book values. Market values of stocks and bonds depend on their absolute yields and the rates of return investors currently demand on them. The rate of return demanded on stocks, according to equation (2), is a function of the degree of mechanisation (v). The rate of return demanded from bonds is simply the market rate of interest (i).

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1 This tendency is likely to be strengthened by the provision, frequently added to loan conditions, by means of which the issuers are enabled to call their bonds before maturity.

Speculative profit will be maximised when neither a more mechanised technique or a higher coupon rate of interest can increase the difference between the market value of stocks and bonds, and their respective book values; that is, when $\frac{\partial \pi e}{\partial v} = 0$, $\frac{\partial \pi e}{\partial i^*} = 0$, and either $i = i^*$ or $k = \hat{k}$.

From (11a) we have

$$\frac{\partial}{\partial v} \pi e = \frac{\partial}{\partial v} (pKs-Ks) + \frac{\partial}{\partial v} p_1 Li - \frac{\partial}{\partial v} Li \qquad (24)$$

Equation (14a) gives $\frac{\partial}{\partial v} (pKs-Ks)$, and from (5a) we get

$$\frac{\partial}{\partial v} Li = f_5'(v) \frac{K_f}{v} - f_5(v) \frac{K_f}{v^2} = f_{25}(v) \qquad (25)$$

Since for the individual firm the market rate of interest is a function of its degree of leverage, we postulate

$$i = f_{26} \left[\frac{Li}{K_s}\right] \qquad (26)$$

Substituting (5a) and (6a) into (26), we get

$$i = f_{26} \left[ \frac{f_5(v)}{v+f_7(v)-f_5(v)} \right] \qquad (26a)$$

For the sake of simplicity, we shall redefine

$$i = f_{27}(v) \qquad (27)$$

Substituting (5a) and (27) into (23), we get

$$p_i Li = \frac{i^* f_5(v) \frac{K_f}{v}}{f_{27}(v)}$$

from which

$$\frac{\partial}{\partial v} p_i Li = f_{28}(v, i^*, K_f) \qquad (28)$$

Substituting (14a), (25) and (28) into (24), we arrive at

$$\frac{\partial \pi e}{\partial v} = f_{21}(v,i^*,K_f) - f_{22}(v,i^*,K_f) +$$

$$+ f_{28}(v,i^*,K_f) - f_{25}(v) \qquad (29)$$

Similarly, from equations (1), (2) and (20), we get

$$\frac{\partial}{\partial i^*} pKs = \frac{1}{k} \frac{\partial}{\partial i^*} \pi$$

$$\frac{\partial}{\partial i^*} \pi = - Li$$

so that

$$\frac{\partial}{\partial i^*} pKs = - \frac{Li}{k} \quad ;$$

and from (23) we get

$$\frac{\partial}{\partial i^*} p_i Li = \frac{1}{i} Li$$

Since the book values of equity and liabilities (Ks and Li) do not depend on i*, it follows that

$$\frac{\partial}{\partial i^*} \pi e = \frac{Li}{i} - \frac{Li}{k}$$

Substituting (2), (5a) and (27) into the above equation, we arrive at

$$\frac{\partial}{\partial i^*} \pi e = \left[ \frac{f_5(v)}{f_{27}(v)v} - \frac{f_5(v)}{f_2(v)v} \right] K_f = f_{30}(v,K_f) \qquad (30)$$

By making (29) and (30) equal to zero, and solving them simultaneously for a given value of $K_f$, we get the degree of mechanisation (v) and the coupon rate (i*) which maximise speculative profits. These will determine employment and income distribution in the individual firm.

Since, at those levels of v and i*, market values of stocks and bonds must equal their book values ( so that k = $\hat{k}$, and i = i*), by substituting them in (26a) we also get the degree of leverage at which speculative profits are maximised.

Equations (29) and (30) show that there may be different values of v for which $\frac{\partial \pi e}{\partial v} = 0$ and $\frac{\partial \pi e}{\partial i^*} = 0$. Therefore, as in the simpler cases of the model , i.e. when we assumed constant income shares and non-negotiable debt, in this case the equilibrium conditions entail multiple equilibrium solutions, in which the degree of mechanisation and the degree of leverage vary.

Thus, the main conclusion from the operation of our microeconomic model is that, as investors discriminate against unstable shares of stock by demanding lower rates of return from the stable ones, issuers may find long-term equilibrium - by means of speculative profit maximisation - with different degrees of mechanisation and different degrees of leverage, despite facing the same relative factor prices. We assume that the choice of inappropriate technology corresponds to one of these long-term equilibrium situations.

K. Comparisons with Other Investment Models

Our model lies within the 'market value of capital' type of investment models [1], which assume that investment depends on the difference between the value of the firm in financial markets and the replacement cost of its assets in commodity markets. Models of this type have been proposed earlier by Miller and Modigliani [2], and Brainard and Tobin [3].

Lerner and Carleton [4] also built up a model in which investment depends on the difference between the rate of return on equity and the rate of profit on real capital. They proposed it to determine the degree of leverage and the rate of profit retention which maximise the market value of the firm, assuming that the rate of profit tends to fall as capital accumulates [5].

These authors, however, assume that investors' behaviour at financial markets is neutral with respect to the technique used, so that the rate at which prospective profits are capitalised is the same for all firms, at least within a given trade [6].

Like in the typical neo-classical investment model [7], therefore, they all assume that firms, by choosing the technique which maximises profits in product terms, also maximise their market value. Neo-classic income distribution theory, thus, is not impaired by the way in which these models introduce the effects of financial markets on real investment decisions.

Contrariwise, our model, by considering that investors dislike unstable returns, and by attaching greater instability to the returns on labour intensive techniques, has important consequences for the theories of income distribution and growth.

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1 See Ch. W. Bishoff, 'Business Investment in the 1970's: A Comparison of Models', Brookings Papers on Economic Activity, No. 1, 1971.

2 M.H. Miller and F. Modigliani, 'Some Estimates of the Cost of Capital to the Electric Utility Industry, 1954-1957', The American Economic Review, June 1966.

3 W. C. Brainard and J. Tobin, 'Pitfalls in Financial Model Building', The American Economic Review, Proceedings, May 1968.

4 M. Lerner and W. T. Carleton, "A Theory of Financial Analysis", Harcourt, Brace and World, New York, 1966.

5 They assume that the capital output ratio is constant; only the share of profits in income tends to fall, as employment rises and the most profitable opportunities for investment are exhausted.

6 Miller and Modigliani assume that investors capitalise returns at different rates of discount. Nevertheless, they consider that these differeces depend on activity risks, and not on the technique used by firms within each trade.

7 See for instance D. W. Jorgenson, "Capital Theory and Investment Behaviour", The American Economic Review, Proceedings, May 1963.

In this model, firms' maximising speculative profits does not entail their maximising real profits; rational entrepreneurial behaviour, therefore, does not necessarily lead firms to use the technique which maximises real profits.

Since marginal productivities depend on the shape of the production function, the distribution of income (and the rate of investment) in earlier market value of capital models (as in the pure neo-classical model) depends on the technical possibilities which eventually determine the elasticity of substitution between factors. Accordingly, low elasticities of substitution have been explained by orthodox economists in terms of technical constraints to the use of labour.

In the recent past, vast amount of empirical work has been devoted to search for the nature of these assumed constraints. It has been claimed, for instance, that low elasticities of substitution, particularly in developing countries, reflect biased technical progress, non-homogeneity of labour (i.e. scarcity of skilled labour), and also economies of large scale production, which bring about under-utilisation of plant in spite of perfect planning [1].

Within this analytical framework, policy prescriptions to increase employment, speed up investment, redistribute income, etc. are usually defined [2]. These policy measures involve larger investment in human capital, research to develop labour using technology, incomes policies to set up relative prices which reflect factor scarcities, etc.

A low elasticity of substitution, under our approach, does not necessarily mean a technical constraint for labour substituting for capital. Rather it may reflect, first and foremost, investors' risk aversion and their preference for labour saving techniques which decrease profits dispersion.

Our approach supports investment models of the accelerator type, which neglect the effects of changes in relative factor prices on real investment decisions. This is so, particularly when these models take the form of distributed-lag functions, since, as Koyck has put it, sales growth induces investment by relaxing the three sources of funds on which it rests, i.e. credit,

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1 See for instance, D. Morawetz, 'Employment Implications of Industrialisation in Developing Countries: A Survey", The Economic Journal, September 1974; and H. B. Chenery, 'Overcapacity and the Acceleration Principle', Econometrica, January 1952.

2 See for instance H. Chenery, M. S. Ahluwalia, C. L. G. Bell, J. H. Duloy and R. Jolly, "Redistribution with Growth", Oxford University Press 1974.

equity and retained profits [1].

On the same grounds, our model agrees with investment models based upon the internal liquidity of firms [2].

Our approach, however, involves a significant qualitative difference relative to these two types of model, as it assumes that firms invest in order to maximise speculative profits. For, then, firms' first goal is to get finance, not to expand capacity; whereas in traditional investment models, finance is the means and capacity is the target.

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[1] See L. M. Koyck, "Distributed Lags and Investment Analysis", Contributions to Economic Analysis, North Holland Publishing Co., Amsterdam 1954.

[2] See for instance L. R. Klein and A. S. Goldberger, "An Econometric Model of the United States 1929-1952". North Holland Publishing Co., Amsterdam 1955.

# Chapter 4

## MICRO-ECONOMICS OF THE DEVELOPMENT OF FINANCIAL GROUPS

In Chapter 1, when we analysed post-Marxist theories of monopoly capitalism, we observed that the transformation of individual enterprises into joint-stock companies favoured a process of capital concentration, which involved the merger of industrial and banking capital. In this chapter, we attempt to build up a micro-economic theory of the development of financial groups, by working out the hypothetical profit-maximising behaviour of a controlling group of capitalists, whose interests are divided into industrial and banking activities.

### A. Economic Framework

To simplify matters, let us assume an economy where only three types of firms exist; these are commercial banks, insurance companies and industrial firms.

Commercial banks receive deposits from firms and households, and grant credit loans under the control of the central bank, which issues the legal tender currency and imposes on them a maximum ratio of loans to deposits.

Let us assume, for the time being, that a competitive stock exchange operates, where industrial securities are publicly auctioned, and prices based on supply and demand are determined.

The insurance companies, whose activities are also regulated by the monetary authorities, cannot either accept demand deposits or grant credit loans. They are, however, entitled to invest their resources in securities, thereby getting additional income.

The banks, like the insurance companies, are allowed to keep their non-cash reserves as security investments. These non-cash reserves are determined, on the one hand, by the maximum ratio of credit loans to deposits imposed by the central bank, and on the other, by the ratio of cash to deposits that the bankers themselves, on the basis of their customers' business practices, consider sound to keep in order to secure the banks' solvency against cash withdrawals.

A typical financial group, is assumed to include a number of industrial firms, one commercial bank, and one insurance company.

B. The Group's Economies of Scale

When the banker's interests in industry widen so that he is not any more solely concerned with the sound allocation of credit (i.e. in order to secure that loans are duly paid off), but rather he becomes a partner in the industrial concern, some economies of scale arise, which increase the overall profitability of the financial group.

To the extent that a bank acts as clearing house for pay settlements among its customers, the amount of cash required to meet claims on deposits is reduced. Therefore, as more firms come under the group's control, as their operations are more interrelated, and also, as they are able to bring other firms to carry out their financial operations at the group's bank, the latter's required ratio of cash to deposits falls.

Bankers' capacity to grant credit to customers depends on the proportion of deposits that the latter are expected to claim at any time. As the required ratio of cash to deposits falls, bankers can increase their profits by expanding their lending. Bank money, thus, substitutes for legal tender currency in transactions amongst the group's firms, and releases cash resources for the expansion of the group's sphere of in-

fluence. The more integrated is production among the firms within the group, the more this medium of exchange can be increased without impairing the bank's solvency, and the less constraining finance will be for profit maximisation among the controlled firms. From this, it follows that the more diversified the portfolio of the financial group, i.e. the more integrated the firms involved, the larger will be the returns to the capital committed.

The financial group can also take distinct advantage from its commitments of capital in insurance companies. Assuming a competitive stock exchange exists, control over an insurance company may increase the group's overall profitability in two ways. First, by bringing into the group's bank the 'real' cash resources (i.e. legal tender currency) from the former's proceeds at the insurance market (like any other firm within the group) ; and, second, by enabling the group to expand its sphere of influence, thanks to the investment of reserves in securities. In the former case, the insurance company would enable the bank to expand credit inside and outside the group, by increasing the bank's capability to afford cash outflows. In the second case, the insurance company would play the role of a holding company, enabling the group to influence managements as it held relatively large blocks of shares in other firms.

C. The Group's Profitability

The capital income that the group is supposed to aim at maximising, is the 'speculative profit' that arises from the appreciation of the firms' securities in financial markets . We may also assume that every increase in profits - the banker's profits from money lending included - would be immediately capitalised in new equity issues, and realised as capital gains at security markets.

Within this framework, it is likely that the group's bank would act as underwriter in every new equity issue of the member firms; and that it, and the insurance company, would hold the amount of the new shares issued by the group's firms needed to prevent any fall in the latter's prices at the stock exchange. They would release the new equity slowly enough to ensure that the price did not fall.

Provided the group's portfolio is diversified, and firms within it are well integrated in the sense that transactions with outsiders are minimised, the banker's role as underwriter, and his holding of a part of the equity issue (as reserve asset), would start a circle of speculative profits generation. Let us work out this process.

We assume that bankers' reserve requirement (according to the loans to deposits ratio fixed by banking legislation) takes the form of cash and security investments, the relative shares of these two forms depending on bankers' preferences. Accordingly, the balance sheet of a bank would look as follows:

Bank B

| | |
|---|---|
| (+) Cash | Deposits (+) |
| (+) Other Reserves | |
| (=) Total Reserves | |
| (+) Loans | Net Worth (+) |
| (=) Total Assets | Capital plus Liabilities (=) |

Non-cash reserves can be kept as investments in securities issued by the financial group itself. Let us assume that, at the stock exchange, the shares of firm A (which is one of the group's controlled industrial firms) are appreciating, so that a new equity issue becomes profitable. Bank B (the group's bank) would carry out the underwriting of the new stock. Let us assume that, at the closing date for the subscription of

the new shares, the bank must keep a part of the issue in order to prevent the market price of the stock falling below the offering price agreed with the issuer. To pay for this part of the stock, bank B would credit A's deposit account by the amount X by which its holding of securities is increased by the unsold stock. As the book value of deposits increases, Bank B is entitled to increase its lending up to the limit posed by the maximum deposits/loans ratio allowed by the central bank.

If most of A's withdrawals from its deposit account enter other deposit accounts at bank B - for the firms controlled by the group are well integrated - there would be no need to increase the amount of cash required to meet deposit claims at the bank in the same proportion as the book value of deposits increased by the holding of A's new shares. Similarly, if the increased lending capacity brought about by the holding of A's shares is allocated amongst the group's member firms, cash requirements would be reduced in relative terms. It follows, then, that every firm within the group's portfolio may easily get additional finance either by increasing its equity, or by borrowing from the bank,or in both ways. Accordingly, firms within the portfolio of the financial group are confronted with better growth prospects than any isolated competitor. If they pay the same or even a lower interest rate on loans than isolated firms pay, nonetheless they will be preferred by the banker, because lending money to them reduces, in relative terms, the amount of cash needed to be kept as reserve asset, and this further increases lending capacity through the secondary effect of loans on the level of deposits.[1]

By multiplying this 'medium of exchange' for use within the group's sphere of influence, bank B keeps output growing rapidly within the controlled sector, and so doing profits. As proceeds and profits grow, share prices rise, and this fosters new equity issues, so that the process is repeated.

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1 Since loans become deposits as they are granted.

In other words, if the ratio of cash to deposits shrinks due to a better integrated portfolio of firms controlled by the group, the lending capacity of bank B increases; and, as more credit is granted to member firms - at rates of interest below the real rates of return on physical assets - the rates of return on equity rise, and the controlled stocks will accordingly appreciate at financial markets.

D. One Condition for Groups Expansion

The return on physical assets brought about by new capital investments, that is the "real" return in product form, may generate media of exchange much larger than the amount required to keep prices stable. In a first stage, when it is capitalised as a new equity issue, it apparently exerts a deflationary influence on the real market, for assumedly the new issue would reduce demand for consumption, at least in the very short run, before investment in physical assets starts on the income multiplier. Nevertheless, the bank's double role as underwriter, on the one hand, and as clearing house for pay settlements, on the other, results in equity issues bringing about an excessive generation of money supply. This initially fills up the demand for finance from the group's firms, but later on it pours over other firms as well, to the extent that controlled firms succeed in bringing new cash resources under the bank's command. In fact, these new "real" resources in cash form are indispensable for the bank's expansion, for they are needed to make up the required cash/deposits ratio at the new level of deposits ( which has resulted,in turn, from the increased lending by the bank to the group's controlled firms).

Industrial firms within the group's portfolio, therefore, must produce a net inflow of cash for the bank to expand pari-passu with them

As the banker is able to place A's new stock with previous non-customers of the bank, e.g. by selling the paper at the Stock Exchange, he receives new cash resources, for firm A presumably increases its deposit account by the amount of the equity sold, in the meantime the latter is spent on new assets.

Being so furnished with additional cash, the banker could expand his lending not only to former customers, but also to outsiders; and as he so did, he would be able to bring under his particular "currency area" new customers who would contribute to enlarge the economies that result from 'clearing' operations.

Obviously, firms within the portfolio of the controlling group may also provide a net cash inflow to the bank from the results of their productive operations. If the amount of money spent on their purchases from outsiders is lower than the amount of their sales to them, expansion of production in controlled firms would lead to a more than proportionate expansion of the medium of exchange produced by the group's bank. An inflation tendency would arise, particularly if credit expansion increased the output of the group and simultaneously conveyed new customers to the bank, thereby enlarging the scope for settlements internal to the bank, and releasing cash for further credit expansion.[1]

Output may be kept high among controlled firms by giving them an increasing amount of loans. Even if they were unable to produce a net cash inflow from their productive operations, - so that profits were, so to say, 'artificially' generated by credit financed expansion from within the group - the fact that these profits can become capitalised as equity issues, and placed on the stock market among outsiders, may eventually compensate for an initial cash outflow.

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1. In Chapter 5, Section B, we qualify this statement for a situation when several financial groups exist.

Let us assume that the banker successfully raises output in controlled firms, so that the absolute value of each firm's profits rises. Yet, the bank might be unable to increase its sphere of action if it lacked the necessary cash to meet higher claims from outsiders. Let us suppose, for instance, that larger sales by controlled firms are possible only because they are well-integrated and the group is nearly self-sufficient (i.e. it has few transactions with outsiders). As the absolute level of profits rose for every firm, however, they would be entitled to issue new stock. If the bankers, as underwriter of the new issue, succeeded in both capitalising the industrial profit, and selling the paper to investors who were not former customers of the banker, he would receive the cash he needs for expansion despite the fact he did not get a net cash inflow from the firms' current operations. As we said ealier, he would achieve this in two ways. First, by increasing its deposits in the meantime larger equity finances new physical investment; and second, by the banker himself realising the promoter's profit through stock appreciation above the price - agreed with the issuer.

E. Inflationary Effects of the Expansion of Groups

As entrepeneurs (i.e. managements) capitalise profits by means of new stock issues, and sell them at the Stock Exchange, they are obviously able to make much larger speculative profits than the real profit in product terms they got, for what they are supposed to be selling at the stock market is equity that yields that return at the ruling rate demanded by investors. Therefore, what they get at the Stock Exchange is several times larger than the amount of profit in product terms that goes to real markets; and when this speculative profit enters the bank as cash deposits, it is in turn multiplied by the banker, who uses it to meet the

cash outflows of much larger credit loans.

Of course, increased equity will eventually finance new physical investment, and this will wipe out the speculative profit and transform it into productive investment which will increase real supply of goods and services. Nevertheless, this addition to capacity and the increase in supply will take much longer to occur than the increase in media of exchange by the banker. In fact, the banker may begin to sell equity on the bases of expectations generated by past profits and obtain speculative profit before any addition to physical assets takes place. The stimulus to general demand caused by the multiplier effect of that cash inflow the bank's lending would actually be followed (rather than led) by the industrial firm's investment outlay. When the latter disposed of the speculative profit deposited at the bank (in order to purchase real assets) the cash inflow to the bank, produced by increased business proceeds due to credit expansion, may have already compensated for the reduction of cash involved in firm A's real investment.

F. Exogenous Determinants of Investment

It is a condition for A's increasing equity to finance physical investment that stock prices rise more than asset prices. Therefore, once this condition is fulfilled and a new equity issue is agreed, the net cash inflow to the bank will depend first and foremost on the banker's ability to sell the new stock to outsiders - so that any "leak" from real investment outlay is compensated for by an inflow from stock sales -; and second, on the net cash flow that results from A's current productive operations.

It is in the hands of the banker, to a great extent, to increase the profitability of a controlled firm. This he can achieve by simply granting it credit, as long as interest rates are lower than the rates of return on

equity and on physical assets. The more integrated the group's portfolio, the less risky it would be to flood member firms with credit, for cash leaks would be minimised. Because the banker can raise firms' profitabilty, it is on the stock market where he must concentrate his attention in order to realise the speculative profit and to get the additional cash that he requires for expansion.

G. Competition in Security Markets

Speculative profits and the group's expansion capability both depend on conditions in security markets, and on the banker's skill to profit from those conditions.

The more competitive these markets were, the more difficult it would be for any participant to profit from them. As Keynes keenly pointed out speculation arises and bears profit due to diversity in expectations.

A perfectly competitive stock market, where investors are people unacquainted with the technical and operational characteristics of the firms they have invested in, would involve very large risks of losses for any trader. If expectations moved unanimously in one or the other direction, stock prices' movements would be chaotic, and so would be speculative profits and investment.

Conversely, imperfect competition in stock markets would rule out any possibility of losses and would involve huge capital gains for the firms that held the stronger positions, that is, for those which could exert any influence on their stock prices.

Uncertainty arising from investors' imperfect knowledge of their firms' future profitability, therefore, provides stock markets with some stability. Nevertheless, it is in the interest of every participant to gain control of general opinion in order to profit from changes in expectations.

Accordingly, stock markets neither could be perfect in their origins, nor are likely to remain so, for there are strong interests to prevent any free flow of information that could lead to the formation of unanimous expectations among investor. Yet, the need for an organised stock market exists, for investors require a place where they can easily get rid of undesired securities or acquire the desirable ones; a place where issuers may realise speculative profits, and bankers can get hold of the cash they need for expansion. Thus, the struggle is to get control of the stock market without threatening the market itself.

a) O-T-C Markets

The growing importance of the so-called "over-the-counter markets" for securities (O-T-C markets) is, from this point of view, the natural outcome of the development of stock exchanges. Let us have a look at how these distorted financial markets operate in order to assess their rôle in the profit maximising policies of financial groups.

Rigorously, an O-T-C market exists wherever a firm quotes prices at which it would buy or sell an issue.[1] The main characteristic of these markets is that they do not report transactions to the general public. Security dealers are informed about stocks and quotations in the market by means of private information services, where data flows unilaterally. In the American O-T-C market, for instance, the largest wholesale security dealers, who are mostly underwriters, are linked by telephone or teletype whereby each trader quotes to the others the prices of the issues on which he trades. Information is requested among subscribers without specifying whether the inquirer wants to buy or to sell. Afterwards, some details are released, for every dealer has to report to the information bureau a list of the securities on which he makes a market transaction and their

1 See Sauvain, op. cit. p.101.

interdealer quotations [1].

