The Micro Foundations of the Corporate Economy

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This paper challenges the orthodox microeconomic theory of the firm which is being gradually replaced as the consensus view by managerialist, behaviourist, institutionalist and post-Keynesian schools of thought. From this new microeconomics is emerging a synthesis which is providing the foundations for a theory of the 'megacorp'. Megacorps have behaviour patterns at odds with those of the atomistic firm. Unless this is understood and an appropriate theory developed, attempts to manage the economy by traditional means are doomed to failure. The paper lays the foundations of such a theory at both the micro and macro levels.

Corporate planners and other business economists have long been aware that the orthodox theory has little relevance to the type of environment in which their companies are forced to operate. What they generally do not realize is that there now exists an alternative body of theory—one which, though no less comprehensive and no less coherent, corresponds far more closely to what can be observed in the real world of corporate enterprise. This alternative body of theory, which represents a synthesis of certain ideas to be found within the managerial, behaviorist, institutionalist and post-Keynesian literature, can be termed the 'new microeconomics'. The purpose of this review is to explain what is encompassed by that term.

The new microeconomics is intended, first and foremost, to provide a more useful model of firm and industry behavior. Instead of viewing the firm as merely the cat's paw of an impersonal market, it regards the business enterprise, especially when it takes the form of a modern corporation, as an important source of independent decision-making within the economy. The relevant set of decisions includes not just how much to produce and what price to charge, as the orthodox theory would have it. It also includes how much to invest and how to finance that investment. Indeed, the decision of how much to invest is far more important to the firm's continued success than the decision of how much to produce, with the decision of what price to charge being more closely tied to the former than the latter. The new microeconomics, however, is also intended to provide a more appropriate foundation for macroeconomic analysis.

The output, price, investment and finance decisions made at the firm level are critical in determining the macrodynamic behavior of the system as a whole, and if that macrodynamic behavior, as represented by the growth of output and employment as well as by the rise in the average price level, is to be adequately explained, it is necessary that the macro model rest on a solid micro foundation.

In the sections which follow, the essential features of what can be termed the 'corporate economy' will first be described, along with those of its representative firm, the megacorp. This is an economy consisting of industries which are predominantly oligopolistic in structure, with a resulting ability to maintain over time a certain margin, or mark-up, above costs. After the essential features of this corporate economy have been specified, a model of mutually determined investment, prices, external finance and output will be presented as the distinguishing centerpiece of the 'new microeconomics'. This micro foundation of the corporate economy will then be compared with the orthodox theory of the firm. The corporate economy is next modeled, at the macro level, to see what light can be shed on the secular inflation which has bedeviled advanced market economics like that of the United States throughout the post-World War II period. The exercise is carried out first in the absence of uncertainty and thus with a continuous, constant rate of expansion assumed; and then, in a more realistic version of the same model, with allowance for three types of unforeseeable events—major product innovation, inter-firm competition and a change in government policies.

THE CORPORATE ECONOMY AND THE MEGACORP

The corporate economy consists of \( k \) industries, as a subset of the \( n \) industries which comprise the...
enterprise sector, or production system, as a whole. These \( k \) industries sell their output either to each other or to a group of proprietary firms which are engaged in retail distribution; and they buy their inputs either from each other or from a second group of proprietary firms engaged in agriculture and other types of primary production. The \( k \) industries thus constitute a sub-matrix within the larger input–output system, with the industries represented by primary producers, retail distributors and other non-corporate enterprises (e.g. residential construction firms) completing the system (Eichner, 1983; Pasinetti, 1981).

Not all of the \( k \) industries produce goods and services for final consumption. Some, in fact, specialize in the production of the capital goods used by the other industries to replace and expand their capacity over time. Indeed, it can be assumed that for each industry producing a good or service for final consumption (either by households or by the government) there are one or more other industries supplying that industry, in turn, with capital goods. (The same industry may, of course, supply capital goods to more than one other industry). Other industries specialize in producing material inputs, such as refined metals and chemicals. The industries producing this intermediate output, capital goods as well as direct material inputs, represent the difference between the \( k \) industries which comprise the corporate economy and the \( h \) industries producing items for final consumption.

Whatever the type of good it produces, each of the \( k \) industries is oligopolistic in structure, with the four leading firms supplying 75 per cent or more of the industry's output and with any new firms which might wish to enter the industry facing significant cost and other barriers. One of the four leading firms has a larger share of the market than the others. It is the dominant firm and the industry price leader (Shepherd, 1970; Blair, 1972). Like at least one of the other leading firms, the price leader is a large corporation, or megacorp (Eichner, 1976), with the following characteristics.

1. The megacorp is an organization rather than an individual. This affects both the megacorp's goals and the way it makes decisions.

As an organization, the megacorp's goal is to expand at the highest rate possible, measured by the growth of cash flow or some correlate. It is expansion at the highest rate possible that creates the maximum opportunities for advancement within the organization, and thus the greatest personal rewards for those who are part of the firm's decision-making structure. To expand at the highest rate possible, the megacorp follows two rules: (a) it attempts to retain its present share of the market in the industries to which it already belongs—as long as those industries are expanding at the same rate as the economy or better, and (b) it periodically expands into newer, more rapidly growing industries while withdrawing from those in which the growth of sales has come to a halt and/or the profit margin has been squeezed below the firm's target rate of return.

The megacorp, as an organization, makes decisions through a managerial hierarchy. At the top of this decision-making, or internal political, structure is the executive group, which consists of the chief executive officer and a number of senior vice-presidents (Gordon, 1945). It is the executive group which makes the key decisions. These include: (a) the target rate of return on investment; (b) the investment projects to be included in the annual capital budget; (c) the required mark-up; (d) the annual increment in wages and salaries and (e) any change in the amount of external debt. The executive group also determines which, if any, new industries or markets the megacorp will attempt to enter and who, from among the middle management, will succeed the present members of the group. In making these decisions, the executive group is constrained only by the laws of the countries in which it operates and by the possible loss of control to some outside group if the growth of dividends falls below a certain rate or if other financial performance criteria (such as repaying loans as they come due) are not met (Wood, 1975).