It is clear from the way these systems operate, that wholesale dealers may artificially keep high the prices of new issues while the latter get seasoned by the market, that is, while investor's misgivings about them vanish. This,however, is not a new development peculiar to O-T-C markets. In fact, the very way in which underwriters have traditionally introduced new issues to the public is nothing but the institutionalisation of monopolistic practices in stock markets. The O-T-C market has only facilitated matters, but it has not qualitatively changed a practice observed in stock exchanges long before. Let us have a look at the traditional process of the launching of stocks into the market to assess the role of O-T-C markets.

b) Underwriting Procedures

Sales of new stock issues constitute the so-called securities' primary market. By distinction, any further transactions make the secondary market. It is the responsibility of the underwriter to control stock prices during the primary distribution. There are three different types of underwriting agreements, which businessmen refer to as negotiated purchase, competitive bidding and stand-by agreement, respectively [2].

When underwriting takes the form of negotiated purchase, the banker buys the whole issue from the firm at a given price, and accepts responsibility for selling it to the public at a somewhat higher "offering price" which is negotiated with the issuer. The difference between the purchase price and the offering price is the banker's "spread", which is supposed to cover distribution expenses plus a profit, when bank and industrial - firm are taken to be independent from each other.

An agreement is reach by competitive bidding, when the issuer himself works out all the details concerning the contractual terms of the issue, and sends invitations to bankers to bid on it. Then, the banker who offers

1 Ibid. pp.103 and ss.

2 Ibid.

the higher purchase price (in case of stocks) or the lowest interest rate (in case of bonds) gets the right to sell the issue.

The stand-by agreement is a variant of the negotiated purchase type. It allows old stockholders to profit from buying a pro-rata amount of the new issue at the purchase price at which the banker buys the remainder of the lot, rather than at the offering price at which it will be sold to the general public. In this agreement, old stockholders are given "subscription rights" which are negotiable at stock markets. The underwriter bank must collect subscription rights from the market before it begins to sell at the offering price.

It is entirely in accordance with the rules of the game that the underwriter hinders the market mechanism to peg the stock price to the offering price during the subscription period. This protects the industrial firm against any loss of its speculative profit. On the other hand, the banker is given this period of time - two or three weeks, while the issue must be sold out - to pay for the securities to the issuer. If a portion of the issue remained unsold at this closing date, the underwriter would buy it himself and keep it for further sale.

To prevent a fall in price below the offering price, the underwriter bank must be able to buy whatever amount of securities were offered at cut price. That is the risk which accounts for its demanding a profit from the issuer.

c) Asymmetry in Investors' Behaviour

Since security dealers operate in a very sensitive market, the more a fall in prices is let to be known to investors, the larger the amount of capital they have to commit in order to peg prices.

Though market prices above offering prices are supposed to exert simi-

lar effects on public's behaviour in the opposite direction, that is enabling underwriters to increase their spread in distribution, there are some reasons to assume that these will not be symmetrical, so that security dealers may prefer to keep prices hidden to the general public. First of all, it is conceivable that the risk of capital losses from a fall in stock prices causes a stronger reaction on investors' willingness to sell than the opportunity for larger capital gains causes on their willingness (rather their capability) to buy. Secondly, while a fall in prices should be arrested solely by the underwriter, who in this case would have to commit whatever amount of capital is necessary to keep market prices pegged to offering prices, a rise in prices would profit underwriters and stockholders alike. This, in itself, would do no harm to the underwriter. In fact, public auctioning would enable him to profit from rising prices. Nevertheless, if investors showed preference for a given stock, so that its price began to rise, it could be more profitable for the banker to get control of the increased demand by underwriting a further issue, rather than to let prices rise in a disorderly way and profit from investors' uncertain reactions.

d) Underwriters' Bargaining Position

If the banker realised, before the issuer did,that some stocks were firmly appreciating, he could get hold of the largest part of the speculative profit involved in a new issue. This he could do by negotiating the purchase and offering prices with the firm's executives before the market prices of the outstanding stock actually got higher. Any future stock appreciation above the offering price would thus be capitalised by the banker.

It is curious to notice that, in spite of this redistribution of speculative profit from stockholders to the banker, every party involved in the deal would believe he had made a bargain. Managements in the in-

dustrial firm would be satisfied by the growth performance of their concern, thanks to increased equity finance. Stockholders would be satisfied by getting stable returns on their investments and by the favourable prospects of growing proceeds due to the firm's expansion. And, finally, the banker would be satisfied by his profiting from stock appreciation in the market. Apparently, no one, except the banker, would assess his success in terms of what had happened to stock prices, and thereby to their returns on capital, if no additional equity had been issued. The more injured in this process would be the old stockholders, who would be unable to profit from stocks appreciation.

e) The Real Rate of Return on Equity

Growing proceeds for firms do not necessarily mean higher real returns on equity for shareholders. In fact, as stock prices rise, rates of return fall; but capital gains from stock appreciation are supposed to compensate for the decline in real returns. Provided the firm's proceeds grow more than the general level of prices, and its stocks appreciate pari passu with the latter, investors' misgivings about a capital loss (in real terms) would vanish. And yet, if equity increased at a rate higher than the difference between the rate of growth of sales and the rate of inflation, there would be a fall in the real return on equity.

When stock prices rise and a new issue is launched to the market the latter puts a brake on price rises, and the increased demand for that stock is furnished by raising the quantity supplied rather than by a price increase. Old shareholders are, so to say, deprived from the potential appreciation of their stock, but the firm, eventually, gets the additional finance. This arrangement clearly should satisfy managements, who can thereby command a larger amount of capital which otherwise would remain private wealth of shareholders. But mainly, it should satisfy the banker, who can make considerable profits from placing this new equity on the market.

H. The Financial Group's Development Process

Let us work out a hypothetical case in order to illustrate the above mentioned process. Let us assume, for the time being, that firms, banks, and insurance companies, in our economy, are independent concerns. Later on, however, we shall demonstrate that the partnership of the controlling group is but the natural outcome of institutionalised practices in capitalistic economies.

Let us start from a situation in which firm A is about to increase its equity to finance expansion. Bank B has been chosen to underwrite the new issue, and, according to the underwriting agreement, the latter will pay a purchase price $p_p$ for the stock, and has accepted responsibility for selling it at an offering price which is equal or greater than $p_o$. We may take this offering price to be approximately equal to the ruling market price of A's already existing stock.

a) Price Elasticity of Securities Demand

The banker, who is acquainted with A's stock behaviour at the market, is aware that an increase in supply would drive the price down. He also knows that if prices increased, there would be two opposite effects on demand. On the one hand, the volume of equity demanded would shrink due to a fall in the rate of return. But, on the other hand, the psychological effect of a rising trend in prices could account for a rightward shift of the demand schedule, as a result of expectations of further stock appreciation, which could more than compensate for a decreasing return. These two effects presumably account for a trade-off, in any investor's decision, between an uncertain capital gain in the future, and his current income. For convenience in the exposition which follows, however, we shall assume that the two effects of a price change on the demand for securities are brought about by two different groups of investors. One, whose price elasticity of demand is positive and constant, which we shall call the group of

'speculative investors'. The other, whose demand curve is a straight line with negative price elasticity (which falls as the quantity demanded increases), we shall call the group of 'income-minded investors' [1].

Under these assumptions, demand for A's stocks would be depicted by parallel lines $D_o$, $D_1$, $D_2$, ... etc., which would shift rightwards as prices rose by a constant percentage rate, as Diagram 16 shows. Assuming the price rises from $p_p$ to $p_o$, former customers would reduce their demand from $Q_o$ to $Q_s$, but new customers would join, who would shift $D_o$ to $D_1$, so that the total quantity demanded would remain unaltered at $Q_o$, as if the price had not changed at all.

b) The Underwriter's Profit

It is to the benefit of the underwriter to push prices up to a level at which his net sales of A's stock are maximised; that is, at the price at which the difference in value [2] between the securities offered to him -primary distribution included- and those demanded from him, reaches the maximum level. Let us analyse this process.

First, let us recall that the banker buys the new stock, $Q_s$ $Q_o$, from the issuer at price $p_p$, to sell it at prices not lower than $p_o$, which is the agreed offering price. We further assume that this offering price equals the market price for net demand equal to $OQ_s$, which is the existing stock before the new issue. Therefore, this price was brought about by - the compound effect of past price changes on the behaviour of investors, according to the positive and negative price-elasticities of demand we - have referred to.

From past market behaviour, the banker knows that, if price increased by $p_o p_1 / O p_o$, the demand schedule would shift from $D_o$ to $D_1$ (Diagram 16). As the price rose, he would thus be able to sell part of the new issue above

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1 These assumptions only aim to facilitate the graphical analysis of changes in the price of securities, and therefore, do not bind conclusions.

2 The maximum volume of net sales he can make depends on the total amount of A's equity. Nevertheless, when prices reached the level at which net demand equalled the amount of existing A's stock the banker might not - be maximising his profit. To this case we shall refer later in this chapter.

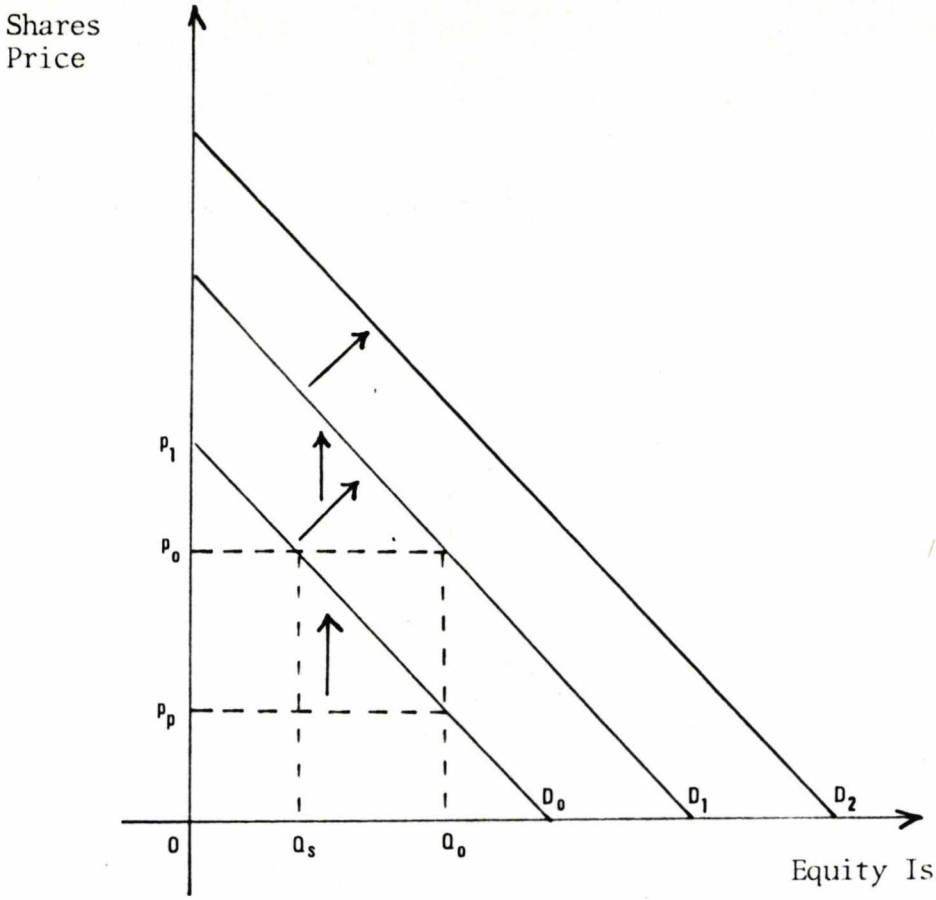


Diagram 16

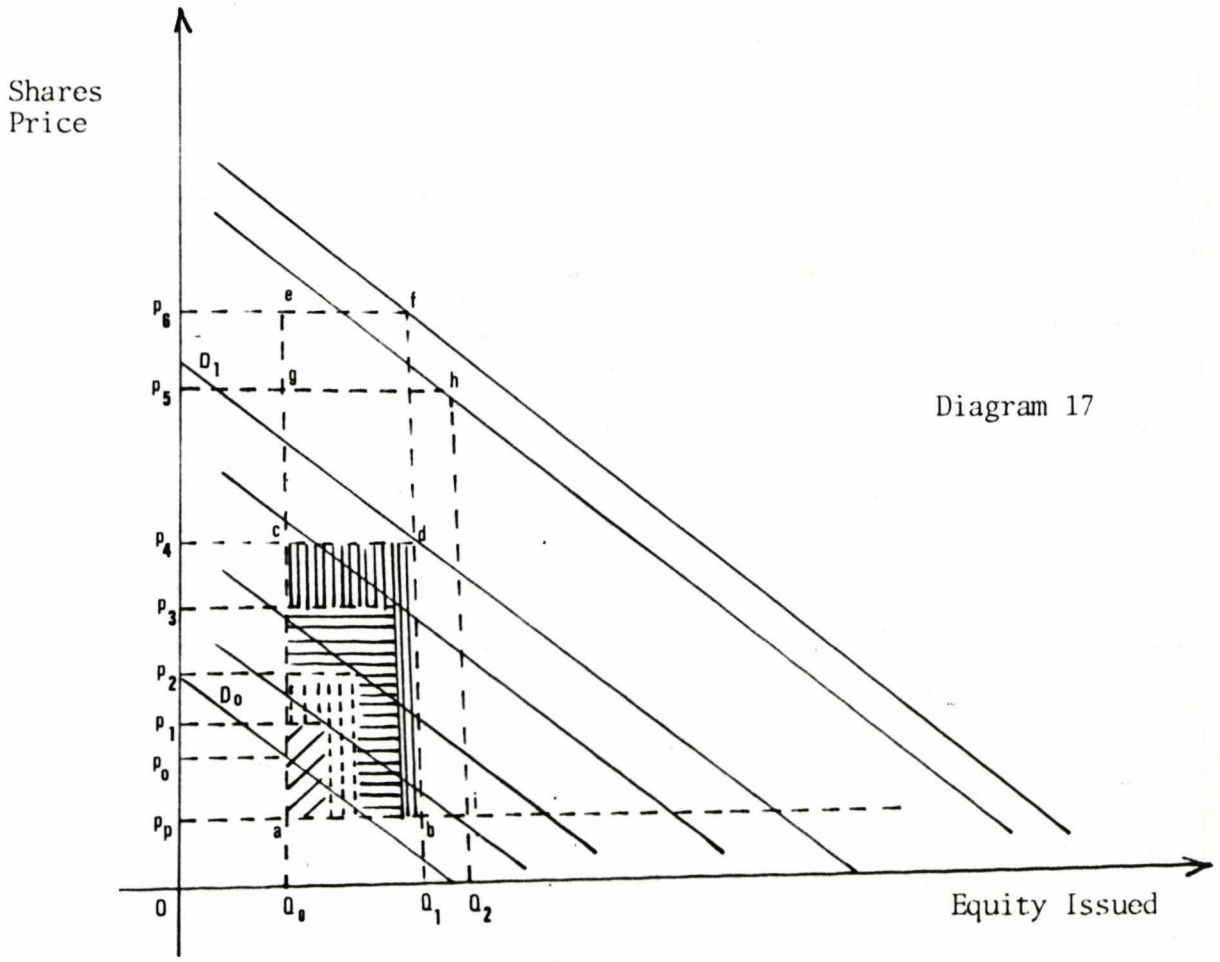


Diagram 17

both offering and purchase prices, thereby making a profit. The evolution of this profit may be illustrated by the shaded areas in Diagram 17.

Once price reaches $p_4$ (on Diagram 17), any further price increase, and the corresponding shift in D , could not be matched by an increase in the volume of securities sold for the total amount of existing shares is $Q_1$. Nevertheless, if the price rose beyond $p_4$, say to $p_6$, the bankers' profit would be abfe instead of abdc. Thus there might be an incentive for the banker to peg prices above the level at which quantity of A's stock demanded would equal supply.

If supply was not exogenously given to the banker, but rather he could influence the amount of new shares to be issued, he might prefer to sell a larger issue at a lower price.[1] This would depend on the size of both positive and negative price-elasticities of demand among the two referred groups of investors, on the purchase and offering prices, and on the already existing amount of A's equity, $Q_o$.

It can be seen from Digram 17 that, had the new issue been $Q_oQ_2$ instead of $Q_oQ_1$, it would have been more profitable to the banker to raise the price just up to $p_5$ and not to $p_6$, for then he would have got a profit equal to aihg, which is larger than abfe.

c) Underwriters' Equilibrium

We may express this process algebraically and thereby derive the conditions for bankers'profit maximisation from underwriting activities. According to our simplifying assumptions, demand for A's shares splits into two components: one, which reflects the behaviour of 'income-minded' investors, who would be looking for highest rates of return; and the other,

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1. Because when stock prices rise, part of the gains from an increased demand goes to former stockholders. By selling a larger quantity of new equity at a lower price, the banker would be able to get the full profit of the increased demand.

which reflects the behaviour of speculative investors, who would be looking for largest capital gains from stocks appreciation; the former showing a negative price-elasticity, and the latter showing a positive one. Assuming that the price-elasticity of the speculative demand for A's stock is constant, and that the demand schedule from income-minded investors follows a straight line, total demand for A's stock at time t ($Q_t$) would be represented by

$$Q_t = a - b\,p_t + c\,\frac{\Delta p_t}{p_t^{-1}} \qquad (1)$$

If we denote the purchase price at which the banker gets the stock from the issuer by $p_p$, his profits as underwriter can be expressed as

$$\pi_b = (Q_t - Q_{t-1})(p_t - p_p) \qquad (2)$$

Finally,

$$p_t \equiv p_{t-1} + \Delta p_t \qquad (3)$$

Substituting (1) and (3) into (2), we may express banker's profit as

$$\pi_b = (a - bp_{t-1} - b\,\Delta p_t + c\,\frac{\Delta p_t}{p_{t-1}} - Q_{t-1})(p_{t-1} + \Delta\, p_t - p_p) \qquad (2a)$$

The price at which the banker maximises his profits can be obtained by making

$$\frac{\partial \pi_b}{\partial \Delta p_t} = 0$$

From (2a) we get

$$\frac{\partial \pi_b}{\partial \Delta p_t} = (a - 2\,bp_{t-1} + c - Q_{t-1} - \frac{cp_p}{p_{t-1}} + bp_p) + 2\left(\frac{c}{p_{t-1}} - b\right)\Delta p_t;$$

therefore, the optimal price increase is

$$\Delta p_t^* = \frac{a - 2b\,pt_{-1} + c - Q_{t-1} - \frac{cp_p}{p_{t-1}} + b\,p_p}{2\left(b - \frac{c}{p_{t-1}}\right)} \qquad (4)$$

and the optimal price is

$$p_t^* = p_{t-1} + \Delta p_t^* \qquad (5)$$

The optimal price does not depend on the amount of new shares issued, even though the latter certainly affects the size of the banker's profit. This is so, because the banker, as underwriter, has to buy the whole issue; but since this is, so to say, a constant cost for him, it makes no difference to the optimal volume of sales. He will resell only the amount that maximises profits.

d) Re-distribution of Speculative Profit

To keep unsold securities, however, reduces bankers' profits. Therefore, it is in the interest of the banker to lower the amount of new equity to be issued by firm A, so that it becomes equal to the quantity demanded at the optimal price. Similarly, if optimal price for the banker was lower than the price ($p_m$) which would be brought about by a hypothetical issue ($Q_m$), e.g. proposed by firm A's management, the banker would try to persuade managers to issue more equity. As they so did, they would be depriving old shareholders from part of the gains they would otherwise derive from stock appreciation.

It is likely that, if managers rely on underwriters to launch new issues to the market, the latter influence decisions about the size of new issues. If the banker lacked such power to influence managements in the first stage, it would only be a matter of time for him to get it, since as he kept an unsold amount of A's equity, he himself would become a stockholder.

We have analysed how the banker can maximise his profit by pegging the price above the price that results from supply and demand. In this case, we pointed out that his additional profits would arise mainly from the

group of 'speculative' investors, who would expect further price increases. Nevertheless, the banker is also in a position to profit from income-minded investors.

By means of increasing borrowing, firms may raise profits and, thereby pay larger dividends and increase stock prices. Once the banker underwrites a given stock issue, he naturally becomes concerned with that firm's performance, for it will affect the size of his own profit. If he provided the firm with additional resources, it would increase its profits and, thus, the dividend pay out. If the banker kept the price pegged at the same level ($p_t^*$), rather than let it rise, as dividends rise, the demand curve from income-minded investors would shift rightwards and he could get rid of part of his holdings of A's stock.[1]

Once the banker attained influence on the firm's management, he would be able to grant credit to the firm more freely than to any other non-controllable firm, for the former's withdrawals would involve lower cash requirements per unit of deposits.

e) O-T-C Markets and Underwriters' Efficiency

O-T-C markets facilitate securities supply control to underwriters. As stock prices are hidden to the small, or individual investor, and they are only released to security wholesaler - mainly the underwriters themselves -, the market becomes, so to say, more reliable. Each wholesaler can adjust his prices according to changes in his holdings of securities, so that he can easily find out the price of each underwritten stock which maximises his profits.

From the point of view of his demands to other wholesalers, the O-T-C market enables the banker to make up big lots of a single security with the

1 Actually, if the price was pegged at $p_t^*$, so that $\Delta p=0$, there would be a shrinkage in speculative investors' demands. We are assuming that the dividend pay out increase is large enough to compensate for this negative effect on $Q_t$. In any case, the banker may increase the price at the same time, so that he maximises profits from both groups of investors.

smallest disturbance on its price, since bids and offers are not auctioned.

By reducing the amplitude of price swings (through O-T-C markets), underwriters also shorten the amount of capital required to peg the prices of the stocks they are responsible for, and therefore, they are able to increase profits by allocating such financial resources to other uses.

It follows that the banker who creates an O-T-C market for the stocks he underwrites, reduces the amount of capital to be committed to peg their prices. So he is able to furnish the issuers with additional credit loans to increase profits, and eventually, can get the benefits resulting from stock appreciation. He would be able to start on a self-sustaining process of expansion. This process would speed up as firms within the banker's portfolio increasingly traded among themselves, for as the bank enlarged its role as clearing house for their mutual pay settlements, the need for ready cash to meet withdrawals from their deposit accounts would diminish, and the banker would be able to increase his lending.

f) The Leading Role of Bankers

Bankers' capacity to grant credit depends, mainly, on the ratio of cash to deposits that they must keep in order to secure their solvency. Monetary authorities may compel them to keep a maximum ratio of loans to deposits through compulsory reserve requirements; but since it is, to a large extent, the bankers themselves who decide on the structure of these reserves - whether they keep them as ready cash or they invest them on income yielding securities -, the scope for the banker's financing to his customers is not bound to the limits of reserve requirements. In fact, the banker may widen those limits to include investments in securities which banking legislation denotes as "legals"[1] for if the securities he

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1 Definitions of "legals" may vary a great deal among countries, but the underlying idea is that securities so labelled are those which, from the bundle of securities in the market, show the lowest degree of financial risk, according to generally accepted standards.

underwrites are awarded legality for investment, he can disguise as reserve assets actual lending to customers.

It is obvious that, once the banker underwrites a stock issue, a community of interests arises between the bank and the firm, which apparently favours every party involved i.e. the banker, the industrial firm's management, and the stockholders[1]. Thereafter, the banker would be willing to grant additional credit to the firm, for it would contribute to increased profits and higher stock prices. As the firm's profitability increased, demand for its stock would shift rightwards, and the banker would be able to sell a new stock issue. An expanding business would satisfy stockholders and managements alike.

Once the bank is so concerned with a firm, it can also exercise its influence on the credit market in order to reduce the cash"leaks" involved in the firm's withdrawals from its current account. By granting credit to the issuer firm's trading partners rather than to any other firms, the banker would reduce his cash/deposits ratio, and this would enable him to grant additional credit to customers, thereby speeding up their expansion.

As the banker so transformed the issuer firm's trading partners into his own customers, it would be likely that the latter appointed him to underwrite their new stock issues. It would not then take very long for a partnership to be formed around the bank,whose characteristics would be determined by the nature of the firms which first demanded the banker's services.

g) Oligopolistic Competition among Financial Groups

According to the activity of his early customers, every banker would start a process of capital concentration which would reflect the advantages of horizontal and vertical integration, or increased monopolisation, or the changes in the technique used, etc., as these elements affected bank-

1 Later on, we shall analyse how the trade offs of such gains appear in the independent sector of the economy.

ing policies towards minimisation of cash "leaks". All technical factors which account for the profitability of industrial firms, or those which determine investors' responsiveness to stocks appreciation - which vary with technique, firm's growth performance, etc. -, and many others which determine the net inflow of cash resources to the bank, would jointly explain different partnership structures.

Actually it is this diversity of interests among underwriter which accounts for the existence and profitability of O-T-C markets. Thanks to this diversity in the economies of scale that each activity mix entails, financial groups collide.

## I. The Nature of Bankers' Profits

No doubt, in the group's development process, the banker keeps the most strategic position, particularly when he operates through O-T-C markets. His capability to influence stock prices, both by committing capital to peg them, and by granting credit and thus raising issuer firms' profitability, enables him to profit from stocks appreciation. He can buy cheap and sell dear by controlling the supply 'seasoning' stocks. Only he knows when prices are artificially pegged and when they are backed by real profitability; and only he knows when prices will rise due to increased profitability brought about by additional lending to firms.

Important as it is, speculative profit is not perhaps the main source of bankers' profits; at least, it is not an independent source, but rather it enters as an accelerator mechanism in their own business concern, which is money lending.

The image of bankers as middle-men between borrowers and investors, profiting from interest rates differentials, is an old naive conception which reality disproved from the earliest life of the banking business.

Bankers, from their oldest ancestors - goldsmiths or kings -, to their present day representatives, have been money-producers; and their money has had real value thanks to increased output and productivity in other sectors of the economy.

a) 'Money Production'

We pointed out earlier that the banker's capacity to grant credit depends, mainly, on his cash inflow; and also it is that it is conditioned, on the one hand, by the ratio of cash to deposits that secures his solvency, and on the other, by monetary authorities' regulations concerning reserve requirements. Let us denote the average ratio of cash to deposits as $\mu$, and the legal reserve requirements as $\chi$[1]. We assume the banking business is based on $1 > \chi > \mu$.

Every amount of cash inflow (C) the banker gets, may be transformed into loans at a rate given by $\frac{(1-\chi)}{\mu}$ C. His profits from these loans will increase either as C rises, or as he lowers $\mu$.

As the banker integrates into his financial group more firms which trade among themselves significantly, he lowers $\mu$. And as he furnishes them with credit loans which raise their profitability and cause their stocks to appreciate, he may raise C as well. Indeed, the 'speculative profit'-maximisation process we have been analysing is an efficient way to increase C, and it also provides the means to bring about a decrease in $\mu$.

As the banker integrates a financial group through his activities as underwriter and lender, he sets into motion a highly dynamic process of "money production". This process is supported by three main conditions which are deeply rooted manifestations of capitalistic institutions. The

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1 For simplicity, we shall assume that the average and the marginal reserve requirements are equal.

first of these conditions is that the market value of securities is given by the capitalisation of the income stream expected from them, at the ruling rate of return demanded by investors.

The second condition is that holders of current accounts at banks do not withdraw simultaneously, so that the amount of ready cash required by the bankers to meet their customers' needs keeps a proportion well below unity to the total level of deposits.

Finally, the third condition is that, due to uncertainty among investors and the corresponding speculative practices in financial markets, one part of the demand for securities behaves with a positive price-elasticity.

Let us trace back this process from the point where bank B is appointed as underwriter of firm A's new stock issue, and let us analyse it in order to single out the stages at which money is produced.

b) The Cash Net Inflow

First of all, bank B accepts to buy A's new stock at a negotiated (purchase) price. At the end of the subscription period bank B will enter firm A's current account with the purchase value of the issue.

For industrial firms, as also for insurance companies, it would not make any difference to be paid in cash or with a debit entry in their current accounts at banks. But, obviously, it is not so irrelevant for the latter. Thus, as bank B enters A's account with the purchase value of the issue, which we may denote by $p_p K_s$, it would have to retain as reserve (in this first stage) only $\mu p_p K_s$. The remaining part of the deposit, $(1-\mu)p_p K_s$, would be available to the banker for expanding credit at a rate $\frac{1-\chi}{\mu}$ .

The banker may have already sold A's whole issue at the offering price or even above the offering price; or he may have retained part of the stock for further sale. In any case, we assume he has done whatever maximised his profit. Let us take that, in fact, he has got the proceeds of stock sales. These proceeds, however, may involve purchases from "insiders", that is, from his own customers who would ask him to debit their accounts to pay for the securities, so that no cash inflow would take place. In this case, he would only be better off - from the point of view of his cash inflow - to the extent of the difference between the purchase price and the selling price - his speculative profit - which would diminish his liabilities (deposits) and would increase his capital account. Since these resources would be his own, he should not keep any cash reserve to meet withdrawals <u>before</u> he transforms them into loans. Therefore, the net cash inflow from his activity as underwriter would be

$$\Delta C = \lambda\, pK_s + \mu(p-p_p)(1-\lambda)K_s \qquad (8)$$

where $\lambda$ stands for the proportion of stock sales to "outsiders", and p for the market price.

This cash inflow enables the banker to increase his lending (F). Since

$$F = \frac{1-\chi}{\mu}\, C \qquad (9)$$

he can grant additional loans by

$$F = \frac{1-\chi}{\mu}\,[\lambda p+\mu(p-p_p)(-1\lambda)]K_s =$$

$$= \left[\frac{(1-\chi)\lambda p}{\mu} + (1-\chi)(p-p_p)(1-\lambda)\right] K_s$$

As loans become due, the banker may be paid with his own "currency" by firms crediting their current accounts. In this particular case, the

banker would only be better off to the extent of interest payments, for his liabilities and his assets would decrease together. Nevertheless, firms supposedly borrow money in order to make a profit from it. As they engage in productive activities, they increase their deposits at bank B. Therefore, cash also enters the bank from customers' proceeds, so that way they credit their accounts to pay off their loans, they have already added to the bankers' lending capacity to the extent of the multiple $\frac{1-\chi}{\mu}$ of the cash inflow they produced. In fact, the total cash inflow to the bank may be represented by

$$C = (\lambda_2-\lambda_1)Q + (\lambda_3-\lambda_1)p_pK_s + \lambda_3(p-p_p)K_s - \lambda_1 F \qquad (10)$$

where $\lambda_1$ stands for the share of purchases from outsiders in the bank's customers' expenditures, $\lambda_2$ for the ratio of their commodity sales to outsiders in their total proceeds, $\lambda_3$ (equal to $\lambda$ in equation (8)), for the ratio of the banker's stocks sales to outsiders to total stocks sales, and Q for customers' proceeds from production deposited at bank B.

From (10) it can be noticed that the net cash inflow to the bank depends on the dgree of integration attained by its customers as much as it depends on the timing of the latter's purchases and sales.

c) Efficiency for the Group

As controlled firms got the proceeds from new equity issues deposited at bank B, and they also deposited the proceeds from their productive activities, the banker's lending capacity would increase by

$$\Delta F = \frac{1-\chi}{\mu} \Delta C$$

Once the banker got his lending capacity so increased by firm A, he would be able to grant it additional credit; this would increase A's profits and, thereby, its rate of profity on equity. A's shares would appreciate at stock markets, and there would arise profitable opportunities

for a new stock issue which would start the process of "money production" anew.

The new stock issue would slow down the rate of growth of A's stock prices. Nevertheless, the banker might be able to appropriate part of the foregone appreciation gains - which would have otherwise solely accrued to old shareholders - by keeping part of the new stock and pegging the price above the offering price until speculative demand rose high enough to compensate for the shrinkage in income-minded investors' demand, so that the whole issue could be sold at the highest possible market price.

Whatever the amount of the cash outflow caused by dividend pay out to outsiders in the phase of raising A's share prices, it would be compensated for the cash inflow which the sale of a new equity issue would produce, for the rate of return at which investors discount future profits (k) is well below unity. Thus, since

$$\frac{\Delta\pi}{k} = p\,Ks, \text{ and } k < 1$$

it follows that

$$\lambda_3\,\Delta\pi \leqslant \lambda_3\,pKs$$

By selling part of the new stock to outsiders, the banker would get hold of new cash resources to further expand his lending; and by adding to his own capital the speculative profit brought about by the difference between the purchase price and the market price, he would increase the banking multiplier, since he should not keep any cash to meet withdrawals from these resources, as he would have had to, had the latter come from customers' deposits.

The banker, thus, increases A's profitability by increasing his lending to it, and later on capitalises A's additional profits and gets much larger resources - through stock sales to outsiders - to further furnish A with credit.

d) Another Role of Insurance Companies

It is clear that if the banker, who knows investors' behaviour, foresees an upward trend in A's stock prices (as a result of A's increased borrowing), he should try to keep part of A's shares in his portfolio and wait for selling them when prices have gone up. There is however, a still more profitable alternative open to him, through his holding of a significant amount of equity in an insurance company.

Insurance companies, we have stated, are not allowed to accept deposits or to grant loans, but their proceeds from policies sales may be invested on financial assets while they remain as reserves. Assuming Insurance Company"C" is already a customer of Bank B, it would deposit its proceeds at B, thereby nourishing the latter with new ready cash.

Let us assume that, instead of depositing its proceeds at B, Insurance Co. "C" buys A's shares from the banker at the offering price. From the point of view of the initial cash inflow, it would be irrelevant to bank B whether C did or did not hold A's securities. Nevertheless, as firms within the group increasingly trade among themselves, it does make a difference whether C buys A's stock or whether it only deposits the proceeds from its policies sales to outsiders. If C does not buy A's shares, but rather these remain at bank B, the latter may be forced to reduce the amount of credit he is allowed to grant on the basis of his customers' deposits. In other words, if the banker has to keep A's shares in his portfolio, and these, together with his cash reserve, exceeded the reserve requirement imposed by monetary authorities, he would be missing profitable

opportunities to get profits from lending those resources. These as we have noticed, do not represent the mere interest rate differential, but the whole chain of industrial profit generation and capitalisation.

Conversely, if C got A's shares from B, with its proceeds from policy-holders, instead of just depositing them at the bank, and the latter got hold of a significant number of C's shares, instead of holding shares of a large number of industrial firms (like A), then it could devote every available resource in deposit form (ready cash) to increase industrial firms' profitability - in order to capitalise it later on at stock market. Actually, the banker could get the benefits of such capital gains further amplified, for as the insurance company directly realised the speculative profits from A's stocks appreciation, and thereby raised its own profits, these C's profits, in turn could be capitalised by the banker in new stock issues. Since the share of equity in the total amount of resources that insurance companies command is relatively small[1], it is more efficient

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1 In U.S.A., for example, the share of equity capital in the total amount of resources commanded by life insurance companies went from 10 to 12 per cent in 1965, and it was only slightly higher than the share of equity capital in commercial banks (8 per cent); see H.Sauvain, op.cit, Chaps. 18 and 19. In Mexico, during 1977, this proportion was below 5 per cent for private commercial banks and 10 per cent for insurance companies. See Nacional Financiera, S.A., "Statistics on the Mexican Economy", Mexico 1977, Tables 6.10 and 6.12.
Property liability insurance companies show higher shares of equity capital (40 to 45 per cent in U.S.A. in 1965), but they still have minor importance in the insurance market (less than 25 per cent of total resources of insurance companies). A higher share of equity capital reflects a higher claim risk. Nevertheless, when property liability companies are well integrated to other firms within the group, e.g. when the group embraces, say, automobile production, servicing and insurance, the scope for payments clearance at the bank widens, and the share of equity capital to total resources is likely to fall.
In fact, both types of insurance companies (life and property liability) may provide differentiated markets for the group's securities. According to different claim risks, different amounts of equity capital, different degrees of integration to other firms within the group, and differences in the seasoning attained by securities in their respective portfolios, they may be allocated more or less marketable (i.e. seasoned) securities, among the new issues underwritten by the banker. On the other hand, conditions in their respective insurance markets, and the level of speculative profits realised through seasoned stock sales, may determine the size of their unseasoned-securities purchasing power. The former would account for their proceeds, and the latter would determine the amount of additional finance they could get through their own new equity issues. All these factors, taken together, would eventually explain their net cash inflow to the bank.

for the banker to get hold of both, control and profits in industrial firms, by holding the insurance company, than by keeping industrial securities in his own portfolio.

The 'brain' of the group, therefore, rests on the bank. It is there where decisions are made with respect to the firms that should grow, thanks to credit allocation; and also, where profits are transformed into new equity issues, by means of underwriting agreements. Finally, it is there where the group's new equity issues are seasoned, and speculative profits are realised, thanks to the substitution of O-T-C markets for stock exchanges.

J. Empirical Research on the Development of Financial Groups

Concern for the monopolistic practices of financial groups has brought about a vast amount of empirical research on the relationships of property and control which underlie these groupings. Recently, Scott [1] surveyed this literature. In this section, we shall assess the significance of our approach in the explanation of the empirical results that he reports; we shall contrast our hypothesis with his conclusions on who commands strategic control in advanced capitalist economies, and we shall compare both approaches with Galbraith's theory of the shift of power from managements to the technostructure in mature corporations [2].

a) Financial Institutions as Major Shareholders

Empirical evidence supports our hypotheses in various respects. Firstly, it shows that financial institutions are important shareholders of industrial and commercial firms in several countries.

For the U. S., Perlo [3] found a tendency for the share of financial intermediaries in total corporate stock holdings to increase over the years, this proportion rising from 8 per cent in 1900 to 33 per cent in 1954.

For Britain, Scott reports that, in 1975, nearly 40 per cent of the largest shareholders in British firms were insurance companies; and while nearly half of all large holdings were in the names of nominees, it was

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[1] J. Scott, "Corporations, Classes and Capitalism", Hutchinson, 1979.

[2] J. K. Galbraith, Op. Cit.

[3] V. Perlo, "'People's Capitalism" and Stock Ownership', The American Economic Review, 48, 1958. Quoted by Scott, Op. Cit.

found that these were acting on behalf of pension funds, insurance companies, unit trusts and investment funds.

For Belgium, De Vroey [1] found out that only one financial holding company controlled or influenced 30 per cent of the top 115 Belgian companies in 1969.

In Germany, Marcus [2] found out that three banks were dominant minority influences in 51 of the 115 largest companies.

In agreement with our hypothesis, these evidences led Scott to conclude that "Individual and family ownership of industrial and commercial companies has gradually been supplemented by the interweaving interests of financial companies, and the latter are becoming the most important bases of strategic control".

b) Financial Groups

Also in support of our hypothesis, empirical research on corporation share-holding in various countries have revealed groups of interest with financial institutions at the centre, and industrial and commercial firms at the periphery.

For U.S.A., Sonquist et al. observed regional groupings of this kind. In the 32 region-based groups that they identified, more than half of the central corporations were banks, and most of the groups had at least one bank and one insurance company at their centre [3]. Bearden et al. analysed the national network. They found that seven of the ten most central corporations in 1969 were banks; they also found that four fifths of the banks which were cwntral in 1962 were still central in 1969. Accordingly, they concluded that banks were the foundation of intercorporate networks, though they pointed out that while "research indicates that banks play a particular role within the corporate structure, the nature of that role is not understood" [4].

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1 M. De Vroey, "Propriété et Pouvoir dans les Grandes Entreprises", CRISP, Brussels, 1973, quoted by Scott, Op. Cit.

2 H. Marcus, "Die Macht der Mächtigen" ("The Power of the Powerful"), Droste, Dusseldorf 1970, quoted by Scott, Op. Cit.

3 J. A. Sonquist et al., ' Interlocking Directorships in the Top U.S. Corporations', Insurgent Sociologist, 5/3, 1975; and also 'Examining Corporate Interconnections through Interlocking Directorates', in T.R. Burns and W. Buckley (eds),"Power and Control", Sage, London 1976. Both quoted by Scott, Op. Cit.

4 J. Bearden et al., 'The Nature and Extent of Bank Centrality in Corporate Networks'. Paper to the American Sociological Association, 1975. Quoted by Scott, Op. Cit.

The results of Mariolis's analysis of intercorporate shareholding in U.S.A. in 1970 lead to similar conclusions. He found financial companies were the most heavily interlocked, and amongst them, banks were more central than insurance companies [1].

For Britain, Whitley [2] also found that financial isntitutions were the most denseley interlocked, and they were closely linked to the largest industrial companies. He also observed that companies of the family-owned type tended to be less interlocked than those subject to management control.

The Japanese industrialisation process was characterised, from the beginning, by dynastic financial-industrial groups. Hadley reports that companies of a combine used to be operated not for their individual advantage, but for the advantage of the holding company, which was always a bank. Within the group, companies were linked by means of interlocking directorships, credit and trade [3]. More recently, Lockwood analysed the network and found out that banks were still the centre of groupings, though their links with other corporations were not so close and exclusive as in the past [4].

For the Netherlands, Mokken and Stokman [5] found a national network in which financial institutions were central. They observed that commercial banks created more links than any other corporation. Though they do not provide an explanation of financial groups structure, they indicate that information is a possible source of financiers' power. So, they state, "Whatever the reasons underlying the structure, the consequence is that companies and institutions at the nerve centres of the communications network [i.e. financial intermediaries] possess power by virtue of their position".

Fitch and Oppenheimer come closer to our approach when they explain

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1 P. Mariolis, 'Interlocking Directorates and Control of Corporations', Social Science Quarterly, 56/3, 1975, quoted by Scott, Op. Cit.

2 R. Whitley, 'Commonalities and Connections among Directors of Large Financial Institutions', Sociological Review 21/4, 1973; and 'The City and Industry', in P. Stanworth and A.C. Giddens (eds), "Elites and Power in British Society", Cambridge University Press, 1974. Quoted by Scott, Op. Cit.

3 E. M. Hadley,"Antitrust in Japan", Princeton University Press, 1970, quoted by Scott, Op. Cit.

4 W.W. Lockwood, "The State and Economic Enterprise in Japan", Princeton University Press, 1965. Quoted by Scott, Op. Cit.

5 R. J. Mokken and F.N. Stokman, 'Interlocking Directorates Between Large Corporations'. Paper presented to European Consortium for Political Research, Strasbourg 1974. Quoted by Scott, Op. Cit.

financial institutions leadership [1]. They observe that, as the size of institutional holdings increases, it is likely that these investments get locked in, for big transactions affect security prices. This gives rise to the possibility of financial institutions direct intervention in industrial concerns. This opinion is also shared by Chevalier [2], who writes .."it appears likely that they [the banks] will proggressively be impelled to give up their neutrality, in so far as the volume of stock they hold obliges them to shed the simple role of institutional investor" .

In Canada, Porter analysed multiple directorships, and found out that directors of the largest banks also led nearly a quarter of the largest industrial firms and half of insurance companies [3].

c) Bankers' Power and Strategic Control

While nobody denies that there is a community of interests between industrialists and financiers, there is much less agreement on who exercises control over investment and production decisions. In their attempt to disentangle power relationships, empirical research have focused attention on the distribution of share-holdings and interlocked directorships, assuming that representation in the board of directors is a sign of strategic control.

For U.S.A., the Patman Committee [4] reported a trend towards bank minority control in industry due to concentration of voting power in financial institutions. Their research revealed a high degree of bank shares cross-holdings. Most American banks held a significant part of their own stock, whereas a high proportion was held by other financial institutions.

The complexity of this network, and the increasing importance of institutional investors, have led many sociologists to believe that corporations, in advanced capitalist economies, are controlled by a 'constellation of interests'[5].

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1 R. Fitch and M. Oppenheimer, 'Who Rules the Corporations?', Socialist Revolution, 4, 5 and 6, 1970. Quoted by Scott, Op. Cit.

2 J. M. Chevalier, 'The Problem of Control in Large American Corporations', The Antitrust Bulletin, 14, 1969, quoted by Scott, Op. Cit.

3 J. Porter, "The Vertical Mosaic", University of Toronto Press, 1965.

4 Patman Report, "Commercial Banks and Their Trust Activities", Staff Report for the Subcommittee on Domestic Finance, Committee on Banking and Currency, House of Representatives, 90th Congress, 2nd. Session. Washington, Government Printing Office, 1968. Quoted by Scott, Op. Cit.

5 See Scott, Op. Cit. Chap. 2.

Nevertheless, some researchers are suspicious about the nature of the so-called 'impersonal holdings' of institutional investors. Burch [1], for instance, points out that the trend from family ownership and control towards managerial control in U.S. corporations has been overstated, because studies do not take into account ..."the now truly vast blocks of corporate stock held by big institutional investors, particularly the top fifty commercial banks and trust companies, a number of which are controlled by various wealthy families". The Patman Committee findings do not oppose to this view, for they also found out that few families owned large blocks of commercial bank stocks, though these holdings were distributed among (supposedly) competing banks.

Other writers argue that evidences of bankers' direct control do not indicate the much larger extent of their effective influence [2]. Scott shares this opinion; nevertheless, he assumes that this influence on corporate strategy is unintended, for ..."the overall structure is so complex that it is unrealistic to depict a particular group as having the ability to form an 'empire' subordinated to its wishes".

From the point of view of our approach, Scott's analysis is misleading as it is based on interlocked directorships, for the latter may reflect the distribution of shareholdings at the end of the speculative profit maximisation process, when institutions at the centre have already got rid of the stock issued by their customers. In our approach, firms dependence on financiers for underwriting services and credit loans enables the latter to exercise control without having direct and permanent representation in the board of directors.

d) Three Hypotheses on Strategic Control

Scott's theory of strategic control clearly opposes Galbraith's theory about the shift of power from managements (i.e. stockholders) to the technostructure[3].

Eventhough Scott admits that interlocking directorships not always involve 'control', but rather 'constraint' (because they reflect a constellation of interests), he denies managements give up control. Accordingly, he states, "Effective possession is held by a loose grouping of major shareholders who may ... delegate some aspects of strategic control to professional managers or to the old controlling families. But these latter groups can achieve

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1 P.H. Burch, "The Managerial Revolution Reassessed", Lexington Books, Mass., 1972. Quoted by Scott, Op. Cit.

2 M. P. Allen, 'Management Control in the Large Corporation, American Journal of Sociology, 81/4, 1976. Quoted by Scott, Op. Cit.

3 J. K. Galbraith, Op. Cit.

no real autonomy from those in effective possession" [1].

Let us compare these two contending theories with the hypothesis that results from our approach.

Galbraith focuses attention on the loss of power by the average shareholder, but he does not consider the enhanced power that, due to shareholding dispersion, goes to the capitalists who can hold significant blocks of shares in various corporations. He underscores the autonomy of finance achieved by the technostructure thanks to corporate savings, and thereby dismisses the role of bankers, of whom he states ..."are honoured more for their past eminence than for their present power" [2]. Indeed, he neglects that internal funding mainly finances replacement investment, whereas it furnishes a relatively small part of investment for expansion [3].