2. The megacorp operates not one but several plants in each of the industries to which it belongs, with each plant embodying in the form of a fixed set of technical coefficients the least-cost technology available at the time the plant was constructed (or last modernized). The multiple plants it operates have a significant bearing on the megacorp's costs, both as it varies output over the cycle and as it expands capacity over the longer period.

In varying its output over the cycle, the megacorp will either start up or shut down an entire production line, and in this way produce only at the least-cost point which has been incorporated into each plant's design. A production line consists of all the equipment needed, along with workers, to produce a particular good or service. The amount of labor hours, together with the quantities of raw materials, needed to keep that production line going is, in turn, what the associated set of technical coefficients represents. Usually, to reduce the overhead expense, a plant will consist of more than one production line. Still, with each of those production lines being a duplicate of the others, the same set of technical coefficients applies to the plant as a whole.

By either starting up or shutting down an entire production line (or plant segment) at a time, the megacorp is able to vary its output over the cycle without incurring any significant increase in its average variable, and hence marginal costs. Thus it can be assumed that the firm is subject to constant returns over the short period represented by the typical business cycle. The constant returns are predicated, however, on (a) the megacorp having a
certain amount of reserve capacity, consisting of plants with vintage equipment and hence somewhat higher operating costs, and (b) the megacorp using its finished goods inventory to bridge the gap between current sales and current output. The megacorp’s reserve capacity, which is likely to be about 25 per cent of total capacity in the case of a durable goods industry and about 20 per cent of capacity in the case of any other type of industry, is what enables the megacorp to vary its output over the cycle by either starting up or shutting down an entire plant or plant segment. This reserve capacity enables the megacorp to handle any likely fluctuation in industry sales; thus it eliminates the opportunity for new firms to enter the industry because of unsatisfied demand. Changes in the megacorp’s finished goods inventory, meanwhile, enable it to avoid any problem because of the discrepancy between current sales and current output. The amount of finished goods inventory is simply allowed to increase when sales are below the output of the production lines currently in operation, and it is allowed to fall when sales exceed that quantity of output (prior to an additional plant segment being activated).

Over the long run, extending beyond any one cycle, the megacorp can be expected to add to its capacity so as to keep pace with the secular growth of industry sales. This is essential if the megacorp is not to lose market share over time. The new plants being added will, to the extent product innovation is occurring simultaneously in the capital goods sector, enable the firm to gradually reduce its labor–output ratio within that industry (as measured by its labor technical coefficients). This will certainly be the case if, as can be assumed, the cost of labor (measured by the money wage rate) has been rising relative to the cost of other inputs and the new plants therefore embody the latest labor-saving technology. Whether the firm’s actual costs of production will also be declining will depend on which is rising more rapidly—money wages or output per worker (the latter measured by the rate of decline of the labor technical coefficients and hence, the firm’s labor–output ratio). All that can be said with certainty is that, with new plants being added that embody the latest technology, the firm’s costs will be less than they would otherwise be—and less when production is concentrated in the newer plants than when, because of an unusually high level of demand, the firm’s reserve capacity has to be utilized. Thus it can be assumed that the expansion of capacity over time will be accompanied by a fall in the firm’s labor–output ratio and, to the extent this is true of all firms within the industries which comprise the corporate economy, by a secular rise in output per worker. The effect on the firm’s unit costs of production will depend on the growth of money wages relative to output per worker.

(3) The megacorp is a price setter (or price matcher) rather than a price taker. This means that the prices in each of the $k$ industries are seller-rather than market-determined, with those prices established by adding a certain mark-up, or margin, to the unit costs of production.

The set of list prices announced in advance of any sales by the dominant firm, or price leader, and then adopted as their own by the other leading firms will remain unchanged until the end of the current pricing period (typically a year in the case of durable goods industries, and six months in the case of other industries). Those list prices will then be adjusted, depending on what has happened in the interim to the unit costs of production as a result of the growth of money wages relative to output per worker. Thus, in the short period, the mark-up, if not the price level itself, can be viewed as being fixed. While prices may change, depending on what is happening to the unit costs of production, the same mark-up will be applied to those changing unit costs in order to arrive at the new price list. What this means is that, in the short period, the mark-up (and hence the set of list prices, to the extent those list prices are based on the mark-up) is indeterminant. Within that time frame, the mark-up is simply as given.

Over the longer period, however, the mark-up is variable and indeed can be explained by the dominant firm’s need for additional investment funds relative to the implicit cost of obtaining those additional funds by increasing the mark-up. The dominant firm can be expected to seek a higher mark-up when (a) the need for investment funds to expand capacity within the industry in line with the growth of sales (or to purchase new plant and equipment for some similarly essential purpose) exceeds the amount of cash flow being generated at the existing mark-up, and (b) the cost of increasing the mark-up, in terms of the long-term loss of industry sales due to the substitution effect, the greater likelihood of attracting new firms into the industry based on the entry factor and the risk of retaliatory action by the government, is not excessive. Indeed, the cost of the additional internally generated funds, taking into account these last three factors, must be less than the cost of obtaining the same funds through an increase in the firm’s external debt. Otherwise, the megacorp will find it more advantageous to tap the capital funds market. The mark-up established within the industry in the long period will be the one which balances off the expected return from investment against the cost of obtaining the needed funds either internally from a change in the mark-up or externally by selling new securities (see below).

(4) The megacorp competes against other firms through the various types of investment it undertakes rather than on the basis of price. This makes the capital budget, followed by the advertising and R & D budgets, the critical means by which the megacorp improves its long-term position, both
within individual industries and throughout the economy as a whole.

Investment projects are routinely screened for inclusion within the capital budget by comparing the prospective rate of return with the megacorp’s target rate of return. The target rate of return will depend on the rate at which the megacorp hopes to grow over time. Indeed, the firm’s desired growth rate, adjusted to take into account any corporate profits tax, is the target rate of return. Thus, if the megacorp has the goal of expanding by 15 per cent each year and the corporate profits tax rate is 50 per cent, the target rate of return will necessarily have to be 30 per cent. Any project with a prospective rate of return less than that figure will, even if all expectations are subsequently realized, preclude the megacorp from achieving its growth objectives. Because it is more easily calculated, the inverse of the payback period is likely to be used to approximate the prospective rate of return from a given project. Thus the prospective rate of return from a project that will enable the megacorp to recover any and all outlays within three years is approximately 33 per cent. While, in choosing among projects, it might seem necessary to take into account what returns are likely to be realized beyond the payback period, those returns can be largely discounted because, being so distant, they are so uncertain. Restricting the projects to be included within the capital budget to those with a certain minimum payback period means that the megacorp is less vulnerable to an unforeseeable, and thus uncertain, future (see Blatt, 1983, Ch. 12).

There are two types of exceptions to the general rule that projects will be included within the capital budget only if their prospective rate of return, as approximated by the inverse of the payback period, equals or exceeds the megacorp’s target rate of return. One type of exception is a project which, unless included, will jeopardize the megacorp’s market position within an industry. The expansion of capacity in line with the growth of industry sales falls within this category. Since retention of its market share in the industries in which it expects to remain over time is a necessary condition for maximizing the growth of the firm, this type of project is likely to be given the highest priority within the capital budget. Indeed, it makes little sense event to attempt to calculate the prospective rate of return on such a project. Instead, the governing consideration is likely to be whether the firm wishes to continue including that industry among those to which it allocates its investment funds. The second type of exception to the general rule that projects will be included in the capital budget only if their prospective rate of return exceeds the target rate of return is a project which involves expansion into an entirely new industry or line of business. Although in this case an attempt will be made to calculate the payback period, strategic considerations may be sufficiently important that they will, in fact, dictate the decision. These strategic considerations include the need to neutralize a similar move by a rival firm, the desire to tie up certain sources of supply or avenues of distribution and the importance of becoming familiar with a new technology.

(5) The megacorp’s investment, pricing, compensation and finance decisions are part of an integrated, sequential decision-making process which the executive group routinely carries out each year (Vickers, 1968). This means that no one of these decisions can be understood in isolation by itself. Each is complementary to the other, the entire set of decisions being the means by which the megacorp is able to maximize its growth over time.

The most important of these decisions, the one that shapes the rest of the decision-making process, is what investment projects are to be included within the capital budget. Still, before a capital budget can be developed, a financial analysis will have to be carried out, with an estimate made of the cash flow likely to be generated, under current sales projections, throughout the period covered by the capital budget. It is this cash flow estimate which provides a first indication of what is likely to be the increase, if any, in the capital budget. If, as may well be the case, the number of projects originating from within the organization which can meet the target rate of return and/or other criteria exceeds the cash flow likely to be generated during the year, the executive group will need to decide how to close the gap by (a) increasing the average mark-up within one or more industries, (b) arranging for external financing or (c) eliminating or stretching out certain projects. The first option to be weighed will be an increase in the average mark-up within one or more industries. However, any decision to try to increase the mark-up will have to be part of a more comprehensive review of pricing policy.

A MODEL FOR THE 'NEW MICROECONOMICS'

The situation in which the megacorp’s executive group is likely to find itself upon reviewing the current set of list prices within a given industry can be represented by the following diagrams (Eichner, 1976):

- Its cost curves will be those shown in Fig. 1. Because of the multiple plants it operates, the megacorp is able to vary output with average variable, and hence marginal, costs remaining nearly constant up to 100 per cent of engineer-rated capacity (ERC). Given its deliberately maintained reserve capacity, the megacorp will seldom operate in excess of 90 to 95 percent of capacity, so that
only the interval between 65 and 95 per cent of engineer-rated capacity represents the relevant range of these cost curves. The megacorp's total costs, which include average fixed or overhead expenses as well as the direct cost of labor and materials, will meanwhile decline steadily as output increases, this because of the greater volume over which they can be spread.

The list prices for the various goods, or product line, supplied by the industry can be expected to have been set, during the previous price review, so that on the average they cover the industry's total costs at the standard, or expected, rate of output plus a certain rate of cash flow (ACF) or margin, \( \mu \). This is shown in Fig. 1 by the price line, \( P_0 \). (The standard rate of output is the level of output that would be needed to supply the market in the absence of any cyclical fluctuations in sales. It is assumed, in Fig. 1, to be 80 per cent of engineer-rated capacity, thus implying 25 per cent reserve capacity as in the case of a durable goods industry.) The question facing the executive group, as it reviews the current set of list prices, is whether to try to effect a shift in this price line. While the megacorp will be in a better position to effect such a shift if it is the industry price leader, it can still expect to have some influence even if it is only one of the firms which matches the set of list prices announced by the price leader. Through public statements and similar means, it can at least make its preferences known to the price leader; and the price leader, to the extent it cannot act unilaterally, will have to take those preferences into account.

The first consideration, in trying to decide whether there should be a shift in the price line, \( P_0 \), is whether there has been an increase in the cost of production since the last price review. It can be assumed that, at the very least, the firms in the industry will attempt to offset any rise in costs by an upward shift in the price line, this to preserve the existing mark-ups. Whether the costs of production have been rising will, in turn, depend on what has been happening to (a) unit labor costs and (b) unit raw material costs. Any rise in unit labor costs will reflect the growth in money wages relative to the growth in output per worker while any rise in unit raw material costs will reflect the industry's position within the input–output matrix and/or supply-and-demand conditions within world commodity markets. The factors determining the past rise in unit labor costs and unit raw material costs will then be projected into the future to provide an estimate of what increase in the average list price will be necessary to offset the expected increase in the costs of production over the period until the next price review.

Once the expected increase in the unit costs of production has been estimated, the next consideration is what change, if any, in the average mark-up, \( m \), would be optimal. (The mark-up, \( m \), is simply the margin, \( \mu \), divided by \( 1 - \mu \). It is added to the average costs of production, \( C \), to obtain the list price and thus, unlike the margin, does not require that the list price already be known.) The optimal change in the mark-up will depend on the demand for additional investment funds (so as to be able to finance a capital budget in excess of the cash flow being generated at the existing margin) relative to the supply cost of those funds, whether the funds are obtained internally or externally. That is, \( \Delta m = f(D_I, S_I) \) where \( \Delta m \) is the optimal change in the mark-up; \( D_I \) is a demand curve for additional investment funds, based on the inverse relationship between the expected rate of return, \( r \), and the amount of additional investment funds employed, \( \Delta F \); and \( S_I \) is the supply curve for additional investment funds, based on the opposite, or, direct relationship between the implicit cost of any additional funds, \( R \), and the amount of those funds to be obtained, \( \Delta F \).