As Galbraith underestimates the importance of external funding, he interprates a low rate of profit in big corporations as a sign of a change in the latter's goals, where growth and returns stability substitute for profit maximisation. By contrast, in our approach, growth and returns stability are subsidiary goals by means of which managements maximise (speculative) profits.

We agree with Galbraith, and disagree with Scott, in that strategic control is not exercised directly by managements. Nevertheless, we disagree with the former in that it accrues to the technostructure. Unlike these two approaches, ours locates strategic control at the banks. It suggests that the density of financial institutions share cross-holdings,which empirical research has revealed, rather than indicating a diffusion of power over a constellation of interests, actually conceals effective control of small groups of individuals over different spheres of activity.

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1 Op. Cit. p. 74

2 Op. Cit. p. 319

3 In U.S.A. during 1946-1953 nearly three quarters of corporate investment for expansion was financed with external funds. See V. Perlo, "The Empire of High Finance", International Publishers, New York, 1957. Quoted by Scott, Op. Cit.

# Chapter 5.

## MACROECONOMICS OF THE DEVELOPMENT OF FINANCIAL GROUPS

In the following pages, we shall carry on our analysis of the formation of financial groups, in order to derive the macro-economic implications of the behavioural patterns that our model assumes at the micro-level.

The chapter is divided into four parts. In the first one, we deal with the many ways in which capital-intensive techniques may confer greater monopoly power to producers. We shall analyse the reasons why it is likely that financially integrated firms (i.e. firms controlled by financial groups) are more capital-intensive, and more monopolistic, than their independent competitors.

In the second part, we show how the relative advantages of capital-intensive techniques, vis a vis labour-intensive alternatives, are strengthened through the growth process, and how this affects growth itself, by means of changes in the shares of the integrated and the independent sectors in the economy.

The third part, gives an account of the reasons why such changes in the relative shares of both sectors generate cyclical fluctuations in economic activity. It also explains the reasons why this cyclical pattern cannot just repeat itself in time, but gradually changes long-term equilibrium conditions, leading to higher rates of inflation and unemployment in modern capitalist economies.

Finally, in the fourth part, we shall assess the theoretical consequence of our approach within the framework of the controversy between the Monetarist and the Keynesian streams of thought.

We shall analyse how the empirical evidence that each school provides in support of its contentions may fit into an alternative model, which bridges the differences between previous models by providing the grounds for assuming an increasing degree of monopoly as capitalism develops.

A. Financial Integration, Capital-Intensity and the Degree of Monopoly.

In this section we shall analyse how it is that industrial firms which are controlled by financial groups are likely to be more monopolistic and more capital-intensive, ceteris paribus, than their independent competitors.

For speculative profit maximisation, as distinct from just profit maximisation (i.e. as it is usually dealt with in economic theory), monopolistic competition opposes to pure competition the advantages of causing more stable returns in addition to the advantage of their being larger, other things remaining the same.

When there is a constant proportional increase in costs for an entire branch of industry, or for the economy as a whole, as also when there is a constant proportional increase in demand, profits in the more monopolistic sector not only tend to be relatively higher than profits in the more competitive sector once individual firms' equilibrium is restored, but in the process of adjustment the rate of growth of profits in the monopolistic sector varies less than the rate in the more competitive one, thereby enhancing its effect on the market valuation or stocks.

This can be seen from Diagrams 18, 19 and 20. Diagram 18 depicts a constant proportional increase in demand for the two sectors, under the assumption that both produce the same commodity and have the same average cost function. Accordingly, the initial demand curve for the more competitive sector, $D_1$, which shows a lower slope as a result of its being more elastic, shifts to $D_1'$, while the demand curve for the monopolistic sector, $D_2$, shifts to $D_2'$. At the initial equilibrium positions, the competitive sector was producing quantity $Q_1$, with average cost $BQ_1$ and selling price $P_1$, at which it maximised profits, for at that price distance AB between its demand curve and its average cost curve is largest. Similarly, the more monopolistic sector reached equilibrium at $Q_2$, with selling price $P_2$, and average profit CE. Average costs in the monopolistic

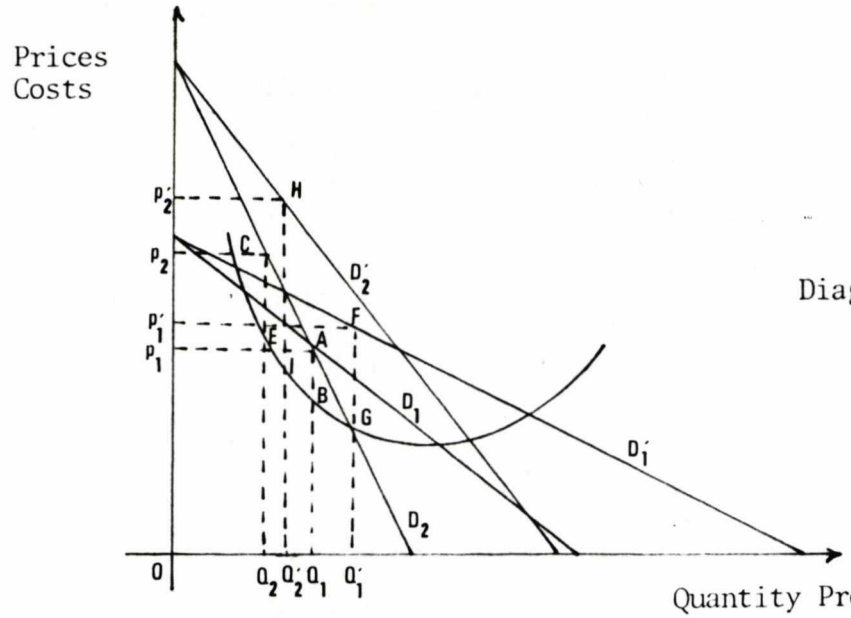


Diagram 18

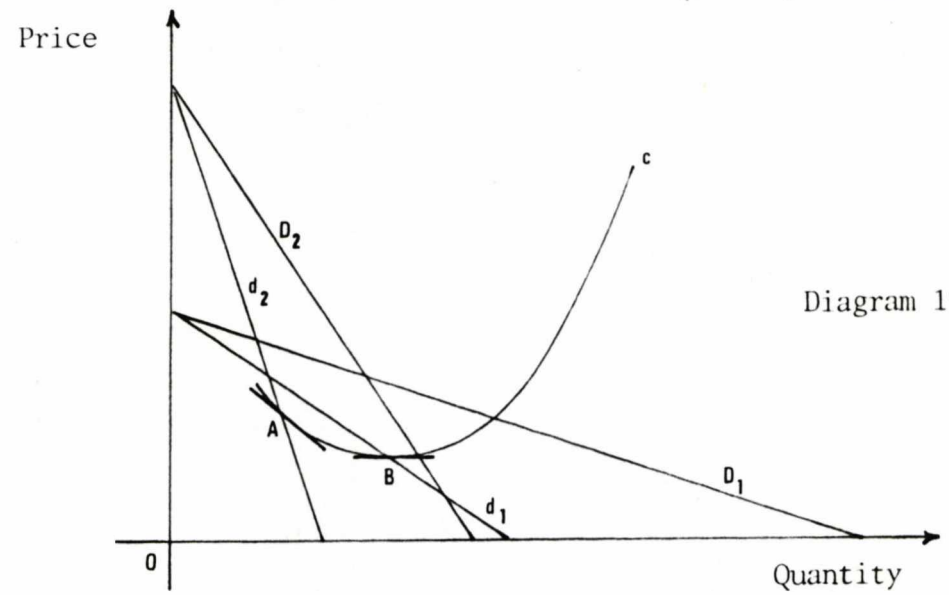


Diagram 19

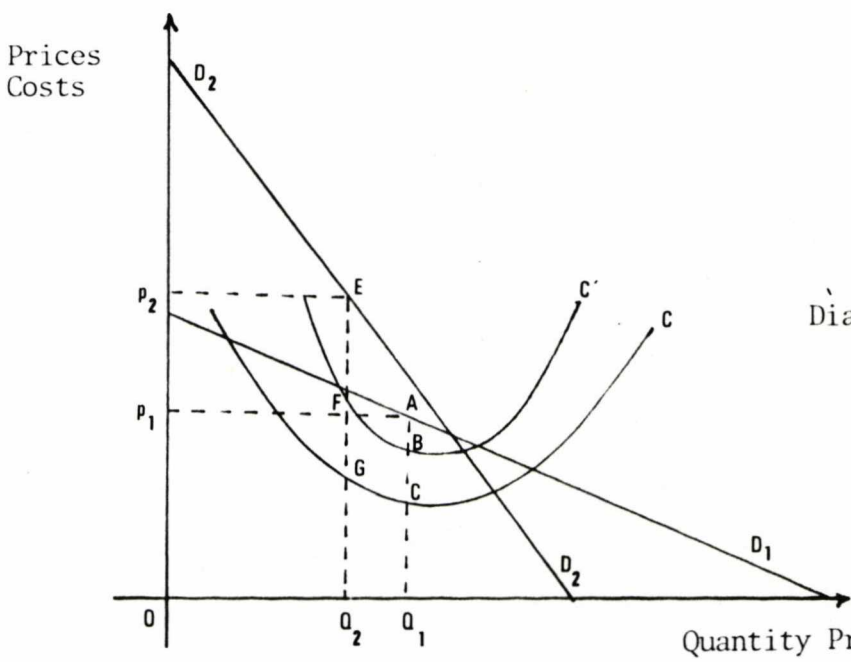


Diagram 20

sector are larger than in the competitive sector, because the quantity produced is smaller. Nevertheless, as demand increases and output expands, average costs will decrease relatively faster in the monopolised sector than in the competitive one, because in the latter marginal costs rise due to decreasing returns. This situation is illustrated in Diagram 19, where $d_1$ and $d_2$ represent the marginal revenue curves for the competitive and monopolistic sectors, respectively, and c is the marginal cost curve for both. The monopolistic sector would have reached equilibrium at point A, where marginal cost equals marginal revenue, and the more competitive sector would have reached equilibrium at B. Since at point A, the absolute value of the slope of the marginal cost curve is larger than at B, an increase in production would bring about a larger fall in marginal cost for the more monopolistic sector. By contrast, the competitive sector might face increasing marginal costs, e.g. if it had already reached the bottom of the c curve.

Therefore, if demand at every price increased by a constant proportion in both sectors, whereas costs fell at a higher rate in the monopolistic one, this would cause total profits to grow relatively faster in the latter.

In Diagram 20, it may be seen that, as average costs rose by a constant proportion for both sectors (the average cost curve thereby shifting from C to C'), while demands ($D_1$ and $D_2$) remain unaltered, the rate of return to capital in the monopolistic sector would change less, simply because the share of costs in product price is lower $\left(\frac{EG}{P_2} > \frac{AC}{P_1}\right)$ and the rate of increase in costs is the same for both sectors $\left(\frac{Q_1B}{Q_1C} = \frac{Q_2F}{Q_2G}\right)$.

Accordingly, even though the rate of profit in the monopolistic sector may be lower than the rate of profit in the competitive sector, as these changes repeated in time, it would be more stable, and absolute profits in the former sector would be growing faster as compared to the latter.

a) Sources of Monopoly Power

Up to now, we have implicitly assumed that the "product" is basically the same in both sectors, i.e. it involves the same cost function, and demands increase at the same constant rate, as if monopoly power arose from producers' location only. There are, however, other sources of monopoly power which arise from the characteristics of the techniques used and, therefore, either encourage or discourage the use of such techniques when their effects on speculative profits are taken into account.

i) Product Differentiation

When monopoly arises from product differentiation, the efforts of a single monopolistic firm to maximise its profits are less likely to spread over other competitors, e.g. advertising outlays may cause the monopolistic firm's demand curve to shift without increasing its elasticity. This source of monopoly may be more desirable than simple location, since it would improve the firm's performance not only in absolute but also in relative terms, which is particularly relevant for speculative profit maximisation.

ii) Monopsonistic Position in Labour Markets

When conditions in labour markets are such that constant wage differentials prevail, and yet there are differences in the efficiency of men (e.g. due to training-on-the job), monopsonistic price discrimination of labour would become a source of monopoly[1], thereby encouraging firms to use the technique which employs labourers from the imperfect segment of the labour market.

iii) Monopsonistic Position in Produced Inputs Markets.

Monopoly may also arise from monopsonistic positions of producers in other inputs markets, the most obvious case when the size of a single firm is large enough to constitute the most important market for a supplier. In this case, the latter may agree to concede a price cut on account of the former's

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[1] See J. Robinson, "The Economics of Imperfect Competition", Second Edition, Macmillan, London 1976, Chap. 26.

attachment to his firm. He may also grant the big firm's orders shipment priority, so that the latter needs to commit a lower amount of working capital in inventories. In every case, the size of the buying firm would account for some economies which would strengthen its position vis a vis smaller competitors.

Even though the size of the buyer is an important source of monopsonistic power, it is by no means the only conceivable one. Producers may be interested on securing the attachment of customers, for instance, on account of their paying their orders immediately, in cash, at delivery. In this case, the buyer firm's liquidity may account for a price cut, and thereby, constitute a source of monopoly power vis a vis its less liquid competitors.

iv) Monopoly from Credit Availability

Credit availability to an industrial firm may be the source of monopoly profits not only on account of its liquidity when dealing with suppliers, but also when dealing with customers.

A firm may attach customers to its product by the simple devise of granting them credit. The extent to which it may profit by raising selling prices would be determined by the relative liquidity of its competitors.

Credit availability may also account for economies arising from smoothness or regularity of operations of industrial firms. By reducing uncertainties about future demands and supplies (by means of credit to customers and suppliers), firms would be able to adjust production to demand requirements more accurately. Accordingly, the amount of working capital to be committed in inventories, both of raw materials and finished products, would be lower, thereby raising the rate of profit. As the planning horizon expanded, the dispersion of the rate of profit would also be lower, and these two elements would account for larger speculative profits at stock markets.

v) Economies of Scale in Financial Intermediation

The size of a firm influences the degree of marketability of its securities. In general, the larger the firm, the larger the issues, the "broader" the market for its securities, the lower the dealers' mark up on their prices and the smaller are price fluctuations, ceteris paribus[1].

vi) Capital as a Barrier to Entry

To complete this preliminary enumeration of possible sources of monopoly profits, we may simply add this typical one, which arises when the minimum profitable size of plant is very large. In this case, the risks involved in committing such amount of capital to a single investment, by themselves discourage investors, thereby preventing competitors entering the field.

b) Capital Intensive Techniques and Monopoly Power.

From our analysis of investors' behaviour of previous chapters, it can be seen that capital intensive techniques, and particularly those that take advantage of embodied technical progress, will at all probability endow producers with a considerable degree of monopoly power.

In fact, through their effects upon credit availability, and more generally, upon finance available to firms, capital-intensive techniques would enable producers to enjoy the sort of monopsonistic positions in inputs markets, and monopolistic positions in product markets, we referred to above. Capital-intensive firms are in a better position to grant credit to customers and suppliers not only because they get a relatively larger amount of finance from security markets, but also because they may use depreciation allowances as working capital while assets are still in operation, before replacement becomes due.

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[1] See H. Sauvain, Op. Cit., Chap. 9.

Conditions for monopsonistic price discrimination in labour markets are also the natural outcome of investors' behaviour in financial markets. Once it is accepted that firms aim to maximise speculative profit as distinct from real profits, there are reasons, as we have pointed out earlier, to expect a permanent excess supply of labour (i.e. due to the choice of inappropriate technology) even though wage rates fell to the levels that would secure full employment equilibrium if perfect competition prevailed.

If, as a result of an excess supply of labour, minimum wages for unskilled workers were enacted by governments, and wage differentials wereset by convention within each firm, as capital-intensive techniques recruited more labour from upper skill levels, the monopoly power from labour price discrimination would be likely to be larger for firms using these techniques than for firms using the labour-intensive ones. Under the assumed conditions, the former could not only profit from price discrimination in the unskilled labour market (by contracting at the minimum wage rate regardless of labourers' efficiency), but they could also set up a hierarchy of wage rates which, by being less dependent from government's wage policies, could be more flexible to profit maximisation. These assumptions are fully consistent with the empirical evidence that supports the so-called dual labour market theories of wages and employment[1].

Finally, we may assume that capital-intensive techniques are more likely to add to monopoly power from product differentiation, particularly through embodied technical progress, for capital acting as a barrier to entry would prevent competitors from following any successful new version of the product.

c) The Cost of Capital to the Integrated Sector

We have pointed out that, due to investors' preferences, firms using capital-intensive techniques, generally, pay a lower price for capital than firms using labour-intensive methods of production.

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1 See D.M. Gordon, Op. Cit.

Quite aside from the characteristics of the technique used, the financial group pays a lower price for capital as compared with the independent sector. This is so, because due to the integration among controlled firms, the ratio of cash reserves to deposits required by the bank to meet their withdrawals is lower than average, and this enables the banker to create more credit means of payment out of any given cash inflow.

If capital is cheaper for the integrated sector as compared with the independent one, and if capital-intensive techniques strengthen monopolistic positions in product markets, we may assume that integrated firms will tend to be more capital intensive and more monopolistic than their independent competitors, in every activity in which both types of firms participate.

To simplify matters in the exposition which follows, we shall only take into account this relative difference between both sectors. Accordingly, we shall refer to the aggregate of integrated firms as the monopolistic or capital-intensive sector of the economy, and to independent firms as the labour-intensive, or competitive sector. This devise should not alter the validity of results, and will help to clarify the relationships between both sectors which account for certain macroeconomic phenomena. Since it is mainly the direction of trends on which we shall concentrate our attention, further qualifications may be introduced, at any stage of the analysis, without impairing conclusions.

## B. A Theory of Sectoral Growth.

### a) Inflation and Securities Demand.

Demand for securities is assumed to respond to price expectations, both on security prices which might lead to capital gains or losses, and on commodity prices because goods may be used as stores of value.

If the expected rate of growth of security prices, plus the rate of return, is higher than the rate of inflation, investors will demand securities. But if security prices are not expected to rise much further, and the yield is already low - for it might have been kept small by bankers' placing new issues as prices tended to rise for a certain time - , then investors would prefer to buy commodities to preserve their real purchasing power, rather than holding securities. Therefore, demand for securities will depend upon the expected rate of growth of security prices (which we shall denote by $\tilde{p}$), the rate of return on securities (k), and the rate of inflation ($p_r$); our basic proposition being that investors will demand securities whenever

$$k + \tilde{p} \geq p_r \quad .$$

b) Real Profits and the Degree of Monopoly

When there is monopolistic competition, the rate of growth of profits ($\dot{\pi}$) is smaller than the rate of growth of prices ($p_r$). Accordingly, the market value of stocks grows less than product prices, so that

$$\dot{\pi} < p_r > \tilde{p} \quad .$$

Nevertheless, when an economy comprises two sectors, one of them being competitive, and the other being monopolistic, the average rate of inflation will depend on the relative shares of both sectors and their respective rates of inflation, so that

$$p_r = p_1 \frac{Y_1}{Y} + p_2 \frac{Y_2}{Y}$$

where Y, $Y_1$ and $Y_2$, stand for total real output, real output of the monopolistic (integrated) sector, and real output for the competitive (independent) sector, respectively; and $p_1$ and $p_2$ represent the two different rates of inflation.

It can be seen that, in spite of growing less than $p_1$, monopolistic profits may rise faster than the average rate of inflation, if the rate of inflation in the independent sector is lower than the rate of inflation of the integrated sector.

As monopolistic firms' profits grow faster than the average level of product prices, they will attract investors to buy their stocks, and so, the sector will keep expanding, in spite of monopoly profits growing less than monopoly prices.

c) Degree of Monopoly and Growth.

It is obvious that the relative shares of both sectors cannot remain constant over time. In order to know the direction of their changes, and its implications for the economy as a whole, let us work out the sequence of events starting from an initial general increase in demand, which splits between the two sectors proportionally to their outputs.

In the short run, as demand increased for the independent sector, it would raise its prices, but since the aggregate demand curve for its product is more elastic - as compared with the integrated sector's - , it would respond to the stimulus mainly by increasing real output.

Conversely in the short run, the integrated sector would better respond to an increased demand by raising prices than by increasing output.

As a result of the general increase in demand, the rate of growth of profits in current terms (though not necessarily the amount of profits) would be higher in the integrated sector; and the share of the independent sector in total real output would rise.

Since profits would grow faster in the integrated sector, the prices of its stocks would perform better than independent stocks prices. On the other hand, the increasing share of the independent sector in total real output, and its lower rate of growth of prices, would smooth the inflationary effects of the increased demand. As a result of these two elements, integrated firms would get relatively more equity finance than independent firms, and therefore, would tend to grow faster.

d) Inflation and Sectoral Costs

Let us now analyse how changes in the terms of trade between the two sectors, and in the average rate of inflation, affect each type of firm.

i) Labour Costs.

As prices rise minimum wages are likely to rise. This will immediately reflect on unskilled labour payrolls. Skilled labour costs, however, might tend to rise relatively less, if wage differentials operated as buffers when the minimum rate rose.This is likely to occur when excess supplies of labour exist at different skill levels, as it is when unemployment arises from the choice of inappropriate technology.

We have assumed that, as the technique becomes more capital intensive, it demands relatively more skilled labour. Therefore, independent firms would tend to demand relatively more unskilled labour than integrated firms. Since, as a result of the increase in demand, the independent sector would expand real output and employment to a greater extent than the integrated sector, and since a relatively larger increase in unskilled labour costs (as compared to skilled labour costs) would affect independent firms more than their integrated counterparts, we may conclude that, as inflation developed and wages rose, labour costs would tend to grow relatively more in the independent sector than in the integrated sector; and for this reason, also profits in the latter would grow faster than in the former.

ii) Produced Inputs Costs

We have pointed out that, as demand grows, integrated sector prices tend to rise faster than independent sector prices. Let us now analyse how this affects costs and profits in each type of firm.

We have assumed that firms controlled by financial groups are more integrated than firms within the independent sector, due to the bankers' interest in minimising cash 'leaks' from payments to outsiders. As product prices in the integrated sector rose faster than in the independent one, therefore, integrated firms would be more badly affected than independent

firms, by having to afford larger produced inputs costs. Taking the integrated sector as a whole, however, it can be seen that higher product prices, in spite of increasing its own sector's costs relatively more than costs in the competitive sector, cause groups' profits to rise faster than independent firms' profits. This is so, because, even though produced inputs costs grow faster in the integrated sector, the fact that at least a part of such inputs comes from the independent sector, makes that the average rate of increase of produced inputs costs is lower than its own rate of inflation. Therefore, as cost prices rise at a lower rate than product prices, profits in the integrated sector tend to rise.

For the independent sector, things reverse. Its rate of growth of product prices is lower than the rate in the integrated sector, and since the latter supplies one part of the inputs that independent firms require, the average rate of growth of produced inputs costs for the independent sector as a whole is higher than its own rate of inflation. Therefore, as demand increased and prices rose, independent firms would find that their profits would grow at a lower rate than integrated firms' profits.

e) Finance Availability and Sectoral Growth

i) Equity Finance.

We assume that, as profits grow in every firm, and stock prices rise, new equity is issued to finance expansion, or at least to realise profits.

We have observed that, as demand increases and prices rise, profits in the integrated sector grow faster than profits in the independent one. The former, therefore, would be expanding at a higher rate than the latter.

Integrated firms, in general terms, should be using more capital-intensive techniques, which, for the reasons we have pointed out earlier, investors prefer. This enables producers to pay a lower price (k) for the equity finance that they get at stock markets. Therefore, also on this account,

the rate of expansion of the integrated sector would be higher than the rate of expansion of the independent one.

ii) Credit Flows

Increased output and wealth (through new stock issues) would increase deposits at banks, and therefore, would bring about an increase in credit means of payments. As the integrated sector furnished a relatively larger share of the new demand for securities, the increase in means of payment would also be relatively larger, for deposits from financial groups' member firms at banks involve a lower ratio of required cash reserves to deposits ($\mu$), and therefore, a higher credit multiplier $\left(\frac{1-x}{\mu}\right)$.