The implicit cost of any additional funds that might be generated internally through an increase in the mark-up will depend on three sets of factors: (1) what has already been termed the substitution effect, that is, the reduction in the growth of industry sales over time as determined by the price elasticity of demand, \( e \); (2) the entry factor, that is, the possible loss of market share to new firms attracted into the industry, as determined both by the minimal size firm likely to enter the industry, \( q \), and the probability of new entry, \( \pi \), associated with a given increase in the mark-up; and (3) the possible untoward consequences of retaliatory action by the government as the mark-up is increased, as determined by the probability of government intervention, \( \rho \). These three types of costs incurred by the megacorp, should it decide to increase the size of the average mark-up, can be converted into the equivalent of an implicit interest rate, \( R \), by first applying the appropriate discount formulas (Eichner, 1976, Ch. 3) and then comparing the subsequent decline in cash flow with the more immediate gain in cash flow, the latter being the equivalent of an externally borrowed principal sum for each year there is a net gain.

An increase in the mark-up, \( \Delta m \), is likely to lead to an increase in the average amount of cash flow generated per unit of output sold, \( \Delta \text{ACF}/C \). This
The relationship is depicted in quadrant (b) of Fig. 2. The average cash flow being generated increases, but at a decreasing rate, as the mark-up is increased because both the substitution effect and the entry factor can be expected to be greater the larger the increase in the size of the mark-up. Meanwhile, the implicit interest rate on these internally generated funds $R$, will also increase as the mark-up rises. This relationship is depicted in quadrant (d) of Fig. 2. In the latter case the substitution effect and the entry factor cause the implicit interest rate to increase at an increasing rate. Indeed, beyond a certain point, say $m^*_s$, the probability of new entry into the industry or of retaliatory government action may be greater than the firm is willing to risk, establishing an upward limit on the possible increase in the mark-up. The two separate relationships depicted in quadrants (b) and (d) of Fig. 2 together determine the shape of the firm's supply curve for internally generated investment funds, $S_I$, as shown in quadrant (a) of Fig. 3. This supply curve is derived by first taking the values for $AACF/t$ and $R$ associated with each change in the size of the mark-up, $Δm$, and then scaling up this locus of all common points as could be shown in quadrant (a) of Fig. 2, by a factor equal to the firm's expected level of sales (its total engineered capacity, ERC, multiplied by its standard operating rate, SOR). In this way the average cash flow generated shown on the right-hand axis of Fig. 2 becomes the total cash flow, or additional investment funds, $ΔF/t$, shown on the right-hand axis of Fig. 3.

The supply curve for internally generated funds, derived in this manner, can then be compared with the demand curve for investment funds, based on the expected rate of return on the various projects considered for inclusion in the capital budget. The portion of the demand curve shown in Fig. 3 is, in fact, the portion represented by the projects which cannot be financed from the flow likely to be generated at the present mark-up. While an increase in the mark-up would, in this case, seem to make sense, the executive group would first need to take into account the firm's cost of external finance before making a decision.

The firm's cost of external finance, $i$, is a weighted average (based on the firm's optimal debt-equity ratio) of the interest it would have to pay on any new fixed-interest securities (bonds) and the inverse of the estimated price-dividend ratio at the time it would be likely to sell additional common shares. Both estimates would have to be adjusted to take into account (a) brokerage and other placement costs, and (b) the increased threat to the executive group's control from issuing new securities. This cost of external finance will then determine the shape of the firm's total supply curve for investment funds—those obtained from the sale of new securities as well as those generated internally by an increase in the mark-up. Such a curve, $S_I$, is shown in Fig. 4, with the portion extending from the origin to $ΔF_b$, coinciding with the firm's supply curve for internally generated funds and the remaining portion coinciding with the supply curve for external finance. The latter is assumed, in Fig. 4, to have a positive slope, but if the firm is a relatively small factor in the capital market, it might be assumed to be horizontal.
funds market and the sums involved are not very large, the curve could be horizontal.

In deciding whether to increase the size of its average mark-up, the firm is likely to find itself in one of the three situations shown in Figs 5, 6 or 7. In the first case, the firm’s demand curve for investment funds, \( D_1 \), intersects the total supply curve for investment funds, \( S_1 \), to the right of the origin but below the point where it is less costly to borrow funds externally rather than generate additional cash flow by increasing the mark-up. In that situation, the firm can be expected to increase its mark-up by \( \Delta m_a \) and in this way finance, at an implicit interest rate equal to \( R_a \), a capital budget which exceeds its current rate of cash flow by an amount equal to \( \Delta F_a \).

In the case shown in Fig. 6, the demand curve for investment funds, \( D_1 \), has shifted sufficiently to the left so that it now intersects the supply curve, \( S_1 \), to the left of the origin. While in this situation it might seem that the firm should be intent on lowering rather than increasing its mark-up – especially if, as the result of rising costs, it must still adjust its prices upward – this need not be the decision which the executive group will make under the circumstances. The long-term gains to the firm from lowering the mark-up and/or prices are not merely the opposite of the long-term losses, or implicit costs, of raising the mark-up and/or prices; and it may be best for the firm simply to maintain the same mark-up and/or price level, even if this means that it will be generating more cash flow than it needs to finance its capital spending. The additional funds can always be placed in short-term government securities or in CD’s until they are needed. Moreover, a reduction in the mark-up and/or prices may upset the collective basis for price setting within the industry.

In the case shown in Fig. 7, the demand curve for investment funds, \( D_1 \), not only intersects the total supply curve, \( S_1 \), to the right of the origin, it also intersects it above the point where it is less costly to obtain additional funds from external sources. In this situation, the firm can be expected to increase the mark-up by \( \Delta m_b \) and in this way finance, at an implicit interest rate equal to \( R_b \), a capital budget which exceeds the current rate of cash flow by an amount equal to \( \Delta F_b \). It will then consider whether to finance an even larger capital spending program by obtaining the necessary funds from external sources. While it might seem that additional investment outlays equal to \( \Delta F_c - \Delta F_b \) would be warranted by the prospective rate of return relative to the cost of external finance, this move will place the firm in a somewhat different position vis-a-vis the capital funds markets, and so it will need to be considered separately as part of a subsequent external financing decision to be made only after consulting outside advisors. Without analyzing this subsequent decision in any depth (cf., Wood, 1975), it can nonetheless be seen how the investment, pricing and finance decisions are all interrelated within the model of a corporate economy which has been developed so far, with the mega-corp as the representative firm.

Once it has been decided what change, if any, in the size of the mark-up would be optimal, this change, together with the expected change in costs, will determine what change, if any, in the average list price will then be announced by the industry.

Figure 5

Figure 6

Figure 7
price leader and matched by the other firms in the industry. This new list price, as shown in Fig. 8, will then determine the vertical position of the industry’s perfectly elastic supply-offer curve, \( P_1 \). The supply-offer curve is perfectly elastic because, at the average list price \( P_1 \), each firm within the industry is prepared to supply any quantity demanded. Indeed, it is the quantity then demanded at that price from each firm which will determine the sales volume for the industry as a whole until the next price review, and it is this sales volume to which each firm’s output decision will be geared. Since the latter involves only the question which plants or plant segments to operate while using the firm’s finished goods inventory to make up the sales volume for the industry as a whole until the next price review, and it is this sales volume to which each firm’s output decision will be geared. Still, it completes the process by which the level of investment as represented by the size of the capital budget, the rates of compensation and hence unit costs, the average mark-up and thus a set of list prices, and the amount of external borrowing are mutually and sequentially determined over the course of a year. These decisions made at the micro level by the megacorp are then the basis for the behavior of the corporate economy which can be observed at the macro level.

**THE CORPORATE ECONOMY COMPARED WITH THE ORTHODOX THEORY OF THE FIRM**

Before developing more fully this model of a corporate economy, it may be useful to contrast its micro foundations with the orthodox theory of the firm. The first important difference is that the orthodox theory is not set within an input-output framework. The significance of this difference can be fully appreciated only when, as in the section which next follows, the behavior of the economy as a whole is analyzed macrodynamically. Suffice it for now to point out that the absence of an input-output framework forces the microeconomic analysis into one or the other of the two modes that characterize the orthodox approach: either a general model involving all \( n \) industries but with no clearly defined technology and indeed with no real production system; or, alternatively, a partial model with each industry analyzed independently of every other industry. The first approach is, of course, the one favored by neo-Walrasians and the second, the one favored by latter-day Marshallians. Since the neo-Walrasian model is a model of exchange rather than a model of production and not even its most ardent enthusiasts would claim that it applies to the real world, it is the Marshallian model, the model that dominates the intermediate level microeconomic theory textbooks, that will be used as the point of contrast with the model of a corporate economy outlined in the preceding section. The Marshallian model, it should be noted, starts out with the disadvantage that, not being set within any larger framework, the results established at the firm or industry level cannot be extrapolated to the economy as a whole. Its greater realism compared with the neo-Walrasian model is therefore at the expense of its generality.

Aside from the larger framework, the next most important difference between the Marshallian model which dominates the orthodox microeconomic textbooks and the model of a corporate economy outlined above is the nature of the representative firm. Instead of a megacorp, the Marshallian model assumes a family-controlled proprietorship to be the typical form of business enterprise. This difference in the nature of the representative firm then leads to the following differences in the model itself.

1. The goal of the firm is short-run profit maximization rather than the highest possible rate of expansion by the firm itself. In seeking to achieve this goal, the key decisions are made by the individual who, as paterfamilias, is the firm’s owner-entrepreneur. There is no executive group sharing the decision-making power (although there may be one or two partners), and there is no lower-level group of managers to help in running the firm. The emphasis on short-run profits reflects both the uncertain future of the firm and the direct personal interest the owner-entrepreneur has in the amount of net revenue being earned. Without a protected market position, the firm cannot be sure of surviving far into the future, and the owner-entrepreneur therefore prefers to maximize the more immediate returns which, unlike any corporate cash flow in the case of the executive group, accrue to him directly.

2. The proprietary firm, since its management is limited to one or two owner-entrepreneurs, is capable of operating only a single plant – which means that it is subject to decreasing returns when it expands output beyond a certain point. This gives rise to the familiar set of U-shaped cost curves found in intermediate level textbooks, with marginal, average variable and average total costs all rising within the relevant range. The technical coefficients, rather than being fixed, are sufficiently

![Figure 8](image-url)
flexible to accommodate varying combinations of labor and material inputs, so that, even with but a single plant, output can be varied in the short run. Indeed, it is the need to offset the fixity of the capital inputs in the short run by relying on greater quantities of the variable inputs which accounts for the decreasing returns as output increases beyond a certain point. In the longer run, expansion takes place, not by the addition of new plants to existing firms but rather by the entry of entirely new firms, each with a single plant.

(3) The proprietary firm may be a price taker as well as a price setter— with the former the more likely case. If the firm is a price taker, implying that it supplies an insignificant portion of the total market, it will have no real control over prices, which are determined by supply and demand factors at the industry level. The firm's owner-entrepreneur can only decide how much to produce, throwing that output on the market for whatever price it will bring. But even if the firm is a price setter, announcing in advance the set of list prices at which it is prepared to sell its output, the competition from other firms, both existing and potential, will be sufficient to prevent that set of list prices from exceeding the costs of production. It can therefore be assumed that the mark-up will be reduced to zero in the long run.

(4) Shaving the price is the only form that competition among existing firms takes. There is no advertising or R & D budget. While the firm may, from time to time, purchase new equipment financed through bank loans, there is no regular capital budget either. Investment is episodic, with the critical decisions being the one to enter the industry in the first place and then, when the firm can no longer compete effectively with the vintage capital stock it owns, the decision to retire from the industry.

(5) The proprietary firm therefore makes only one type of decision continuously over time. This is the decision of how much to produce, and it is a decision which the owner-entrepreneur himself will make by comparing the marginal cost of the additional output with the marginal revenue which can thereby be earned. The owner-entrepreneur, by not allowing the marginal cost to exceed the marginal revenue, can be assured of maximizing his short-run profits through the one means he has of influencing that goal, to wit, by varying the firm's output. The pricing decision is largely in the hands of an impersonal market, even when the firm is nominally able to set prices in advance. Investment occurs too infrequently even to be analyzed as part of the normal decision-making process, and when it does occur, the firm can be expected to rely on bank financing because the firm's inability to maintain a mark-up in excess of costs prevents it from generating the funds internally—except as a windfall from unexpectedly high levels of demand.