If the ratio of credit to output in current terms $\left(\frac{Li}{Q}\right)$ remained constant for both sectors as inflation developed, relatively more real resources per unit of real output would flow to the integrated sector through bank loans, for credit means of payment depreciation (i.e. the average rate of inflation) would be the same for both sectors, whereas output in real terms would grow less in the integrated sector, due to higher prices.

If the bankers, as it is likely to happen, allocated relatively more credit to the integrated sector - either because capital-intensity was regarded as an indicator for firms' solvency (e.g. if $\frac{Li}{Q} = f(v)$ as we have assumed earlier); or simply because it involved a lower $\mu$, or they looked forward to increase controlled firms' profitability in order to raise speculative profits - the real amount of resources available to this sector would be still larger.

As the integrated sector commanded a relatively larger amount of real resources, its rates of growth of output and profits would be higher than in the independent one, and the capitalised value of these profits, realised through new stock issues, would also grow faster.

Thus, while the costs involved in means of payment depreciation would be paid, to a larger extent, by the independent sector, the benefits would accrue, in a larger proportion, to the integrated sector.

iii) Inflation and Interest Rates

General depreciation of means of payment calls forth increases in money interest rates. As interest rates rise due to inflation, the market value of existing bonds falls, but the market value of shares might increase, for profits in current terms would rise (so that the increase in $\pi$ might compensate for the rise in k, and $pKs = \frac{\pi}{k}$, in the end, might rise).[1]

Inflation and a rise in the market rate of interest (i) would affect each sector in a different degree. First, because k, in the integrated sector, is smaller; and second, because as a result of a smaller k, the latter's degree of leverage is also lower.

We have observed that, as inflation develops, the terms of trade between both sectors become favourable to the integrated one. Since this sector enjoys a lower k in the average, the gains from inflation on stock appreciation are relatively larger for it, for these two reasons.

On the other hand, the difference in k between both sectors accounts for a lower equilibrium coupon rate of interest (i*) in the integrated sector, and, therefore, for a lower degree of leverage as compared to the independent one[2]. The latter sector, accordingly, would be relying more heavily on debt-financing than on equity financing, so that an increase in the market rate of interest, due to inflationary pressure, would affect it more adversely (or benefit less favourably) both as a result of a relatively larger shrinkage in speculative profit from bonds' appreciation, and of a relatively lower gain from stock appreciation.

f) A Note on the Aggregate Model

When we analysed the process of the expansion of financial groups we referred to the inflationary effects of their individual struggle to bring

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[1] In addition, a better growth performance of integrated firms is likely to widen the difference between the rates of return investors demand from integrated and independent firms.

[2] As speculative profit maximisation determines equilibrium conditions, and $i = i^*$.

net cash inflows to their respective banks. In the aggregate, however, the struggle among financial groups to raise their stock prices would cancel out individual gains and losses, for what is a net cash inflow for one bank, would be a net cash outflow for the rest of them.

In fact, the inflationary pressures brought about by financial groups do not arise from their individual struggle to deprive other groups from their cash resources, but from the allocation of investors' demand into controlled firms' securities. By so doing, bankers as a whole, speed up the rate of growth of means of payment, because groups' securities involve the payout of lower rates of return to investors, on the one hand, and a lower ratio of cash to deposits (a higher credit multiplier), on the other hand. Thus, it is the relative shrinkage of the independent sector (and the relative expansion of the integrated one) which, due to their different behavioural patterns, causes inflation to speed up.

The struggle among financial groups to increase their individual net cash inflows can only be inflationary, for the economy as a whole, to the extent that, by so doing, they re-allocate independent customers, and households, amongst them in such a way, that the average $\mu$, for the banks as a whole, decreased. In other words, cash flows among banks would not be neutral to inflation if they are accompanied by a better integration of customers within each individual bank,so that economies in the use of currency, for the economy as a whole, took place.

g) The "Inflation Barrier" in the New Approach

As the integrated sector expands, the rate of inflation rises, not only because integrated firms tend to be more monopolistic, but because as they - expand, the financial resources that they raise from new equity issues enter the banks as deposits, and are multiplied through credit loans according to a lower than average ratio of cash to deposits ($\mu$). Thence, an increased demand , brought about by the creation of - -

credit means of payment, is to be furnished by an increasingly monopolistic industry, the process feeding back as banks grant preference loans to integrated firms, and high monopolistic profits encourage new equity issues. There is a limit, however, to groups' expansion. This limit, to a large extent, arises from their own monopolistic nature.

We have pointed out, that the basic condition for investors to demand securities is that

$$k + \tilde{p} \geq p_r$$

or, in words, that the rate of return from securities, plus the expected rate of growth of security prices, is greater or at least equal to the average rate of inflation. As the integrated sector expands, the average rate of inflation approaches the latter's rate of inflation. Firms within this sector, due to their monopolistic character, will tend to respond to increasing demand by raising prices rather than by expanding output. For the economy, as a whole, therefore, profits will tend to grow less than prices, and so will stock prices, particularly if previous upward trends in security prices have been slowed down by new issues.

As stock prices keep growing less than product prices, shares of stock will eventually cease to be good store of value, and investors will substitute goods for them.

As less stocks are demanded, underwriters will have to commit more capital to peg stock prices. At the same time, their ready cash requirements increase, for their customers' turnover increases, as the latter try to get rid of cash balances - which are depreciating - and try to buy goods as stores of value. This additional demand on product markets speeds up inflation, and further pulls down stocks' demand.

Credit stringency (due to a larger $\mu$, and to a larger amount of capital committed by banks to peg stock prices), prevents an expansion of the independent sector; and as demand for goods as stores of value increases, it leads to still

higher prices and lower real output growth, thereby hastening the decline in the demand for stocks.

## C. Financial Integration and the Business Cycle

The analysis we have carried out so far enables us to provide an explanation for the business cycle as resulting from speculative profit maximisation by firms, and changes in the relative shares of the integrated and independent sectors of the economy.

Let us take a step backwards from the point at which the economy reaches the 'inflation barrier', and analyse the sequence of events starting from the point at which both sectors enjoy prosperity conditions, and prices are rising but less than aggregate profits

### a) Prosperity

We may assume that real investment financed with earlier equity issues keeps total real output growing, with money supply increasing, but prices rising moderately due to real expansion of both sectors.

At this stage, interest rates are rising, but this need not reflect capital scarcity but rather deliberate policies of high coupon rates on bond issues followed by integrated firms in order to maximise profits by means of bonds appreciation.

As output, employment and prices rise, however, upward pressure on wage rates begins to arise, which, together with increasing interest rates, erode independent firms' profitability. Costs for the independent sector rise faster than in the integrated one, for the reasons we referred to earlier, while sales proceeds in the former, whose aggregate demand curve is relatively more elastic, grow at a lower rate.

Lower profitability of independent firms impairs their stocks' performance in financial markets, at the time that expectations of higher interest rates

raise the costs of long-term finance. Independent firms' expansion, therefore, is discouraged just when they approach full utilisation of existing capacity.

Weakening of the independent sector expansion, when nominal demand is increasing, brings about even higher prices. Formerly, 'efficient' entrepreneurs now try to profit from short-term favourable conditions, and engage themselves in speculative investment instead of productive investment. Since prices are rising quickly, they do not object paying the current high interest rates on short-term bank loans. Credit demand, thus, grows pari-passu with the rate of inflation.

As independent sector supplies become inelastic, costs in the integrated sector rise faster, and this causes the latter's selling prices to step up, and its real output to shrink, thereby adding strength to the already existing inflationary pressure.

Thus, as the average level of prices rises, both sectors, though for different reasons, face constraints in expanding real output, so that the absolute amount of profits grows at a lower rate than the rate of inflation, thereby causing stock prices to lag behind product prices. The independent sector cannot expand real output, because it is already working at nearly full capacity. The integrated sector, on the other hand, will not do so because, due to its monopolistic nature (low elasticity of demand), it maximises profits by raising prices rather than by increasing production.

Now, money capital scarcity begins to appear. A high average rate of inflation has conceivably discouraged investments in securities, causing the bankers' net cash inflows from securities sales to decrease, at the time that larger cash reserves are required to meet the differences between cash-inflows and -outflows that arise from their customers' increased deposit turnover.

At this stage, which puts an end to prosperity, bank credit, in general, becomes stringent; and there are no incentives for any firm to grant commercial credit, since the independent sector is operating at nearly full capacity, and speculative investments in inventories tie up the working capital that would be

required to increase production in firms which still operate at undercapacity. This is the time of crisis.

b) Crisis and Depression.

Since the goods favoured by speculative demand are those whose prices rise faster, it is also those whose supply is most inelastic, either because producers enjoy a monopolistic position in the market, or because they are already operating at full capacity. Whatever the reason, the result will be that an increase in the speculative demand for them - brought about by a fall in the prices of securities vis a vis the average level of prices - will not lead to significant increases in output, if any.

As profits rise less than commodity prices, so do the prices of securities, and speculative demand for goods remains high. Banking credit will continue to be stringent, for underwriters will have to commit increasing amounts of resources to peg security prices and as cash reserves to secure their solvency.

Credit stringency and care for solvency cause new orders to firms to fall off[1]. Uncertainty on future demands, high prime costs, and high interest rates, lower the scale of operations. Creditors refuse to renew old contracts to firms performing badly, and labourers are laid off as old orders are completed. The income multiplier reverses, and demand decreases cumulatively; while overhead costs rise due to growing idle capacity. From here onwards depression follows. As demand falls and real output shrinks, profits also decrease, thereby further discouraging investments in securities.

At this stage, some firms will try to reduce prices relative to other competitors, in order to attract customers to their markets, thereby increasing profitability by means of increasing capacity utilisation.

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[1] See W.C. Mitchell, 'Business Cycles', in "Readings in Business Cycles and National Income", (Eds.) A.H. Hansen and R.V. Clemence, George Allen & Unwin, London 1959.

In the struggle for markets by means of lower prices, marginal producers will have to leave the field. A smaller number of firms (the more efficient ones) will remain in business. Employment will diminish by the closing down of redundant firms, and profitability in the remaining ones will increase.

c) Recovery.

Although the rate of growth of product prices begins to slow down, speculative demand will keep flowing to the high-price products we referred to above for some time, while prospects of capital gains from other assets rise high enough to attract investors.

Firms operating at full capacity or enjoying a monopolistic position, which are favoured by the speculative demand for goods, will also see their profitability improved by relatively lower labour costs as a result of higher unemployment, and lower produced inputs prices brought about by the battle for lower prices just described.

Thus, as the rate of inflation slows down, profitability for all the firms that remain in the market increases. Accordingly, speculative demand for goods is discouraged, and securities resume their function as stores of value.

d) Underwriters' Policies.

We have assumed that, while this process works itself out, underwriters are actively pegging the prices of integrated firms in order to protect speculative profits, or at least to prevent their firms against any loss of capital. Accordingly, the bottom limit to any given stock price would be posed by the replacement cost of assets to the firm and the actual rate of return ($\hat{k}$). We pointed out earlier that firms would achieve individual equilibrium when the valuation of assets at stock markets equalled the

replacement cost of assets (Ks = pKs) and the actual rate of return $\left(\hat{k} = \frac{\pi}{K_s}\right)$ equalled the rate of return demanded by investors ($\hat{k} = k$).

Replacement costs rise with inflation. Therefore, pegged prices should rise proportionately to the rate of inflation if profits in integrated firms were constant. If profits were falling, pegging prices at replacement cost of assets would involve a lower rate of return on equity, and therefore, it would cause a fall in the volume of securities demanded at that price. As this happened, underwriters should increase their holding of securities to keep prices pegged at that level. Thus, we may state that bankers, in order to peg stock prices at the level that preserves firms from making capital losses, will have to increase their holding of securities to the extent that the rate of growth of nominal profits falls short of the average rate of inflation.

Investors, however, will accept a lower rate of return if they expect to compensate this short-run loss in income with larger capital gains from future increases in the market price of stocks. We may, thus, assume that bankers - who know investors' preferences and behaviour - will supply the amount of securities which will secure a current rate of return and expectations of price movements such, that the market value of the firm equals the replacement cost of assets.

When reorganisation in industry occurs, as the average rate of inflation falls, so does the replacement cost of assets; and as productivity in industrial firms increases, the rate of return on equity rises. Bankers are, then, able to increase the supply of stocks, for they can indulge a fall in the rate of growth of stock prices on account of replacement costs growing more slowly, and rates of return on equity being larger.

Thus, once profitability in the integrated sector is restored, and the rate of inflation has fallen, a part of the resources committed by underwriters to peg security prices can be released, and banking credit ceases to be stringent.

As speculative demand for goods is discouraged by a lower rate of inflation, deposits turnover at the banks slows down, and so do cash reserve requirements, thereby raising the credit multiplier. Therefore, as reorganisation in industry takes place, credit is eased and costs fall; all these factors adding to the stimulus provided by higher security prices and lower product prices in fostering new real investment. This is the stage of recovery, and from here onwards a new cycle begins.

D. Sectoral Growth, Inflation and Unemployment

All through the cycle, integrated firms enjoy advantages vis a vis their independent competitors, which account for a larger share of the integrated sector in the economy at every successive cycle. If only for this reason, business cycles cannot just repeat themselves, but will show different features.

In this section, we shall analyse how such relative advantages of integrated firms arise, and their role in the explanation of some peculiar phenomena in the evolution of capitalism, namely growing inflation and unemployment.

We have pointed out, in this and previous chapters, the advantages that integrated firms get from the support of their financial institutions during the expansion phase of the cycle. So, here we shall concentrate in those relative advantages which appear during the critical phases, that is, at the end of prosperity, throughout the crisis and during depression.

a) Speculative Profits along the Cycle.

At the end of prosperity, when the more competitive lines of production are approaching full capacity, and the replacement cost of assets is already high, the more monopolistic firms within each trade - including the cartelised

ones - are less badly affected, for a higher degree of idle capacity saves them from the necessity of carrying out additions to plant when productive assets prices are at their highest. Therefore, when profits are squeezed by ever higher costs and the rate of growth of output slows down, integrated firms' profitability may still perform satisfactorily, thereby attracting investors' demand to their stocks.

Once goods replace cash balances and securities as stores of value, integrated firms, again, enjoy comparative advantages. Since production within the financial group is better integrated than in the independent sector, firms within each financial group may enjoy higher liquidity than their independent competitors. Bankers would allocate credit among their group firms in preference to independent firms, not only to sustain their profitability (and thereby their stock prices in security markets), but also because the cash leaks involved in their current operations with deposits would be smaller. Higher liquidity of integrated firms, when all sorts of credit are stringent, would strengthen their monopolistic positions in product markets as they, in turn, granted credit to customers. On the other hand, as they advanced money to suppliers, or paid them in cash on delivery, they may also strengthen monopsonistic positions, for in face of current inflation, suppliers would conceivably reduce selling price for the sake of prompt liquidity, since opportunities for speculative investments, or simply a higher capital turnover, would compensate for such price cuts.

Stronger monopolistic positions, at a time when product demands become speculative to a large extent, are particularly profitable, for, as we have pointed out earlier, it will be the products whose prices rise the fastest which will attract investors' demands to increase inventories. Once more, a higher degree of idle capacity, and a higher rate of growth of prices, will bring about a higher rate of growth of profits in the integrated sector, and thereby, of controlled firms' stock prices.

During the critical phases of the cycle, integrated firms also get relative advantages from their lower equilibrium degree of leverage, that a lower k brings about. When firms fail to fulfill obligations, and even liquidations become frequent, a lower degree of leverage may easily account for integrated firms being better graded by investors.

The increase in stock prices due to prospective yields is not automatic, and it is likely to be lower for low-grade stocks, which exhibit large dispersion, than for high-grade securities. Accordingly, a small increase in a stable return may cause a higher increase in the price of a high-grade stock, then a large increase in the yield of a risky one. Certainty on price trends, in other words, increases responsiveness from investors.

b) Pegged Prices of Securities

As the prices of controlled firms' securities become the responsibility of the group's bank, which pegs them when necessary in order to protect the overall profitability of the group, bonds and stocks of integrated firms are given better grading by investors than independent firms' securities. This relative advantage, which accrues to integrated firms all over the cycle, is further enhanced by O-T-C markets, since by means of this device, underwriters directly reduce the dispersion of security prices, and economise in the amount of capital required to peg them.

By pegging security prices, underwriters make interest rates rigid, so that adjustments in financial markets are brought about by changes in the volume of credit or securities supplied. At the end of prosperity, before crisis begins, this practice further tightens independent firms' liquidity; whereas at revivals, it makes finance available to them at relatively high prices.

The increase in controlled firms' securities supply by underwriters, during revivals, has important effects for the economy as a whole. When the rate of inflation slows down, after the crisis, and re-organisation of industry has taken place, the firms which remain in business - among which the integrated

ones have now a larger share - are likely to show a lower degree of leverage than the average prevailing before crisis, for it is common that firms that go into liquidation either leave part of their liabilities unpaid, or sell their equity at low prices. On the other hand, at this stage, efficiency in industry is increased (for capacity utilisation has risen, and prime costs are low), so that profits rise and so does the demand for securities. Underwriters, who have been pegging security prices by keeping themselves part of the issues, can now sell their holdings of securities without lowering market prices. But at the same time, firms remaining in the market and operating at nearly full capacity will, most probably, try to expand by issuing debt rather than equity, for not only their low leverage would encourage investors to demand their bonds, but also the latter's expectations of a future fall in the rate of interest, as a result of the fall in the rate of inflation. Therefore, as demand for securities increases after depression, the supply of them increases for two reasons, so that security prices are likely to remain sticky at low levels, thereby keeping rates of return at relatively high levels.

This is a time when opportunities for the resurgency of the independent sector appear, for prime costs are already low and bank credit, and finance in general, becomes available to them.

c) Relative Prices and Employment

If interest rates are kept <u>relatively</u> high, prime costs must fall lower to encourage independent entrepreneurs to engage in business. On the other hand, as the share of the cartelised sector in the economy rises at every successive cycle, produced input prices also tend to remain sticky at depressions - as a result of an increasing degree of monopoly - . Therefore, the burden of the adjustment in the slump relies, increasingly, on the labour market's bringing about wages low enough to compensate for ever higher lower limits to inflation and interest rates.

Quite obviously, the bias towards the use of capital-intensive techniques, instead of labour-intensive techniques, eases the path towards equilibrium, but this is eventually achieved at the cost of ever higher unemployment.

d) Sectoral Differences in Cyclical Patterns.

Price swings of independent firms' new issues, as these enter stock markets, further strengthen high grading of integrated firms' securities; whereas real investment demand and real output from the independent sector, at the time that raise profits in integrated firms, further lower the rate of inflation, thereby encouraging investors' demand for groups' securities.

Financial groups, due to their monopolistic nature, are able to enjoy prosperity long after independent firms enter into crisis, for speculative demand for goods and idle capacity keep integrated firms growing longer. They also enter the revival phase before independent firms, as product prices fall and investors' demand for securities rises again, for their stocks and bonds have better performance at the market. Accordingly, the integrated sector experiences shorter depressions and longer periods of prosperity.

The length of depression for the economy as a whole depends on how quickly the labour market operates to bring about the required fall in wages to encourage expansion of the independent sector, and also, on the degree of idle capacity which results from reorganisation of industry after the crisis. If capacity utilisation, after marginal producers leave the market, is still low, recovery in financial markets will not prompt new real investment among remaining firms. We have already pointed out that, due to the relative advantage of integrated firms over their independent competitors, the share of the former in the economy is likely to increase during depressions. Being, as they are, monopolistic in nature, the degree of idle capacity during the slump is likely to increase at every successive cycle. Under these conditions, the length of depression is left to depend, solely, on the speed at which wages fall.

e) Financial Integration and the Elasticity of Labour Demand

Let us now analyse what are the conditions in the labour market under which this adjustment must occur.

Quite obviously, the supply of labour increases with population growth. As the economy grows, and income per capita grows, we assume that supplies of labour of different skills increase proportionally, so that, ceteris paribus the aggregate supply curve of labour would shift rightwards with constant elasticity.

Labour demand also increases as the economy grows. Nevertheless, as the share of the integrated sector in the economy also increases, shifts in the demand curve for labour, ceteris paribus, are accompanied by changes in its elasticity.

The elasticity of labour demand will be greater the larger the elasticity of substitution between factors and the lower the elasticity of demand for the product. Changes in factor proportions, as minimum wages rise, are larger in the integrated sector; first, because the effect of changes in minimum wage rates on labour costs is likely to be smoothed by declining wage differentials; and second, because firms in this sector enjoy economies in the use of capital which are not available to independent firms.

Since the elasticity of demand for the product is also smaller for integrated firms than for the independent ones, it follows that, as the former increase their share in total output, the elasticity of the aggregate demand for labour increases.

As the economy grows and the supply curve of labour shifts with constant elasticity, the bargaining position of workers weakens for two reasons. First, because labour demand will grow less than real output, due to lower labour inputs per unit of output in the capital-intensive integrated sector; and second, because it will become more elastic. These relative changes in the supply and demand schedules for labour will generate increasing downward pressures on wages at every successive cycle, which, eventually, must compensate for the stickiness of interest rates and product prices.

Any action on the side of unskilled labourers to defend their wages would further foster labour saving techniques. Even the range over which minimum wages may be flexible is likely to fall short of what is required to compensate for the economies of higher capital intensity. Thus, lower wages by no means will secure long lasting benefits to the labour force. By aiding the recovery of the independent sector, they may lead to temporary lower unemployment and lower rates of inflation. But as the major benefits of real growth and price stability accrue to the integrated sector in the form of higher speculative profits, there is nothing to secure that, in the long term, lower wages will bring about an increase in employment or a decrease in the rate of inflation.

In fact, if lower wages are pleaded in support for growth and stability during the slump, they could be better replaced by cheap long-term finance to the independent sector during prosperity, for it is at that stage in the cycle where steady growth is hindered. Controls to groups' expansion during the boom, and promotion of independent firms' investments in plant, would eventually favour integrated firms too, for real output growth would keep profits and stock prices growing faster than product prices, thereby stimulating investors' demand for securities. Financial groups could still profit from increased productivity in the independent sector, to the extent that the rates of growth of product prices within both sectors differed, and the rate of growth of integrated firms' profits exceeded the rate of growth of independent firms' profits.

Of course, there is nothing to guarantee that the amount of speculative profit that financial groups would realise from such a policy would be larger than if letting the cycle run its painful course, for integrated firms, as we have noticed, get advantages over their competitors during depressions as during prosperity. But the rates of growth of output and employment would be higher.

## E. The New Approach and Controversy in Economics

In this section we shall analyse how alternative theories to explain employment, income and prices, which fit in different phases of the business cycle, compare with our approach; and also, how their supportive empirical evidence agrees with the results we should expect from the latter.

In order to concentrate our attention on the main issues under discussion, we shall compare our approach with only two models, which we may take as representatives of Keynesian economics and Monetarism, respectively.

### a) The Controversy

Controversy in modern economics has arisen principally, from assumptions concerning price flexibility. Spending decisions depend on prices, and so do incomes. The explanation of production, income distribution and growth, therefore, directly depends on the way in which prices are assumed to be determined at product and factor markets. Any disagreement on this crucial point, thus, has far reaching consequences.