The contrast between this Marshallian model and the model of a corporate economy presented earlier is clear, and there seems little point in asking which corresponds more closely to what can be observed in the real world. The one thing that can be said for the Marshallian model is that it can easily be grafted on to the other model by identifying the primary producers in the latter with the proprietary firms which are price takers and the retail distributors with the proprietary firms which are price setters. In this way, the model of the corporate economy can be further developed to include a description of its primary and retail distribution sectors, while the Marshallian model is limited to what it correctly describes—the peripheral sectors of the corporate economy.

**THE CORPORATE ECONOMY AT THE MACRO LEVEL**

One test of how useful this model of the corporate economy might be is how well it can serve as the microeconomic foundation for macrodynamic analysis. Can it account for some of the stylized historical facts of recent years—in particular, the secular rise in prices, together with the uneven expansion of the national economy? This is the exercise that will be carried out in this next section of the paper.

It is necessary to distinguish, at the outset, the types of unforeseeable events, and hence the sources of uncertainty and instability, which originate within the corporate economy as has just been described and the types of unforeseeable events which originate from without. The former fall into two sub-categories: (1) major product innovations (those which lead to a change in the number of k industries), and (2) a change in the market position of the firms within any of those k industries as a result of non-price competition. The second type of unforeseeable event includes a change in either the rate of growth or in the composition of demand for the goods and services purchased by the government (or, for that matter, insofar as the model is an open one of a less than global system, in the rate of growth and composition of net exports). It also includes any other changes in the government's economic policies, such as a less accommodating stance by the central bank or a revision of tax schedules. (Unforeseeable changes in household spending patterns can be assumed not to occur, those patterns being determined entirely by the relevant set of income and price elasticities of demand as real wages and other forms of household income increase over time.) The absence of uncertainty in the model implies that none of the above unforeseeable events occurs, both those which might have their origins within the corporate economy and those which might have their origins without. At the outset, primarily for heuristic
purposes, the analysis will be carried out on the presumption that uncertainty in this sense does not exist. Later this restriction will be relaxed to show what happens when major product innovations, inter-firm competition and changes in government policy are introduced into the model.

In the absence of uncertainty in the sense just defined the corporate economy can be expected to expand along a steady-state growth path that is determined by the growth of real income within the household sector (Pasinetti, 1981). It is the growth of real income within the household sector which, interacting with the various income elasticities of demand, will principally determine the growth rates for each of the k industries—both directly in the case of the h industries producing goods for final consumption and indirectly in the case of the k-h industries producing capital goods and material inputs. It is the growth rates for each of these k industries which, when weighted and added together, will give the aggregate growth rate or rate of steady-state expansion, \( G \). The growth of real income within the household sector will, in turn, depend on the growth of output per worker, \( Z \). While it will make some difference how that income is distributed within the household sector between workers and non-workers if they have different marginal propensities to consume (the latter group including stockholders and other rentiers as well as transfer payment recipients), this complication can be avoided by assuming that, whatever the distribution of income within the household sector, it will remain unchanged over time. On this assumption, the steady-state growth path is determined ultimately by the growth of output per worker.

How to explain the growth of output per worker in the absence of major product innovation is somewhat of a problem, and indeed the problem itself provides an important insight into the nature of the corporate economy. For now it will suffice simply to say that, as part of their non-price competitive strategy, the firms in the capital goods industries continually expand their product line to include new types of equipment which, when purchased by other firms, enable them to reduce their labor technical coefficients and hence their labor–output ratios. In this way, it is possible to postulate a certain rate of technical progress without introducing the further complication, at least at this time, of major product innovations. On this basis it can be assumed that the corporate economy, consisting of the k oligopolistic industries and the n-k other types of industries, is expanding along a steady-state growth path, \( \dot{G} \), which is equal to, and determined by, the growth of output per worker in the aggregate, \( Z \).

Not all n industries will be expanding at the same rate, however. The rate of expansion for any particular industry, \( \dot{g}_j \), will depend on the income elasticity of demand for the final goods and services it either produces directly (if it supplies goods for final consumption) or indirectly (if, alternatively, it supplies capital goods or material inputs). To determine the growth rate for any particular industry, it is necessary to scale the average rate of expansion, \( \dot{G} \), by the income elasticity of demand, \( \eta_j \), for each of the goods and services that enter into final consumption. Thus, for final goods and services with income elasticity of demand greater than 1, the growth of demand over time will be greater than \( \dot{G} \), and for final goods and services with an income elasticity of demand less than 1, the growth of demand will be less than \( \dot{G} \). A final demand growth vector, consisting of the elements \( \dot{G}(\eta_j) \), can then be multiplied by the Leontief inverse, \( (I - A)^{-1} \), to give the rate of expansion, \( \dot{g}_j \), for each of the n industries, both the h industries producing items for final consumption and the n-h industries producing intermediate goods. This rate of expansion \( \dot{g}_j \), is the rate at which the total output of each industry, \( Q_j \), will need to increase, based on the direct and indirect demand for its output, as the demand for all items of final consumption expands over time.

The rate of expansion for each of the n industries, \( \dot{g}_j \), is one of two factors which will then determine the mark-up which needs to be established in each of those same n industries, \( m_j \), if the investment necessary to enable the corporate economy to continue expanding at the steady-state rate is to be financed (Eichner, 1982). The other factor determining the size of the mark-up is the incremental capital–output ratio, \( v_j \), for each of the same n industries. With each industry expanding at a rate equal to \( \dot{g}_j \), plant capacity will need to increase by the same percentage if the growth of output is to keep pace with the growth of demand. With an incremental capital–output ratio equal to \( v_j \), this means that the industry’s outlays on new plant and equipment at any given point in time must be equal to \( \dot{g}_j v_j \), or, dropping the subscripts and superscripts, \( gv \). If investment outlays equal to this amount are to be financed, either concurrently out of cash flow or with payment stretched out over time through an increase in debt service, then the price charged by the industry must exceed the direct costs of production by an amount equal to \( gv \). In other words, the rate of profit, or margin, must be equal to \( gv \). (The margin, \( \mu \), is the same as the average cash flow, ACF, previously identified.) Since the mark-up is equal to the margin, \( \mu \), divided by \( 1 - \mu \), this means that the mark-up, \( m_j \), in each of the n industries must be equal to \( gv/(1-gv) \) if that industry is going to be able to finance the investment which its expansion over time requires.

Note that it makes little difference to the argument whether the investment is financed internally or externally. While a resort to external financing will make it possible to step up investment outlays without immediately increasing the mark-up, the advantage is only a temporary one. If the external debt is to be serviced, the mark-up will in
time need to be the same as it would if the investment were being financed concurrently out of cash flow. It is just that the industry will have gained some time before it need achieve that size mark-up. However, offsetting the time gained by relying on external financing is the fact that the industry will have to obtain the approval of one or more financial institutions for its investment plans, thus reducing the freedom of action by the firms in that industry.

The point is that, with the economy expanding at a certain constant rate, it is the growth rate for each of the individual industries, g, together with the incremental capital-output ratios for each of those same industries, v, that will determine the size of the required mark-up, m. This is true, with continuous expansion over time, irrespective of how the accompanying investment is to be financed, whether internally from cash flow or externally through an increase in debt. If competitive forces, such as those usually assumed in the orthodox theory, preclude an industry from achieving that size mark-up, then one of the necessary conditions for continuous expansion over time will not be met. This point goes far toward explaining why the type of economic system represented by the orthodox theory has evolved into the corporate economy (Eichner, 1969; Chandler, 1977). A mark-up equal to zero in any of the n industries is consistent only with a non-expanding industry. While it is possible for some industries to fall within this category, and indeed even to go through a period of absolute decline, this cannot be true of most industries—not if the system as a whole is to continue expanding. In other words, the orthodox model is incompatible, at the microeconomic level, with a continuously expanding economy even if one assumes—however unrealistically—that all investment is being financed externally through the 'savings' of the household sector. With a zero mark-up, an expanding industry will be incapable of reproducing itself and growing at the requisite rate in value terms. Expansion can occur, if at all, only through alternating periods of 'boom' and 'bust', the former assuring the necessary financing, as a result of the temporary increase in the mark-up, for the investment that must accompany the expansion and the latter serving to reduce the mark-up to the zero level required by the other long-run equilibrium condition of the model.

With the size of the mark-up, m, for each of the n industries explained, one need only add an explanation of what determines unit labor costs so as to be able to explain what determines the set of relative prices, or price vector, that will need to be established within the expanding system. Unit labor costs, together with the mark-up, will determine the value added per unit of output in each of the n industries, and this value added vector, multiplied by the Leontief inverse, \((I-A)^{-1}\), will yield the required price vector. Unit labor costs will, in turn, depend on two factors: (1) the set of labor technical coefficients for each of the n industries, indicating the quantity of labor inputs (in hours) needed to produce a given amount of output, and (2) the money wage rate. Indeed, the unit labor costs for each of the n industries will simply be the product of these two factors, \(w(l_j)\), where \(w\) is the money wage rate (assumed to be the same for all n industries, although this assumption can easily be relaxed) and \(l_j\) is the labor technical coefficient for each of the n industries. These unit labor costs, in conjunction with the mark-up, \(m_j\), and the Leontief inverse, \((I-A)^{-1}\), are then sufficient to determine the price vector, \(P\), for the corporate economy.

Based on the set of labor coefficients, \(l_j\), it is possible to define a rate of growth of output per worker in each of the n industries, \(z_j\). The rate at which the labor coefficient becomes smaller over time, as the result of technical progress, can be represented by a negative growth rate, and the absolute value of this growth rate (that is, with the sign omitted) is the value of \(z_j\). This rate of growth of output per worker in each of the n industries can then be compared with the growth of output per worker, or the rate of technical progress, within the system as whole, \(Z\), the latter being the weighted sum of the growth of output per worker in each of the n industries, \(z_j\). The rate of technical progress is unlikely to be the same for all industries. This means that some industries will experience above-average rates of growth of output per worker. For these industries, \(z_j - Z\) will be positive and, with the money wage rate the same for all industries, their unit labor costs will be declining relative to the average for the system as a whole. Other industries will experience below-average rates of growth of output per worker. For them, \(z_j - Z\) will be negative and, as a result, their unit labor costs will be increasing relative to the average.

The extent to which each industry's unit labor cost, \(w(l_j)\), are falling or rising relative to the average—depending on whether \(z_j - Z\) is positive or negative—will be the primary factor determining the change in the corporate economy's price vector over time. While a change in the growth rate for any of the n industries, \(g_j\), will also lead to a change in the price vector (due to its effect on the size of the required mark-up), this possibility can be excluded, at least for the moment, by the steady-state expansion being assumed. Different growth rates for each of the n industries may be consistent with a constant rate of expansion for the system as a whole, but a change in any one of those industry growth rates is not. A change in any of the n industries' incremental capital-output ratio, \(v_j\), although it would also affect the size of the required mark-up, is less likely than a change in the industry growth rate; and, unless the change in \(v_j\) was at a constant rate, it, too, would be inconsistent with a steady-state rate of expansion for the economy as a whole. On these grounds, the change in the
corporate economy’s price vector over time can be said to depend primarily on what is happening to each industry’s unit labor costs, based on the growth of output per worker in that industry relative to the average, \( z_j - \bar{Z} \).