#### i) Price Flexibility

Monetarism assumes all prices are flexible, the wage rate and the rate of interest included, and are determined by supply and demand forces. From the supply side, prices depend on marginal productivities, and from the demand side, they depend on marginal utilities. Wage bargaining, therefore, is carried out in real terms, and the rate of interest is determined by people's willingness to save and entrepreneurs' profitable opportunities to invest.

Absolute price flexibility implies that, at any time, the economy is working at full employment, so that any increase in aggregate demand, financed by additional means of payment, can only bring about inflation. The arithmetic of the famous quantity equation, $MV = PT$, which is used to prove this contention, involves constancy, or at least stability, in the velocity of circulation of money.

Keynesian economics, on the other hand, also assumes product prices are flexible and determined by marginal costs and marginal utilities; but it holds that factor prices, due to uncertainty and institutional arrangements, tend to be sticky, which amounts to saying that, at any time, there is a certain amount of involuntary unemployment.

From this, it follows that, at any time, there is the possibility of expanding real output and employment by increasing aggregate demand - the latter being financed with additional means of payment - , without causing any other inflationary pressure than the one derived from diminishing returns. As real output grows, it eventually provides the additional media of exchange with real value.

Keynesians contend, however, that the sole expansion of media of exchange cannot by itself bring about real output growth. It needs to be spent, for otherwise it might remain saved as idle cash balances, with no further effects on the economy (i.e. in a 'liquidity trap'). It would not be partially spent on consumption, because the latter depends on current income, and people would consider additional cash balances as an increase in wealth. On the other hand, as an increase in savings, it might not bring about investment, because there are conditions in which it would be unable to lower the rate of interest.

ii) The Marginal Utility of Money

In order to explain this 'liquidity trap', Keynesians recall that the price of money, like the price of every commodity, depends on its utility, and the utility of money arises from its properties as store of value, unit of account and means of payment. Since money, as a store of value, may be replaced by any other non-perishable commodity, the existence of a rate of interest on money, in money terms, can only be explained by its utility as unit of account and means of payment.

Securities, Keynesians point out, replace money as stores of value, but they cannot fulfill the other functions of money. That is why they yield interest. If interest is, as Robinson has put it, the 'price of parting with liquidity', the sole increase of means of payment will not lower its price, for the utility of money from its properties as unit of account and means of payment does not decrease at the margin.

It follows that, once the rate of interest reaches its bottom limit - which corresponds to the utility investors attach to money as means of payment and unit of account - , any further increase in money supply would remain saved in the form of cash balances, because if it were invested in securities, and the latter's prices rose (the rate of interest fell), investors would be immediately discouraged, since the utility of money would exceed the marginal utility of the yield. Within the framework of the quantity theory equation, this means that the velocity of circulation of money, V, is flexible.

To Keynesians, the rate of interest is determined in financial markets by investors' liquidity preference and the money supply. It is not determined by savings supply and real investment demand, and as a result of this divorce, there may be cases in which the rate of interest which secures equilibrium in financial markets is too high to persuade entrepreneurs to invest in the amount required to bring about full employment of labour. Since institutional arrangements make money wages rigid, it follows that the economy may reach equilibrium with less than full employment. In Keynesian theory, thus, saving equals investment by means of changes in real income, and not by changes in the rate of interest.

By assuming prices are sticky, and consumer preferences and the production function are stable, Keynesians make saving a residual element. On the other hand, as savings can only be kept either as cash balances or as security investments, there should be a mechanism which secured that any of these two assets supply acted as a buffer. This is the role played by a flexible velocity of circulation.

By contrast, Monetarists assume that saving equals investment by means of changes in the rate of interest, which, like any other price, is flexible. Since supply and demand determine commodity and factor prices, real consumption becomes the residual element, which depends on all other prices, the wage rate and the rate of interest included. In this way, the demand for money is determined in the same way as that of other commodities, i.e. at the level where the marginal utility of money equals the marginal utility of all other commodities.

To Keynesians, cash balances are held for transactions and precautionary motives, which depend on income, and also for speculation in security markets. Nevertheless, as they assume that prices are sticky, the demand for securities, is, mainly, a demand for a stream of income. In other words, they neglect the negative effect that the rate of inflation - as a negative return on cash balances - has on the demand for money, which also accounts for speculative transactions on goods as stores of value.

By contrast, these two effects of the rate of inflation play an important role in the Monetarist approach, as the rate of interest is determined, simultaneously with all other prices, in a full equilibrium system.

Antagonistic as these two models seem, their differences have been softened in time. Monetarists, on the one hand, increasingly accept that there are unavoidable, though temporary, market imperfections which may cause some degree of unemployment. On the other hand, Keynesians agree that the demand for money, on account of the transactions and precautionary motives, provides some grounds on which real investment may affect the rate of interest. Therefore, even though their conclusions with regard to an anticyclical policy are still in opposition to each other - for reasons which we shall analyse later in this chapter - these theoretical approaches are converging into a sort of synthesis, which is particularly noticeable in the theory of interest[1].

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[1] See J.W. Conard, "An Introduction to the Theory of Interest", University of California Press, Berkeley 1959.

This synthesis, however, dismisses the role that monopolies may play in the path towards equilibrium, which, according to our approach, eventually prevents full employment to be attained, in spite of governments' implementing the anticyclical policies suggested by any of these two theories.

In order to clarify the relationships between the three approaches, let us analyse the sequence of an imaginary expenditure in real investment financed with additional means of payment.

b) The New Approach and Keynesianism

Let us start by assuming that an investment expenditure in plant takes place. As a result of it, profits would rise, and stock prices, at the ruling rate of interest, would tend to rise.

Savings, which arise from such income generation, should also reach the financial market, and exert pressure on interest rates, as long as they are not kept as cash balances.

i) Speculative Profits and Liquidity Preference

Keynes did not consider that increased profits from higher employment would exert an upward pressure on security prices, which could encourage investment in securities at a falling rate of interest, on account of expectations of future capital gains from stocks' appreciation. As expectations on future prices and actual prices enter investors' decisions with opposite signs[1], the net effect may cause that the rate of interest corresponding to the state Keynes named of "absolute liquidity" varies over time, regardless of investors' assessment of the utility of money as means of payment and unit of account.

On the other hand, Keynes's assumption of speculative demand for money depending solely on interest rates holds good only as long as product prices are stable. If the rate of inflation rises, however, speculative demand for real cash balances should fall, and demand for securities might not rise

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[1] See J. Hicks, 'A Suggestion for Simplifying the Theory of Money', in "Critical Essays in Monetary Theory", Oxford University Press, 1967.

accordingly, if the rate of return is below the rate of inflation. Under these conditions, even though (ex-post) saving would be equal to investment, real saving and real investment would become a smaller part of real income.

In Keynes's scheme, prices would rise only to compensate for diminishing returns from increased employment at a constant nominal wage rate. The absolute amount of profits in nominal terms, therefore, would rise at a higher rate than the rate of inflation, and with a given interest rate, stock prices would rise. An upward trend in stock prices, as we noticed earlier, would encourage speculative investors to buy securities, even at a lower interest rate (higher price), on the hope of realising capital gains in the future. On the other hand, higher security prices may encourage the firms to issue new equity, or new debt, to finance expansion.

If an increased demand for stocks is matched by an increase in supply, the rate of growth of stock prices would slow down, and it would become closer to the rate of inflation, thereby discouraging speculative investors' demand for securities. Nevertheless, if investment in new plant is financed out of the new equity, or debt, and real output increases, product prices remaining sticky, the process would repeat itself, profits rising more than product prices, thereby compensating for a larger amount of equity. These are the conditions, during prosperity, when the independent sector is growing, and its output compensates for the growth of media of exchange brought about by the integrated sector expansion.

It follows that product prices (P) and real output (T) affect liquidity preference not only through the demand for money for transactions and precautionary motives, but also through the speculative demand for cash balances. Nominal output (PT), on the other hand, affects the supply of securities. But while supply of securities is affected indistinctly by changes in PT, through higher nominal profits (since $\Delta pKs = \frac{\pi}{K}$), changes in

liquidity preference, due to the speculative part of the demand for money, depend very much on how much P rises relatively to T. In other words, they depend upon the degree of monopoly.

If people think product prices are going to rise faster than security prices, they will try to buy goods as stores of value. If they think security prices will rise by more, then they might buy securities in spite of a low interest rate, for capital gains would compensate for a lower capital income.

If product prices remain sticky, as Keynes assumed, while dividends increase, stock prices would rise and the liquidity preference curve would actually shift downwards, thereby preventing the rate of interest from rising, in spite of the increase in money supply. An increased transactions demand for cash would be furnished by an increased money supply and a lower speculative demand for cash balances.

ii) 'Absolute Liquidity' and the 'Inflation Barrier' in the New Approach.

We have pointed out that there is a relationship between product prices and rates of interest, determined by investors' preferences, which accounts for the business cycle.

In every business cycle, the rate of interest has a minimum, because, when stock prices rise and interest rates fall, product prices also rise and commodities replace securities as stores of value.

When profits rise, prices in product markets may rise or real output may take place. If product prices rise, goods become better stores of value than securities. If real growth takes place, as stock prices rise, their demand also rises, for the rate of inflation is lower. It will not matter very much what the absolute level of the rate of interest is, for it is not the level of interest rates but their future trend, as compared with product prices' trend, that accounts for the demand for securities[1].

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[1] Throughout this analysis, we have been tacitly assuming a closed economy. This statement should obviously be qualified when account is taken of an external sector.

Generally speaking, the level of product prices depends upon the real amount of goods produced and the money supply; but changes in the relative shares of the independent and integrated sectors determine, more precisely, the turning points at which absolute profits rise by less than product prices, and thereby, there is a switch in investors' demand from securities into products.

As profits rise, security prices rise, and expectations of capital gains also rise. Firms supply new issues of securities which slow down the rate of growth of security prices at the same time that bring to the banks resources which are multiplied by means of credit loans, thereby enlarging money supply. As money supply so increases, product prices rise, and this eventually brings about a fall in the demand for securities.

As the demand for securities falls, underwriters tend to peg their prices. Accordingly, they reduce the quantities supplied and keep interest rates somewhat high. When product prices fall again, and demand for securities recovers, increases in underwriters' supply of securities to maximise speculative profit would tend to prevent the rate of interest from falling.

During depression, interest rates are low because absolute profits have fallen with respect to the amount of equity issued. They have also fallen because, paradoxically, an increased demand for goods as stores of value depresses real production. In fact, when demand for goods becomes a speculative demand, its price elasticity changes sign. Therefore, it is the products which show the highest rates of growth of prices which attract investors' demand; and these products, accordingly, have the lowest elasticities of supply. As demand for these products rises and prices rise, the absolute level of profits tends to grow less than prices, because real output growth is constrained; and a vicious circle appears because inflation goes on, making inventories of goods more and more attractive, at the time that stock prices fall, due to a relatively sluggish growth in aggregate profits.

We have pointed out that the basic condition for investors' demanding securities is that the rate of return (k), plus the expected rate of growth of security prices ($\tilde{p}$), is larger than, or at least equal to, the rate of inflation ($p_r$), that is

$$k + \tilde{p} \geq p_r \quad .$$

As the degree of monopoly rises, at every successive cycle, the rate of growth of nominal profits ($\dot{\pi}$) falls more quickly than $p_r$ during depression, because output tends to shrink while prices are sticky. Therefore, $\tilde{p}$ falls more quickly than $p_r$, and k should be higher when the economy reaches the bottom of the slump. Also, during the expansion phase, as the degree of monopoly rises, $\dot{\pi}$ does not rise as quickly as $p_r$ because, due to monopolistic practices, output grows less than prices, and $\tilde{p}$ grows less than prices. Besides, new equity issues also keep $\tilde{p}$ growing less than $p_r$. Thus, k should grow higher in order to compensate for the sluggishness of $\tilde{p}$ , as compared with the readiness of $p_r$.

It follows that there is, indeed, a floor to the rate of interest beyond which stock prices will not rise. But this is not due to the special properties of money as compared to other goods as Keynes assumed, namely as means of payment and unit of account, which would lead to the phenomenon that he named 'absolute liquidity'. Rather, a floor to the rate of interest arises, not only at the bottom of the slump, but also at the time of crisis, because either money itself, or other commodities, replace securities as <u>stores of value</u>.

According to our logic, during depressions investors would accept a lower rate of return (k) if the expected rate of growth of stock prices was high enough to compensate for the current rate of inflation. But there are constraints, on the supply of securities side, which prevent security prices from rising.

We have pointed out that, in order to maximise speculative profits, underwriters would peg security prices at the level at which net security sales (F) equal zero. In so doing, they are constrained by the absolute level of profits in industrial firms ($\pi$), the average rate of inflation ($p_r$), and investors' preferences, which also depend on $p_r$. During depressions, the price at which $\frac{\partial F}{\partial \tilde{p}} = 0$ may be so low, at a given rate of inflation and with given profits and stock prices expectations - the rate of return so high to persuade income-minded investors to buy and, thus, to compensate for speculative investors' decreased demand for stocks - , that the market value of the firm may be lower than the replacement cost of assets. Under these conditions, suppliers would prefer to sell the firms' assets in commodity markets, rather than pegging their equity prices at stock markets.

During the slump, therefore, a floor to the rate of interest appears due to restrictions on the supply of securities side - not on the demand side, as Keynes assumed - , because either cash balances or commodities replace securities as stores of value for the suppliers.

During the boom, underwriters would tend to increase the supply of securities as the market value of firms exceeded the replacement cost of assets. They would peg prices growing high to encourage speculative investors' expectations of capital gains from stocks appreciation. Nevertheless, as product prices grew faster than profits in industrial firms, there would be a point at which investors would prefer to buy commodities instead of securities. In this case, the upper limit to stock prices (i.e. the floor limit to the rate of interest at the time of crisis), would be put by constraints on the demand for securities side. Underwriters would still be willing to increase the supply of securities, for pegged prices would be above the replacement cost of assets. Nevertheless, investors would prefer to buy commodities rather than securities, for the former would have become better stores of value than the latter. Securities cease to perform this function,

simply because they have been issued in excess of the output that the physical assets which back them are capable to produce at profit.

c) The New Approach and the Monetarist School

Our analysis comes close to the monetarist school, in so far as we postulate that there is, indeed, a stable demand function for money in terms of the rate of interest and all other prices. It disagrees, however, in two crucial points which concern the nature of monopolistic competition and the effects of the institutional framework in modern capitalist economies.

i) The Credit Multiplier

Monetarists, generally speaking, contemplate monopolistic competition as a market imperfection which may conceivably be overcome without changing the nature of capitalist production. Our approach, on the other hand, provides grounds to the belief that monopolistic tendencies are, as Sraffa has put it, pervasive enough for them to be considered as an essential element in capitalist economies[1].

That confidence on the market mechanism leads monetarist economists to agree with Keynesians in the possibility, if not in the probability, of achieving full employment in the short-run by means of public spending financed with an increase in money supply. If all prices are flexible, and there is a stable demand function for money, increases in money supply, they concede, could speed up the path towards full employment. Unfortunately, they complain, the time lag is so unstable, that the money multiplier cannot be used for anticyclical policies, for it would most probably bring about inflation[2].

In fact, if markets were truly perfect, there should be no such lag. One might be tempted to state if only prices were flexible, even though there

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[1] P. Sraffa, "The Laws of Returns under Competitive Conditions", Economic Journal, December 1926.

[2] See M. Friedman, "The Demand for Money; Some Theoretical and Empirical Results", The Journal of Political Economy, August 1959.

were certain market imperfections, the time lag should be a stable one. Nevertheless, there is no reason at all for this to be so once financial markets exist, where capital assets are priced according to their expected profitability. Here, our second major point of disagreement arises.

We have earlier pointed out the role of financial markets in speeding up the process by means of which productive assets are priced according to their marginal productivities. From that analysis, it follows that firms would tend to increase investment expenditure whenever the market value of the firm exceeded the replacement cost of assets.

As soon as the market price of the firm exceeds replacement costs, managements will try to raise additional finance by means of new security issues. Nevertheless, they are free to choose the timing for its actual spending in productive assets, only provided that, at the end, they distribute a reasonable dividend to satisfy investors' expectations.

Investment in productive assets, therefore, does not by necessity coincide with investment in financial assets. The time lag for real capacity expansion may vary according to a variety of factors, e.g. the degree of existing capacity utilisation, the period length for capital orders to be furnished, profitability of alternative uses of funds, etc. Moreover, favourable opportunities to increase equity capital may, in certain cases, actually slow down the rate of real capital accumulation, e.g. when high profits (and stock prices) result from monopolistic positions accounted for technical innovations[1].

ii) Secular Trend in Velocity and Endogenous Changes in Money Supply

Our analysis also leads us to a different interpretation of the secular downward trend in the velocity of circulation of money, which Friedman attributes to money becoming a luxury as economies develop and income per capita rises[2].

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[1] See J. Robinson, "The Accumulation of Capital", Macmillan, London 1966.

[2] M. Friedman, Op. Cit.

In fact, it is difficult to accept that, in spite of the upward trend in the rate of inflation that capitalist economies have shown in their recent development, the increase in real cash balances with respect to real output should be taken to represent a voluntary demand for non-interest bearing assets on the side of investors. Our approach would rather suggest that both, the declining trend in velocity and the upward trend in the rate of inflation, are the reflection of the strengthening of monopolistic competition that constitutes part and parcel of capitalist development. A falling trend in velocity may be explained by a rising credit multiplier on account of the falling ratio of the banks' cash reserves to deposits that increasing financial integration brings about. Whereas the secular trend in the average level of prices would be accounted for by the growing share in output accruing to the integrated (i.e. monopolistic) sector. This brings us to a last difference in our approach as compared to the two main contemporary streams of economic thought.

Keynesians and monetarists alike, assume that the ratio of the monetary base to total money supply is determined by institutional factors, as well as firms' and individuals' preferences, which are exogenously determined.

According to our approach, however, the composition of money supply should also change as the rate of inflation ($p_r$) varies. When $p_r$ is high and there is speculative demand for goods, people try to reduce real cash balances, and therefore bank deposits turnover rises. Since banks' demand for cash balances depends on turnover rather than on the level of deposits[1], the ratio of cash reserves to the amount of deposits ($\mu$) would rise, and total money supply should fall accordingly, as a result of banks' self-imposed credit tightening policies to preserve their solvency.

On the other hand, when there is a process of integration among firms, and, or the banks increase their role as clearing houses for payments, the

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[1] For cash reserves are kept by banks in order to meet differences between cash-inflows and -outflows. Thus, as deposits turnover rises, both cash flows increase, and the absolute differences between them also rise.

ratio of cash reserves to the amount of deposits falls, and the supply of money may be increased by the banks, without impairing their solvency.

An increased demand for cash balances by the banks, when liquidity preference falls as a result of higher prices, may thus confer velocity greater stability. Nevertheless, an aggregate analysis of changes in money supply and changes in income, as much as an aggregate analysis of changes in the monetary base without regard to its split between banks' demand for cash reserves, on the other hand, and firms and individuals' holdings, on the other hand, can be highly misleading.

d) Empirical Research on Growth and Income Distribution

For the last three decades, developments in economic theory have relied increasingly on the results of empirical work. In this section, we shall analyse how our approach contributes to explain the results of empirical research in the fields of growth and income distribution theory.

i) The Aggregate Investment Function

For the controversy between monetarists and Keynesians on growth theory empirical evidence has not been conclusive yet.On the basis of their estimates, some economists claim capacity utilisation is the key variable in investment decisions, whereas others argue that investment depends mainly on the amount of finance available to firms. Increasingly, economists have been considering both approaches as complementary rather than exclusive. Thus, investment functions, nowadays, usually comprise variables which represent both, the accelerator and the liquidity effects on investment decisions [1].

This apparent agreement, however, has not produced the desired stability in estimated parameters. Some authors have found out that elasticities of capacity and liquidity variables tend to vary in opposite directions as investment functions are estimated for different periods of time [2]. Others have observed that during inflationary periods or when the economy is expanding rapidly, capacity variables dominate, whilst in periods of stability, and during depressions, the elasticities of liquidity variables increase [3].

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1 See, for instance, J. Meyer and E. Kuh, 'Acceleration and Related Theories of Investment: An Empirical Inquiry', The Review of Economics and Statistics, August 1955; Ch. W. Bishoff, 'Business Investment in the 1970's: A Comparison of Models', Brookings Papers on Economic Activity, Number 1, 1971; M. D. Mc Carthy, "The Wharton Quarterly Econometric Forecasting Model Mark III", Studies in Quantitative Economics No. 6, University of Pennsylvania, 1972.

2 See J. J. Diamond, 'Further Development of a Distributed Lag Investment Function', Econometrica, April 1962.

3 See J. Meyer and E. Kuh, Op. Cit.

These findings have puzzled orthodox economic theory. From our analysis in this chapter, however, it can be seen that these phenomena should appear logically under our approach. Indeed, two factors may account for it. First, the changes in the relative shares of the integrated and independent sectors of the economy that occur along the cycle; and second, the fact that the former sector experiences shorter depressions and longer periods of prosperity than the latter.

ii) Human Capital Approach and Segmented Labour Market Theories

Our approach may also contribute to explain the results of empirical research which have given rise to the controversy between neo-classical theory of wages and segmented labour market theories [1].

Neo-classic income distribution theory, in its modern versions, postulates wage rates depend on labourers' investments in human capital, which determine labour productivity.

Dual labour market theorists, on the basis of empirical research on regional labour markets, argue that the variables which neo-classical theorists usually take to represent investments in human capital (i.e. years of formal education, training, etc.) do not conform with the continuous function that the theory assumes. Instead, they claim that there is a dichotomisation of labour markets, each segment having its own rules for income distribution.

In their analysis, the so-called 'primary market' is characterised by high wages, good working conditions, employment stability and job security. By contrast, the 'secondary market' is characterised by low wages, poor working conditions and variability in employment [2].

Among the causes which account for this separation of markets, these theorists emphasize the increasing importance of on-the-job training, which "has raised the incentive to employers to retain some (stable) employees and has tended to create a division between those jobs and other jobs which do not require such employee retention" [3].

Formal education, in this approach, is only used as a 'screening devise' to recruit workers with certain attitudes or social background to be trained .

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1 For a survey of the literature on this controversy, see G. G. Cain, 'The Challenge of Segmented Labour Market Theories to Orthodox Theory: A Survey', Journal of Economic Literature, December 1976.

2 See M. J. Piore, 'The Dual Labour Market:Theory and Implications', in D. M. Gordon (ed.), "Problems in Political Economy: An Urban Perspective", D. C. Heath, Lexington, Mass., 1971.

3 See D. M. Gordon, "Theories of Poverty ...", Op. Cit.

It determines the access to a given job cluster and, thereafter, policies internal to the firm determine wage behaviour [1].

From these statements, it follows that firms develop internal wage structures in order to increase profits by reducing absenteeism and labour turnover. This explanation, however, only supplies a short-run theory of wages. For, if we assume that firms behave like profit maximisers, and also that workers make rational decisions, training costs, in the long run, would equal wage rates and labourers' productivities, so that internal wage structures would converge.

By contrast, our approach may provide the basis for extending dual labour market theory into the long run. The discontinuity of the wage function which opposes the human capital approach would be accounted for by firms' maximising speculative profits as they decreased wage bill dispersion. Under our assumptions, segmented labour markets, in fact, would develop. They reflect different technical alternatives in which speculative profits are maximised by the combined effect of investors' preferences for stable returns and the marginal revenue products of labour.

Therefore, if employees' attitudes towards stability at work are actually influenced by their social or educational background, the propositions of dual labour market theory to explain discrimination in labour markets would be supported by the new approach.

F. Concluding Remarks

In this chapter, we have worked out the consequences, for the economy as a whole, that follow from the micro-economic theory of growth that we proposed in chapters 3 and 4; that is, the macro-economic effects of the maximisation of speculative profits by individual firms, and the development of financial groups. From our analysis, we concluded that capital-intensive firms tend to be more monopolistic, and enjoy better growth prospects, than labour-intensive firms, ceteris paribus.

We also observed that firms controlled by financial groups, on account of their paying a lower price for capital (i.e. due to the economies in the use of cash resources within the group), tend to be more capital-intensive, and thereby more monopolistic, than independent firms, ceteris paribus .

Finally, on the basis of these relative differences between integrated and independent firms, we derived a theory of growth, prices and business

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[1] See P. B. Doeringer and M. J. Piore, "Internal Labour Markets and Manpower Analysis", D. C. Heath, Lexington, Mass., 1971.

cycles, which reconciles previous theories to the extent that the latter hold under conditions of monopolistic competition.

In the following chapter, we shall test whether firms choose inappropriate techniques in order to maximise speculative profits.

## Chapter 6

## EMPIRICAL ESTIMATES CONCERNING THE RATE OF SPECULATIVE PROFIT IN MEXICAN INDUSTRIAL FIRMS

Data from more than 13 thousand Mexican firms, of various sizes in 43 industrial activities, strongly support our hypothesis that firms maximise speculative profit rather than operational profit, and that in so doing, they rely on the use of inappropriate technology [1].

The analysed sample of firms refers to businesses which were classified as 'major tax payers' by the Income Tax Administration Bureau. This classification is based on the amount of the firms' proceeds from sales during one year. The data refers to 1973, when firms considered as major tax payers were those whose annual proceeds exceeded 500 thousand pesos (40 thousand U.S. - dollars at constant prices).

The data are composed of financial statements and income expenditure flows for firms grouped into 10 brackets, according to the net book value of their fixed assets. Activities are defined at a level which is comparable to the four digit level of the International Standard Industrial Classification of All Economic Activities [2].

The 43 activities that were chosen for analysis, were those which showed the largest sales proceeds in the industrial sector covered by the Income Tax Administration's sample. Their aggregate sales accounted for - nearly 60 per cent of total proceeds in industry, according to the sample (Table 1).

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1 We define inappropriate technology as the one which at the time that raises the capital-labour ratio and the capital-output ratio, brings about a fall in the rate of profit. Some development theorists, like Prof. Kurt Martin, also call it 'labour-saving-capital-using' technology.

2 United Nations, Statistical Papers, Series M, No. 4, Rev. 2, Add. 1.

The analysis was carried out in terms of ratios between the reckoned items, partly because this procedure suited our interest on such variables as the rate of profit, the capital-output ratio, the capital-labour ratio, etc., and partly because it enabled us to avoid the effects of trend in the estimation of parameters.

Observations were, thus, average ratios from firms grouped in each fixed-assets'value-bracket for every class of activity. Classification of firms in 43 activities and 10 assets'value-brackets led to 282 observations for each ratio-variable (since not all the activities registered firms in each of the 10 assets'value-brackets).

A. Elasticities Estimates.

Elasticities were computed using the ordinary-least-squares weighted regression technique. Observations were weighted according to the share of the firms grouped into each activity's assets'value bracket in the aggregate sales proceeds of the 43 chosen activities.

Before getting into the analysis of our empirical results, it is convenient to think over two factors which are likely to affect our estimates. First is that the degree of monopoly varies among the activities under investigation; and second -though not completely unrelated-, that there are varying degrees of tax evasion amongst firms within each activity, and from one industry to the other. Gathering together activities with different degrees of complexity such as mining, construction, food processing, motor industry, etc. necessarily involves large errors in the regression equations, though, on the other hand, it strengthens conclusions about the size and significance of the elasticities'estimates.

In order to overcome the problem of activities'heterogeneity, when it involved variables exogenous to the system which were likely to affect the elasticities' estimates, we took resource of dummy variables -one for each activity- to represent the peculiarities of the trade. This procedure,

however, was kept in limited use, and in the cases where it was thought to be justified, the elasticities' significance was also tested by removing the dummy variables in the regressions.

For the sake of simplicity in the presentation of our results, we shall omit the coefficients of the dummy variables in the equations which follow. We shall only indicate them by the expression $\sum_{j=1}^{j=43} d_{ij} D_j$, subscript i denoting the number of the equation to which they correspond.

The biases caused by tax evasion, which were inherent to our data base, were partly reduced by using a proxy variable for profits. Since an important part of corporate income tax evasion in Mexico takes the form of overvalued allowable deductions to the tax base, we decided to use a 'gross profits' - concept instead of 'taxable income' in our estimates. We arrived at that concept by sustracting prime costs plus labour overheads from the net value of sales.

In accordance with our theoretical approach, our empirical research aimed to find out the relationship between the technique used and the distribution of income in the individual firm.

Our results may be thus analysed as they concern the rate of operational profit [1], the wage rate, and the rate of interest.

B. The Rate of Profit and the Degree of Mechanisation.

If firms could not be traded in financial markets, and, therefore, - there was no possibility of speculative profict arising from investors' risk aversion, we should expect that analysis of cross-section data of firms would reveal remarkable constancy in the rate of profit as firms grow in size, due to the effects of competition.

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[1] We use the concept 'operational profit' to refer to profits in product terms, i.e., which result from production relationships, as distinct from 'speculative profit', which arises from the capitalisation of the former at security markets.

Under this assumption, the use of technology which led to rising capital/output ratios as firms grew could only be rationally explained by either its demanding lower labour inputs per unit of output, or its enabling to pay lower wages, or both which effects compensated for the fall in profits - brought about by the shrinkage in output relative to capital inputs.

By contrast, recognition to the existence of stock markets, and also to investors' risk aversion which manifests itself as a demand for a higher return on labour-intensive firms, may explain a falling rate of operational profit as firms grow in size. This possibility, as we have pointed out earlier, rests on the assumption that firms aim to maximize speculative profit, so that, once investors' aversion to fluctuating returns is given a price in terms of the rate at which they capitalise the latter, maximisation of operational profit may not necessarily lead to maximisation of speculative profit, as orthodoxy assumes.

In long term equilibrium, the fall in profits, brought about by an - increase in the capital/output ratio, would be just compensated for by the effect caused by the fall in the rate of return on equity demanded by investors. In other words, in long-term equilibrium, the rate of speculative profit would be the same for firms of different sizes and varying degrees - of mechanisation, in spite of a falling rate of operational profit as the capital/output ratio rose.

Our empirical research provides strong support to this approach. - Computed elasticities not only show the appropriate signs, but their values are consistent with the long-term equilibrium conditions that we expected from cross-section data analysis.

Concerning elasticities' signs, equation (1) shows a significant negative elasticity of the rate of profit on equity $(\frac{\pi}{Kwn})$ to the ratio of fixed capital to value added $(\frac{Kf}{VA})$ [1].

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[1] Definitions of the variables used in regressions can also be found in Table 2. Figures in brackets below coefficients are standard errors.

$$\ln \left(\frac{\pi}{kwn}\right) = 3.99236 - \underset{(.047)}{.73064} \ln \left(\frac{Kf}{VA}\right) \qquad (1)$$

$R^2 = .46$

$F = 237$

Equations (2) and (3), on the other hand, reveal that as firms grow in size -the latter being measured either by average output (Q/N) or by - average fixed assets'gross book-values (Kf/N), the capital/labour ratio (Kf/Lt) rises.

$$\ln \left(\frac{Q}{N}\right) = -2.21706 + \underset{(.086)}{1.60127} \ln \left(\frac{Kf}{L_t}\right) \qquad (2)$$

$R^2 = .61$

$F = 350$

$$\ln \left(\frac{Kf}{N}\right) = -5.11242 + \underset{(.087)}{2.08795} \ln \left(\frac{Kf}{L_t}\right) \qquad (3)$$

$R^2 = .72$

$F = 582$

Finally, Equations (4) and (5) indicate that, as the capital/labour ratio rises, the ratio of fixed capital to value added and the fixed capital-output ratio also rise.

$$\ln \left(\frac{Q}{L_t}\right) = 2.92486 + \underset{(.026)}{.50987} \ln \left(\frac{Kf}{L_t}\right) \qquad (4)$$

$R^2 = .57$

$F = 375$

$$\ln \left(\frac{VA}{L_t}\right) = 2.38045 + \underset{(.029)}{.44629} \ln \left(\frac{Kf}{L_t}\right) \qquad (5)$$

$R^2 = .46$

$F = 241$

Gathering these results together, the conclusion is that, as firms grow in size, they increase mechanisation in spite of a fall in the rate of

operational profit.

From the point of view of orthodox economic theory, this behaviour is irrational: firms should not keep growing at the expense of a falling rate of profit, but rather should tend to multiply themselves at the optimum - size of plant. Matters look different, however, when one looks at the - effects of increasing mechanisation (and capital-intensity) on the amount of speculative profits that firms could realise at stock markets. In section E of this chapter, we shall work out the effects of a hypothetical investment project which could take the form of either an increase in the degree of mechanisation (a rise in Kf/L and kf/Q), or an expansion in plant with the same technique (by hiring more labourers and keeping Kf/L and Kf/Q) constant. We shall find out that the amount of speculative profit that can be realized from a given investment in fixed assets is approximately the same for firms of different sizes with varying degrees of mechanisation. This result, however, involves some effects of mechanisation on economic variables other than the rate of return demanded by investors, namely on total factor productivity, wage rates, and interest rates, to which we shall immediately refer.

C. Mechanisation, Total Factor Productivity and Wage Rates.

a) Average Wages Rates.

Equations (6) and (7) show that average wage rates (w) largely depend upon labour 's average productivity, which according to equations (4) and (5) above, is explained by the amount of fixed capital per worker.

$$\ln w = .12035 + \underset{(.027)}{.60761} \ln \left(\frac{Q}{L_t}\right) \qquad (6)$$

$R^2 = .64$

$F = 495$

$$\ln w = .52376 + \underset{(.027)}{.62971} \ln \left(\frac{VA}{L_t}\right) \qquad (7)$$

$R^2 = .66$

$F = 536$

Wage rates, therefore, rise as mechanisation increases. Comparing equation (8), which explains the average wage rate (w) as a function of the capital-labour ratio ($K_f/L_t$), with equation (4) above, which relates output per worker ($Q/L_t$) to the capital-labour ratio, we can see that, as the capital-labour ratio rises, output grows faster than wages (the - elasticity for output being .51, while the elasticity for wages is .36). Therefore, profits grow faster than output as mechanisation proceeds. This is not to say that the rate of profit rises, for, at any rate, the elasticity for output is below unity and the elasticity for the wage rate is positive. It suggests,however, that a part of the adjustment process towards a uniform rate of speculative profit relies on declining relative wage differentials [1].

$$\ln w = 1.67097 + \underset{(.021)}{.36411} \ln \left(\frac{Kf}{L_t}\right) \qquad (8)$$

$R^2 = .51$

$F = 291$

b) Blue-and White- Collar Wage Differentials.

Equations (9) and (10) relate average blue-collar wage rates($w_b$) and average white-collar wage rates ($w_w$),respectively, to the capital-labour ratio. They show that, eventhough labour market conditions enable firms to pay declining wage differentials as mechanisation rises, they tend to pay constant wage differentials, at every degree of mechanisation, to labourers in each occupation (i.e. elasticities being approximately the same).

$$\ln w_b = 1.40691 + \underset{(.024)}{.36105} \ln \left(\frac{Kf}{Lt}\right) \qquad (9)$$

$R^2 = .44$

$F = 222$

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[1] Since we assume that labour is not a homogeneous factor -for higher mechanisation requires more skills-, we consider that wage differentials decline when labour inputs per unit of output fall at a higher rate than average wage-rates rise.

$$\ln W_w = 1.97912 + \underset{(.023)}{.37176} \ln\left(\frac{Kf}{L_t}\right) \qquad (10)$$

$R^2 = .49$

$F = 272$

Equations (11) and (12), on the other hand, show that white-collar labour inputs per unit of output, which is the reciprocal of $Q/L_W$, decline more rapidly than blue-collar labour inputs as mechanisation rises.

$$\ln\left(\frac{Q}{L_b}\right) = 3.70232 + \underset{(.035)}{.45383} \ln\left(\frac{Kf}{L_t}\right) \qquad (11)$$

$R^2 = .37$

$F = 165$

$$\ln\left(\frac{Q}{L_W}\right) = 3.77058 + \underset{(.030)}{.55982} \ln\left(\frac{Kf}{L_t}\right) \qquad (12)$$

$R^2 = .55$

$F = 337$

These results suggest that there are considerable degrees of monopsony in the various segments of the labour market, which enable firms to adjust wage differentials vertically (i.e. at different skill levels) as well as horizontally (i.e. between white- and blue-collar occupations), according to the fall in total labour inputs per unit of output as mechanisation rises. They are also consistent with the elasticities that we should expect from blue- and white-collar labour supplies. Since blue-collar average rates are considerably lower than white-collar rates, their elasticity should be greater, and so the relative pressure on managements to keep them at competitive levels in order to prevent trained blue-collar labour turnover.

So far, thus, we have two effects of increased mechanisation which operate positively on the level of speculative profit. First is the fall in the rate of discount at which investors capitalise operational profits; and second,

is the increase in the share of operational profits in output.

Let us now examine how mechanisation affects the third element on which speculative profit depends, that is, the rate of interest paid on liabilities.

D. Interest, Leverage and the Degree of Mechanisation.

As the rate of interest on liabilities rises, operational profits fall. We have pointed out, however, that in the process towards equilibrium, firms can make speculative profits by selling debt at interest rates above market rates.

Issuing debt and issuing equity are, thus, alternative ways of making speculative profits. Since interest rates demanded by investors assumedly vary with the degree of leverage, equilibrium will be reached when the amount of profits that would go to interest payments (on total debt) at any higher interest rate, could have been better capitalised as equity, in spite of the higher level of the rate of return demanded by investors on the latter as compared with the rate of interest.

As mechanisation rises, and the rate of return at which profits are capitalised falls, it is profitable for firms to get finance from equity issues. If the supply of loan capital to the firm is unaltered, the equilibrium degree of leverage will fall, and so will the equilibrium rate of interest.

If the rate of interest demanded by investors is also affected by the degree of mechanisation, i.e. if investors' aversion to fluctuating profit rates also influences the prices of fixed income securities, then the equilibrium degree of leverage (and the equilibrium interest rate) will depend upon the effects of mechanisation on the rate of return and the rate of interest.

a) Interest Rates Elasticities Estimates.

Our empirical research supports our hypothesis that, as mechanisation increases, the rate of interest on negotiable debt falls. Before analysing these results, however, let us consider some problems concerning the estimates

of interest rate elasticities, which arise from our statistical data.

The average rate of interest that a firm pays on its negotiable debt depends, partly, on the term structure. The issue of short-term rather than long-term debt by firms, like the issue of new equity, largely depends upon market conditions, which are influenced by investors' expectations about the future of both, short- and long-term rates. At any given time, we may assume that these conditions are affecting the debt structure of all firms in a similar manner, regardless of their activity and size, so that past evolution of interest rates would not affect elasticities estimates based on cross-section data. Nevertheless, the term structure of firms' debt also depends upon financial constraints posed by the nature of the trades. The ratio of sales turnover, the expected lives of different assets, etc., conceivably affect the term structure of liabilities, and thereby average rates of interest. To account for the effects of these exogenous variables on the average level of interest rates, 43 dummy variables were introduced in the regression equations, to stand one for each activity under investigation.

Finally, a word must be said about the constant terms in interest rates equations. Our data did not enable us to separate interest payments to suppliers from interest payments on other liabilities. Interest rates, therefore, were computed by relating total interest payments alternatively to total liabilities (i/Li), and to negotiable liabilities (i/Lic). From equations (13) and (14), which relate the rate of interest on total liabilities (i/Li) to the reciprocal of the share of negotiable debt in total liabilities (Li/Lic), we may infer that interest rates charged by suppliers are lower than rates on negotiable debt, but nothing else can be said about their absolute levels.

$$\ln \left(\frac{i}{Li}\right) = 1.68960 - \underset{(.048)}{.61260} \ln \left(\frac{Li}{Lic}\right) \qquad (13)$$

$$R^2 = .42$$

$$F = 162$$

$$\ln\left(\frac{i}{Li}\right) = 1.73939 - \underset{(.050)}{.55678} \ln\left(\frac{Li}{Lic}\right) + \sum_{j=1}^{j=43} d_{14\,j} D_j \qquad (14)$$

$R^2 = .71$

$F = 10$

Since our research was concerned with changes in interest rates brought about by mechanisation and their effects on speculative profits, we neglected the constant terms and focused attention on elasticities only. We assumed that credit from suppliers either was free, or it was granted at a constant interest rate for all producers in the same trade.

We have pointed out that, as the capital-output ratio rose and the rate of return demanded by investors fell, we should expect a fall in the equilibrium rate of interest, for, ceteris paribus, firms would prefer to raise finance through new equity issues -thereby realising additional speculative profits from a lower rate of discount- rather than through new liabilities at a given rate of interest. As the degree of leverage thus fell, the rate of interest would fall as well, and firms would increase liabilities again, but this time up to the point at which the marginal increase in total - interest payments brought about by an increase in the degree of leverage yielded the same amount of speculative profit if it were capitalised as equity at the lower rate of discount. The new equilibrium degree of leverage, and the new equilibrium rate of interest, therefore, would be lower.

$$\frac{i}{Lic} = 8.29342 - \underset{(.0009)}{.00242}\left(\frac{Q}{N}\right) + \sum_{j=1}^{j=43} d_{15\,j} D_j \qquad (15)$$

$R^2 = .52$

$F = 5$

Equation (15) supports this hypothesis. It indicates that the rate of interest on negotiable liabilities (i/Lic) decreases as average output (Q/N) increases. Since, according to equation (2), the capital-labour ratio also increases as average output rises, it follows that interest rates on negotiable debt fall as mechanisation increases. Equations (16) and (17) also show a negative relationship between the rates of interest on negotiable debt and the capital-output ratio within each activity.

$$\ln\left(\frac{i}{Lic}\right) = 1.80523 - \underset{(.064)}{.16099} \ln\left(\frac{Kf}{Q}\right) + \sum_{j=1}^{j=43} d_{16j} D_j \qquad (16)$$

$R^2 = .47$

$F = 4$

$$\ln\left(\frac{i}{Lic}\right) = 1.76486 - \underset{(.065)}{.17372} \ln\left(\frac{Kf}{Q}\right) + \underset{(.064)}{.07389} \ln\left(\frac{Li}{Kwn}\right) + \sum_{j=1}^{j=43} d_{17j} D_j \qquad (17)$$

$R^2 = .47$

$F = 4$

b) Interest Rate Discrimination.

It might happen that,as mechanisation increased, the rate of interest demanded by investors also fell, on account of a lower financial risk attached to firms with lower profit rates dispersion. Equations (16) and (17) also provide some support for this hypothesis. They show that adding the degree of leverage (Li/Kwn) to the capital/output ratio in the explanation of interest rates does not lower either the regression or the Kf/Q elasticity standard errors. Moreover, the elasticity of Kf/Q remains significant at the same absolute level, while the elasticity with respect to the degree of leverage is insignificant.

In fact, these results suggest that the falling trend in the rate of interest, when mechanisation rises, is accounted for by a lower rate of

interest demanded by investors at any given degree of leverage, and not by the fall in the degree of leverage brought about by a lower rate of discount for equity (which depends on kf/Q); in other words, that as mechanisation rises, there is a downward shift in the supply of loan capital to the firm, which is similar to the upward shift in the demand schedule for stocks.

If the rate of interest that creditors demand also falls when mechanisation rises, equilibrium is to be achieved by the individual firm when the actual rate of interest on its liabilities equals the market rate, and no additional profit can be made either by issuing new debt or new equity. Therefore, the new equilibrium degree of leverage may increase or decrease, depending on the relative values of the elasticities of the rate of interest and the rate of return on equity with respect to the degree of mechanisation. This may explain the poor performance of leverage in the explanation of interest rates, and the comparatively stronger role played by variables such as the capital-output ratio and the size of firm (as measured by Q/N).

c) Speculative Profits from Negotiable Debt.

By all means, as the rate of return demanded by investors fell, the equilibrium rate of interest would necessarily fall, and the degree of leverage would have to adjust to that level of the rate of interest. Since investors'risk aversion assumedly accounts for a negative elasticity of the rate of interest with respect to leverage, as the equilibrium rate of interest fell, liabilities would be growing less than equity. This equilibrium growth path might involve a trade-off in speculative profit from bonds [1] when firms are making speculative profits from stocks.

If the demand for bonds also shifts with changes in the degree of mechanisation, it is not possible to know the trade-off in speculative profits from bonds on the basis of estimates of the interest rate elasticity to leverage. In this case, firms might be making speculative profits from

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[1] We take bonds as representatives of negotiable liabilities.

negotiable liabilities even when the equilibrium rate of interest and the equilibrium degree of leverage were falling, simply because the market rate of interest at which creditors were capitalising such securities would also have fallen.

In order to estimate the effects of mechanisation on the rate of speculative profit which are accounted for by both changes in the rate of interest and the degree of leverage, we computed ratios of total liabilities to output, as well as negotiable liabilities to output, and related them to the capital/output ratio (as an indicator of the degree of mechanisation). We assumed that liabilities bear a more or less constant relationship to output (according to the peculiarities of each trade), so that changes in the computed ratios, as a result of mechanisation, would reflect actual shifts in the supply of credit to firms. Since the latter reach the equilibrium degree of leverage when the market value of their liabilities equals the price of the assets financed that way -which is assumed to be the same for all firms within each trade- an increase in the ratio of liabilities to output, as mechanisation rose, would reflect the speculative profits made by firms on account of lower market interest rates.

This procedure, thus, enabled us to estimate straightforwardly the combined effects on speculative profit caused by a shift in the demand curve for bonds, due to increased mechanisation, on the one hand; and, on the other, by the movement along the schedule itself brought about by the change in the degree of leverage that the corresponding fall in the rate of discount for equity accounted for.

Equations (18) and (19) show that there is, in fact, a positive relationship between the ratio of total liabilities to output (Li/Q) and the fixed capital-output ratio. This means that, as mechanisation increases and total factor productivity falls at the margin (Equations (4) and (5) ), the effect of a shrinkage in output on speculative profit from liabilities -as compared with the situation of constant technology- is partially offset by a rise

in the ratio of liabilities to output, in response to a shift in the demand of fixed income securities to the individual firm.

$$\ln \left(\frac{Li}{Q}\right) = \underset{(.049)}{-.00126 + .50203} \ln \left(\frac{Kf}{Q}\right) + \sum_{j=1}^{j=43} d_{18j} D_j \qquad (18)$$

$R^2 = .69$

$F = 12$

$$\ln \left(\frac{Li}{Q}\right) = \underset{(.045)}{-.37969 + .34183} \ln \left(\frac{Kf}{Q}\right) \qquad (19)$$

$R^2 = .21$

$F = 59$

Not all liabilities, however, are capable to produce speculative profit. In fact, only negotiable claims can do it. Credit from suppliers to replenish inventories of raw materials, intermediates, etc., therefore, should be subtracted from total liabilities in order to estimate the elasticity of the demand for negotiable claims with respect to mechanisation.

$$\ln \left(\frac{Lic}{Q}\right) = \underset{(.093)}{-.71954 + .81334} \ln \left(\frac{Kf}{Q}\right) + \sum_{j=1}^{j=43} d_{20\,j} D_j \qquad (20)$$

$R^2 = .65$

$F = 8$

Equation (20) shows that, as we subtract credit from suppliers ($S_t$) from total liabilities, the elasticity of the ratio of negotiable debt to output (Lic/Q) with respect to the fixed capital-output ratio rises up to .81 (from .34 and .50 in equations (18) and (19)).

From equations (21) and (22) we can see that other indicators of the degree of mechanisation, namely the fixed capital-labour ratio and firms' size [1], when related to the ratio of negotiable debt to output, also produce high and significant positive elasticities.

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[1] Firms' size, measured either by average output (Q/N) or by average value of fixed assets (Kf/N), is considered a proxy to mechanisation on account of equations (2) and (3), which show a high and significantly positive relationship between the size of the firm and the fixed-capital-labour ratio.

$$\ln \left(\frac{Lic}{Q}\right) = -1.77366 + \underset{(.028)}{.16988} \ln \left(\frac{Q}{N}\right) + \sum_{j=1}^{j=43} d_{21\,j}\, D_j \qquad (21)$$

$R^2 = .58$

$F = 6$

$$\ln \left(\frac{Lic}{Q}\right) = -3.47309 + \underset{(9.073)}{.50051} \ln \left(\frac{Kf}{L_t}\right) + \sum_{j=1}^{j=43} d_{22\,j}\, D_j \qquad (22)$$

$R^2 = .60$

$F = 6$

d) Credit from Suppliers.

Equation (23) makes explicit the negative relationship between the ratio of credit from suppliers to output (St/Q) and the degree of mechanisation, that we may infer from equations (18) to (22). The size and significance of this elasticity deserves attention.

$$\ln \left(\frac{St}{Q}\right) = -.79823 - \underset{(.122)}{.30332} \ln \left(\frac{Kf}{L_t}\right) + \sum_{j=1}^{j=43} d_{23\,j}\, D_j \qquad (23)$$

$R^2 = .46$

$F = 4$

From equation (13), we inferred that credit from suppliers bears lower interest rates than other sources of credit, so that it is not in the interest of firms to replace it with negotiable claims. Not even for the sake of making speculative profits from liabilities this policy would be rational, for,on this footing, larger speculative profits could be made by borrowing cheap from suppliers in order to increase operational profits which, after being capitalised in new equity issues, would further enlarge the borrowing capacity of firms.

The shrinkage in the ratio of suppliers' credit to output as mechanisation rises, therefore, cannot be explained on the basis of a financial strategy. Nevertheless, it might be explained by a fall in real output and a rise in output prices as mechanisation increased. In fact, if we take

suppliers' credit as an indicator of the volume of material inputs, and assume constant input-output coefficients, equation (23) could stand for the inflationary effect of mechanisation (which might be accounted for by some degree of product differentiation).

If this was the actual case, the elasticity of St/Q with respect to the capital-labour ratio would imply that nearly two thirds of the increase in output value brought about by mechanisation would be explained by price increases, whereas only one third would correspond to real growth.

Under the above mentioned assumptions, these results would support our explanation of the business cycle as the outcome of changes in the relative shares of a competitive (capital-saving) and a monopolistic (labour-saving) sectors in the economy. On the same grounds, equations (2) and (3), which indicate that the degree of mechanisation rises as firms grow in size, would provide support to our hypothesis of a tendency towards everincreasing equilibrium rates of unemployment and inflation at every successive cycle.

e) The Equilibrium Rate of Speculative Profit.

So far, our empirical research has shown that increasing degrees of mechanisation (and capital-intensity) at falling rates of operational profit, may be explained by firms' maximising speculative profits.

If firms maximised speculative profits, rather than operational profits, cross-section data should reveal fairly constant rates of speculative profit -as it illustrates long-term equilibrium conditions-, in spite of differences in the rates of operational profit among firms of different sizes and activities. Moreover, in corporative firms, for which stock markets secure nearly perfect capital mobility, the rate of speculative profit should not be expected to reflect the rigidities that constrain the equalisation of the rate of (operational) profit in real markets to which we referred in chapter 2.

In this section, therefore, we shall test our hypothesis that firms use

inappropriate techniques as a means to maximise speculative profits, by comparing the rates of speculative profit, at the margin, for firms using different techniques.

a) Speculative Profits from Equity.

Let us complete our estimates by adding equation (24), which expresses the relationship between value added and total output in the individual firm.

$$\ln\left(\frac{Kf}{VA}\right) = .77353 + \underset{(.035)}{.94613} \ln\left(\frac{Kf}{Q}\right) \qquad (24)$$

$R^2 = .77$

$F = 744$

A simple arithmetical exercise with equations (1), (4), (8) and (24), indicates that a hypothetical increase of 10 per cent in fixed assets would yield approximately the same amount of speculative profit from new equity issues, whether it was invested in raising the degree of mechanisation (i.e. 10 per cent increase in the fixed capital-labour ratio), or whether it was spent on plant expansion with the same technique (i.e. constant fixed capital-labour ratio), thereby raising employment by 10 per cent.

In the former case, according to our estimated elasticities, the rise in mechanisation would bring about an increase in output value of only 5.1 per cent [1] (equation (4)), which would raise the capital-output ratio by approximately 4.7 per cent, and the fixed capital-value added ratio by 4.5 per cent (equation (24) ). Total wages would rise by 3.6 per cent (equation (8) ), and gross profits, whose average share in value added is .70, would be rising by 5.7 per cent.

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1 The increase in real output might be even smaller. If we take equation (23) to stand for the effects of mechanisation on output prices, real output would increase by 2 per cent if the capital-labour ratio rose, whereas it would increase by 10 per cent if investment was carried out using the same technique, and thereby raising employment by 10 per cent.

In the second case, with constant technique, the fixed capital-output ratio, the fixed capital-labour ratio, and the fixed capital-value added ratio, would remain constant, so that output and employment would increase by 10 per cent. Since the degree of mechanisation would not change, the wage rate would also remain constant. Accordingly, total wages would increase by 10 per cent, and so would do gross profits.

In the latter case, the new level of profits, which is 10 per cent above the previous level, when capitalised by investors at a constant rate of discount (since mechanisation did not change ), would enable the firm to increase speculative profits by 10 per cent.

By contrast, in the former case the increase in mechanisation, which - raised the fixed capital-value added ratio by 4.5 per cent, would bring about a fall of 3.3 per cent in the rate of discount at which investors capitalise operational profits (equation (1) ). Since this new rate would be applied to the total amount of profits made by the firm, which is 5.7 per cent above the previous level, the market value of equity would increase by 1.057/.967, that is, by 9.3 per cent, and so would do the amount of speculative profit from equity that could be realised at stock markets.

b) Speculative Profits from Negotiable Debt.

So far, we have compared the rates of speculative profit to be made from equity issues by firms with varying degrees of mechanisation. For negotiable debt issues, a similar exercise leads to an even smaller difference between the two rates.

From equations (4) and (22), it can be seen that the hypothetical investment of additional 10 per cent in fixed assets, if spent in raising the degree of mechanisation, would bring about an increase of 5 per cent in the ratio of negotiable liabilities to output. Since output in this case would be growing by 5.1 per cent -due to the fall in marginal total factor productivity caused by mechanisation-, the new level of negotiable debt would be equal to 1.050 x 1.051 times its previous level, which entails an increase of 10.3 per cent

in speculative profit from negotiable liabilities.

In the case of investment under constant technique -with rising employment-, the increase in the absolute level of negotiable debt would be just - equal to the increase in output, since the ratio of negotiable liabilities to output would remain constant (equation (22) ). The increase in speculative profit from negotiable liabilities, therefore, would be 10 per cent.

c) The Rate of Speculative Profit.

We may now gather these results together with our previous ones on the rates of increase of speculative profits from equity, in order to derive a conclusion on the effects of mechanisation on the rate of speculative profit.

The relative shares of equity and negotiable debt in the total value of industrial financial assets (i.e. total assets minus credit from suppliers), in our sample of firms, are approximately .50 for each source of speculative profit. Therefore, the weighted average rate of increase of speculative profit, when mechanisation rises, is 9.8 per cent (9.3 per cent from equity issues, and 10.3 per cent from negotiable debt); whereas the rate under constant technique (where output, employment and profits increase by 10 per cent), is equal to 10 per cent.

Our estimated elasticities, thus, show that the rate of speculative profit remains approximately constant as firms grow in size and increase mechanisation, in spite of the relative fall in total factor productivity and operational profits, that such behaviour brings about.

F. Concluding Remarks.

Our empirical research showed that, as firms grow in size, they tend to be more capital-intensive and more mechanised, in spite of facing a fall in total factor productivity and in the rate of operational profit.

It also revealed that, despite differences in the rate of operational profit, firms using different techniques get, at the margin, the same rate of speculative profit.

Accordingly, our research supports the hypothesis that, as firms grow, they tend to use inappropriate technology as a means to maximise speculative profits at security markets.

TABLE 1

SALES PROCEEDS OF MAJOR INCOME TAX PAYERS IN SELECTED INDUSTRIAL ACTIVITIES IN MEXICO DURING 1973

(Millions of Pesos)

| MFC1/ | isic2/ | Activities | Sales Proceeds | Weight (%) |
|---|---|---|---|---|
| 2131 | 3134 | Soft drinks and carbonated waters | 6 070 | 3.90 |
| 2134 | 3133 | Malt liquours and malt | 5 000 | 3.22 |
| 2138 | 3132 | Wine industries | 2 419 | 1.56 |
| 2152 | 3112 | Manufacture of dairy products | 1 799 | 1.16 |
| 2171 | 3115 | Manufacture of vegetable oils | 3 918 | 2.52 |
| 2270 | 3211 | Spinning, weaving and finishing cotton textiles | 4 876 | 3.14 |
| 2272 | 3211 | Manufacture of synthetic textiles | 3 096 | 1.99 |
| 2331 | 3140 | Tobacco manufactures | 2 181 | 1.40 |
| 2358 | 3240 | Manufacture of footwear, except vulcanized, or moulded rubber, or plastic footwear | 1 877 | 1.21 |
| 2362 | 3220 | Manufacture of women's apparel | 3 165 | 2.04 |
| 2431 | 3419 | Manufacture of pulp, paper and paperboard articles | 3 134 | 2.02 |
| 2437 | 3411 | Manufacture of pulp, paper and paperboard | 3 835 | 2.47 |
| 2903 | 3813 | Manufacture of structural metal products | 2 181 | 1.40 |
| 2911 | 3822 | Manufacture of agricultural machinery and equipment | 5 366 | 3.45 |
| 2918 | 3843 | Manufacture of motor vehicle parts and accessories | 4 032 | 2.59 |
| 2653 | 3551 | Tyre and tube industries | 2 091 | 1.34 |
| 2697 | 3620 | Manufacture of glass products | 2 331 | 1.50 |
| 2055 | 3117 | Manufacture of bakery products | 1 748 | 1.12 |
| 3227 | 3832 | Manufacture of radio, television receiving sets and sound reproducing equipment | 2 038 | 1.31 |
| 2153 | 3112 | Pasteurizing of milk | 1 169 | 0.75 |
| 2452 | 3420 | Publishing industry (printing excluded) | 1 580 | 1.02 |
| 3052 | 2301 | Metal ore mining | 5 194 | 3.34 |
| 3053 | 2301 | Metal ore mining and beneficiating | 1 200 | 0.77 |
| 3223 | 3839 | Manufacture of electrical apparatus not elsewhere classified | 7 168 | 4.61 |
| 2993 | 3692 | Manufacture of cement | 2 980 | 1.92 |
| 3026 | 5000 | Construction | 14 999 | 9.65 |
| 2642 | 3521 | Manufacture of paints, varnishes and lacquers | 1 128 | 0.73 |
| 2853 | 3720 | Non-ferrous metal basic industries | 504 | 0.32 |
| 2925 | 3710 | Iron and steel tube industry | 1 843 | 1.19 |
| 2851 | 3710 | Iron and steel smelting industry | 8 394 | 5.40 |
| 2852 | 3720 | Non-ferrous metal smelting industries | 1 406 | 0.90 |

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TABLE 1 (Conc.)

SALES PROCEEDS OF MAJOR INCOME TAX PAYERS IN SELECTED INDUSTRIAL ACTIVITIES IN MEXICO DURING 1973

(Millions of Pesos)

| MFC1/ | ISIC2/ | Activities | Sales Proceeds | Weight (%) |
|---|---|---|---|---|
| 2881 | 3843 | Manufacture of motor vehicles | 12 936 | 8.32 |
| 2593 | 3522 | Manufacture of drugs and medicines | 3 061 | 1.97 |
| 2594 | 3522 | Manufacture of cosmetics and other chemical products | 7 223 | 4.65 |
| 2631 | 3523 | Manufacture of soap, detergents, and cleaning preparations other than toilet preparations | 1 897 | 1.22 |
| 2454 | 3420 | Printing, lithographing and bookbinding industries | 2 668 | 1.72 |
| 2551 | 3512 | Manufacture of fertilizers | 2 639 | 1.70 |
| 2559 | 3513 | Manufacture of synthetic fibres, except glass | 2 970 | 1.91 |
| 2562 | 9331 | Medical laboratory services | 2 205 | 1.42 |
| 2565 | 3560 | Manufacture of plastic products | 4 692 | 3.02 |
| 2572 | 3529 | Manufacture of chemical products not elsewhere classified | 1 763 | 1.13 |
| 2004 | 3118 | Sugar factories and refineries | 2 279 | 1.47 |
| 2021 | 3122 | Manufacture of prepared animal feeds | 2 440 | 1.57 |
| | | Sub-total | 155 495 | 100.00 |
| | | Total sales proceeds of major tax payers in industrial activities | 267 832 | |

1/ Ministry of Finance's Classification of Activities.

2/ International Standard Industrial Classification of Activities.

Sources: Ministry of Finance (Mexico), Direccion General de Informatica de Ingresos, 'Estadisticas por Actividades de Impuestos Federales y Niveles de Activos Fijos Netos. Impuesto al Ingreso Global de las Empresas, Causantes Mayores, 1973'.
Banco de Mexico, S. A. MFC-ISIC Cross-classification of Activities.

TABLE 2

KEY TO VARIABLES USED IN REGRESSIONS

| Variable | Description: |
|---|---|
| $K_{wn}$ | Equity (reserves included) |
| $K_f$ | Fixed assets (gross book-values) |
| Q | Sales Proceeds |
| $\pi$ | Gross profits (interest payments excluded) |
| VA | Value Added (total wages plus estimated gross profits, interest payments included) |
| w | Average wage rate |
| $L_t$ | Total employment |
| $w_b$ | Blue-collar labourers'wage rate |
| $w_w$ | White-collar labourers' wage rate |
| $L_b$ | Number of blue-collar workers |
| $L_w$ | Number of white-collar workers |
| i | Total interest payments |
| Lic | Negotiable liabilities (total liabilities minus credit from suppliers) |
| Li | Total liabilities |
| St | Credit from suppliers |

## CONCLUSION

In chapter 1, we pointed out the need for a theory of investment and employment which took into consideration the effects of investors' behaviour towards risk, and the role of financial markets in shortening the period in which capital assets reach equilibrium prices.

In chapter 2, we found out that uncertainty with respect to the future of wage rates may account for a bias towards the use of labour-saving techniques by firms, since the elasticity of the rate of profit with respect to the wage rate is lower for these techniques than for labour-using alternatives, ceteris paribus.

Our analysis of the profitability of alternative techniques, under different assumptions concerning conditions in the labour market and technical progress, showed that the choice of inappropriate technology [1], as it appears in cross-section data of firms, can be explained as a temporary disequilibrium situation only when technical progress has been significantly biased in the labour-saving direction for a number of years equal to the life of productive assets; whereas this phenomenon could be explained as a long-term equilibrium situation, on the grounds of entrepreneurs' profit maximising behaviour under uncertainty, without any restrictive assumption about the nature of technical progress.

In chapter 3, we observed that high liquidity of financial markets - accounts for investors' aversion to fluctuating rates of profit which shows in the higher average returns they get, in the long-run, from securities whose prices show larger dispersion, as compared to more stable securities. We found out that this behaviour also accounts for biases towards the use of labour-saving technology, because the elasticity of the rate of profit to changes in the wage rate is higher for labour-intensive techniques, than -

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1 Labour-saving-capital-using technology.

for capital-intensive ones.

On the basis of this negative relationship between capital intensity of firms and the rate of return demanded by investors on equity, we built up a model of investment behaviour of the individual firm. This model showed - that long-run equilibrium may be achieved at different degrees of mechanisation of technique, despite the fact that firms face the same relative factor prices. In other words, our model showed that the choice of inappropriate technology may correspond to a long-term equilibrium situation in which firms maximise speculative profits in security markets.

In chapter 4, where we analysed other effects of financial markets on firms' growth. We noticed that the diffusion of ownership in the joint-stock company has increased the power of big capitalists, who, by holding significant blocks of shares (though not necessarily majority) in various corporations, are able to influence managements and exert control over an amount of capital several times their own. We observed that, when the banker exerts this type of control over insurance companies and industrial firms -so that he integrates a financial group- there are economies of scale, which enhance the growth rate of each of the individual firms so integrated.

These economies arise, mainly, from the banks' function as clearing houses for their customers' payments. The more a bank's customers trade among each other, the more the bank saves currency for transactions, and the more credit it is able to grant to customers without impairing its solvency, - ceteris paribus.

In that chapter, we also pointed out that two different reactions of investors to increases in security prices account for both a positive and a negative element in the elasticity of demand for securities. The negative element is brought about by changes in the rate of return as prices vary, and the positive one corresponds to expectations of capital gains from securities appreciation. From this, we inferred that investors' speculation in financial markets may account for a net positive price-elasticity in the

demand for securities.

On the basis of this positive element in the elasticity of demand for securities, we assumed that bankers, as underwriters of securities, would implement monopolistic policies in order to protect the speculative profits of the issuers. They would peg security prices by controlling supplies. Evidence about underwriters' behaviour at stock markets, and particularly at the so-called 'over-the-counter-market',supported this hypothesis.

Further, we noticed that, if the banker controlled an insurance company, he would not need to commit his own capital to peg underwritten securities prices (i.e. by holding part of the issues). Instead, he would be able to dispose of much larger resources for this purpose, by influencing managements at the insurance company to invest their firm's reserves in securities that he underwrites. By holding securities as reserve assets, insurance companies would have temporary control over other firms, and, as the banker controlled the former firms, he would also be able to influence managements in the latter firms.

We pointed out that the economies of scale, for the financial group, would depend upon the way in which the banker's customers integrated their activities, and minimised the bank's cash outflow from their transactions. In other words, they would depend on the banker's partnership structure. Since the banker, by means of his influence over insurance companies, and by credit allocating policies, would be able to select his customers, his partnership structure would be likely to depend upon the activities of his early customers. The latter would have determined his policies towards minimisation of the bank's cash outflow.

From this, it follows that each financial group would develop a particular partnership structure, which eventually would explain financial groups collusion.

In chapter 5, we recalled that when there is monopolistic competition, profits tend to be larger and more stable than under perfect competition, so

that the rate of speculative profit may rise, eventhough the rate of profit in real terms falls. We also observed that capital-intensive techniques strengthen firms' monopolistic and monopsonistic positions at commodity and factor markets so that, on this account, they also have a positive effect on the rate of speculative profit.

Since the cost of capital for financial groups is lower than for independent firms (on account of economies of scale in banks' operations), we inferred that firms financially integrated would tend to be more capital-intensive and more monopolistic than independent firms, ceteris paribus.

By being more monopolistic and more capital-intensive than independent firms, firms controlled by financial groups are likely to get a higher rate of speculative profit, and as their rate of speculative profit was higher, the integrated sector, as a whole, would tend to grow faster than the independent sector.

Changes in the share of the integrated sector within each activity -we observed-, would bring about changes in the average rate of inflation, which would affect investors' decisions. Shifts in the latter's demand from securities to goods, as stores of value, would account for a cyclical pattern of economic activity.

Due to investors' behaviour towards risk, integrated firms would get relative advantages over independent competitors at every phase of the cycle. In general, we noticed, the integrated sector would experience shorter depressions and longer periods of prosperity than the independent one. As a result of this, the integrated sector would be strengthened at every successive cycle, and the degree of monopoly, for the economy as a whole, would tend to rise.

This strengthening of the integrated sector at every successive cycle, we remarked, changes the conditions under which recovery may take place. These conditions involve ever higher rates of interest, inflation and unemployment, which would be further hastened by underwriters' policies of -

pegging security prices.

Higher capital-intensity and an increasing degree of monopoly, as the share of the integrated sector in the economy increased, would raise the elasticity of labour demand. If the supply of labour increased with constant elasticity (and at a constant rate), equilibrium at higher rates of unemployment would entail a relatively larger fall in wage rates.

Therefore, we concluded, as the integrated sector expanded, and capital-intensity increased for the economy as a whole, the burden of the adjustment process at every trough would increasingly lie on the labour market. Higher rates of unemployment would be required in order to bring wage rates down, and thereby, restore the profitability of the independent sector, which the integrated sector requires for further expansion. For, only by so restoring productivity in the economy, prices would fall, and investors' speculative investment on commodities would be discouraged.

From the theoretical point of view, the new approach qualifies Keynesian theory by allowing the liquidity preference schedule to shift downwards with expectations of rising security prices.

When the Keynesian model is worked out under the assumption of monopolistic competition, so that security prices rise less than commodity prices, it becomes clear that 'absolute liquidity' does not arise from the utility of money as a means of payment and unit of account, but from its utility as store of value. Accordingly, the rate of interest at which there is absolute liquidity changes over time, according to the degree of monopoly.

During the slump, a floor to the rate of interest appears due to restrictions in the supply of securities -not in their demand, as Keynes assumed-, because either cash balances or commodities replace securities as stores of value for the issuers.

During the boom, a floor to the rate of interest also arises, but this time due to constraints from the demand side, because rising commodity prices account for goods substituting for securities, as stores of value.

The new approach agrees with the Monetarist school in that there is a stable demand function for money in terms of the rate of interest and all other prices. Nevertheless, it qualifies Monetarism in two crucial points. First, by considering monopolistic competition as the normal state of affairs in capitalist economies; and second, by giving recognition to differences in the length of the period in which the prices of capital goods reach equilibrium in financial and real markets.

Differences in the length of the period in which capital assets reach equilibrium prices in real and financial markets, according to the new approach, explain the instability of the credit multiplier. Whereas, an increasing degree of monopoly, brought about by the development of financial groups, accounts for the secular downward trend in the velocity of circulation of money observed in modern capitalist economics.

Our empirical research on Mexican industrial firms revealed that there is a negative and significant relationship between capital-intensity and the rate of operational profit. It also showed positive relationships between capital intensity and the degree of mechanisation, and between these two and the size of firms. These results indicate that, as firms grow, they tend to use inappropriate technology.

The rate of interest on negotiable debt showed a negative relationship with the degree of mechanisation, which suggest that investors discriminate against labour-intensive firms, not only in their demand for stocks, but also in their demand for fixed-income securities.

The observed constancy in wage differentials between white- and blue-collar occupations in the individual firm, and between firms with different degrees of mechanisation, in spite of differences in the rates of fall of blue- and white-collar labour inputs, as mechanisation increases, suggests a considerable degree of monopsony in the Mexican labour market.

Our estimates also revealed that firms with different degrees of mechanisation get, at the margin, the same rate of speculative profit from any

given investment in fixed capital. This result suggests that our cross-section data reflects, in fact, firms in long-term equilibrium.

Therefore, our data supports the hypothesis that firms maximise speculative profits, and that, for this reason, they tend to use inappropriate techniques as they grow, in spite of their holding a monopsonistic position in labour - markets.

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