Any such change in the corporate economy’s price vector will be an additional factor, besides the growth of household income, in determining the rate of expansion for each of the \( n \) industries, \( \dot{g}_j \). The growth rate for each industry given by \( \eta_j(G) \) will be either boosted or reduced by a factor equal to \( e_j(z_j - \bar{Z}) \), where \( e_j \) is the price elasticity of demand for each of the goods or services produced by the \( n \) industries. This is because \( z_j - \bar{Z} \) will correspond to the change in the industry’s relative price over time, and this change in relative price, together with the price elasticity of demand, will determine the change in relative demand for that industry’s output. With \( z_j - \bar{Z} \) taking a positive value, implying a relative decline over time in both unit labor costs and in the price that will need to be charged, the industry growth rate will be boosted, beyond what it would be from the value of \( \eta_j(G) \) alone (or since \( G \) can be assumed to be equal to \( \bar{Z} \), from the value of \( \eta_j(\bar{Z}) \) alone). Conversely, with \( z_j - \bar{Z} \) taking a negative value, implying a relative increase in unit labor costs and the price that will need to be charged, the industry growth rate will be reduced below what it would otherwise be. How much the industry’s growth rate will be either boosted or reduced will, of course, depend on the price elasticity of demand, \( e_j \). What this means is that the growth rate for each of the \( n \) industries, \( \dot{g}_j \), will depend on not just one but two sets of factors: the relative increase in output per worker, \( z_j - \bar{Z} \), multiplied by the price elasticity of demand, \( e_j \), as well as the increase in output per worker for the industry as a whole, \( \bar{Z} \), multiplied by the industry’s income elasticity of demand, \( \eta_j \). However, since \( \eta_j \) is generally greater than \( e_j \) and \( z_j - \bar{Z} \) is unlikely to exceed \( \bar{Z} \), it follows that the change in relative price—what can be termed the substitution effect—will only modify what is the principal determinant of the industry growth rate, the growth in household income. It is for this reason that the possible substitution effect is introduced only now as a qualification to the earlier argument.

So far only the set of relative prices, or price vector, for the corporate economy has been explained. To derive the set of actual prices for each of the \( n \) industries, \( p_j \), it is necessary to specify and account for the money wage rate, \( w \), as well. That money wage rate serves as the numéraire for the system as a whole, and thus is the basis for converting the set of relative prices into a set of actual prices. Any money wage rate, \( w \), together with a set of labor technical coefficients, \( L \), and a set of required mark-ups \( M \), will be sufficient to produce the value added vector, \( V \). That is, \( V = wL + M \).

This value added vector, in turn, when multiplied by the Leontief inverse, \((I - A)^{-1}\), will produce the vector of actual prices that will need to be established within the corporate economy. The weighted average of these actual prices constitutes the corporate economy’s price level, \( P \).

The link between the money wage rate and the price level can be seen more clearly by transforming the Leontief model of production which has been relied upon up to this point, based on other technical coefficients besides the labor ones, into a vertically integrated model of production in which all the other technical coefficients are replaced by a single labor coefficient for each of the \( h \) industries producing items for final consumption, (Pasinetti, 1980, 1981). This single labor coefficient, \( l' \), represents not just each industry’s direct labor requirements but its indirect labor requirements as well—the labor needed directly and indirectly to produce any material inputs. Since the Leontief inverse is the basis for deriving these vertically integrated labor coefficients, \( l' \) (which, as a group, constitute the \( L' \) vector, as well as the accompanying set of vertically integrated mark-ups, \( m' \) (which, as a group, constitute the \( M' \) vector), it need not otherwise be taken into account. The vector of actual prices which will need to be established within the corporate economy (for the \( h \) industries producing items for final consumption) is simply the product of the wage rate and the vector of vertically integrated labor coefficients plus the vector of vertically integrated mark-ups. That is, \( P = wL' + M' \).

Since the set of vertically integrated labor coefficients, represented by the \( L' \) vector, is determined solely by the prevailing technology while the set of vertically integrated mark-ups, represented by the \( M' \) vector, depends solely on the economy’s rate of expansion (along with the social rate of return on investment, or the inverse of the incremental capital–output ratio in each of the \( n \) industries), it follows that any change in the price level over time will necessarily be due to a change in the money wage rate. More specifically, the growth in the price level will depend on the growth of money wages, \( w \), relative to the average growth of output per worker, \( \bar{Z} \). With money wages increasing more rapidly than the growth of output per worker on the average, the \( n \) industries will need to increase their prices on the average by the difference between the two growth rates if they are to cover the increase in their wage bill. That is, \( \dot{P} = \bar{w} - \bar{Z} \). It is, of course, possible for the growth in money wages to be less than the average growth in output per worker. But in that case, household income will not be increasing at a rate sufficient to maintain the growth in demand for items of final consumption which the steady state expansion of the corporate economy requires. The argument that the growth in the price level depends on the
difference between the growth in money wages and the growth in output per worker is therefore subject to the important qualification that the growth in money wages must be equal to or greater than the growth in output per worker. Otherwise, one of the essential conditions for the steady state expansion of the economy will not be satisfied. This indicates both what can bring the longer secular expansion of the economy to a halt and what is the condition under which a secular rise in the price level can occur.

With the growth of output per worker given once the corporate economy’s steady-state rate of expansion has been determined, it follows that the growth in the price level, \( P \), will vary over time, depending on the growth of money wages, \( \dot{w} \). This raises the question of what determines the growth of money wages. The orthodox theory asserts that it depends on (1) the growth of the money supply, (2) the rate of unemployment or (3) both (as in the arguments made about the ‘natural rate’ of unemployment within the context of a monetarist explanation of inflation). The alternative post-Keynesian explanation is that the growth of money wages depends on the wage norm adopted by trade unions in collective bargaining. The trade unions are assumed to have sufficient power that whatever wage norm they adopt as their own will then determine the growth of money wages within the corporate economy. Indeed, the growth of money wages will be equal to this wage norm plus any ‘wage drift’. Although the rate of unemployment (though not the growth of the money supply) may be one of the factors influencing the wage norm and thus the growth of money wages, the point is that the wage norm is not uniquely determined by any set of economic factors. It depends on a broader set of socio-political factors – and thus can take a wide range of values independently of either the unemployment rate or the growth of output per worker.

This explanation of what determines the growth of money wages, when incorporated into the model of a corporate economy, suggests why such an economy may be susceptible to a secular rise in the price level. According to the model, it is necessary only that the growth of money wages, which are exogenously determined, exceed the growth of output per worker – the difference between the two being the rate of inflation (Weintraub, 1959, 1966). Indeed, the corporate economy would seem to be confronted by a second type of ‘knife-edge’ problem besides the one first pointed out by Harrod (1939, 1948; see also Kregel, 1980). If the growth of money wages, \( \dot{w} \), is less than the growth of output per worker, \( \dot{Z} \), the system’s continuous constant rate of expansion cannot be maintained; if, on the other hand, \( \dot{w} \) is greater than \( \dot{Z} \), a secular rise in the price level cannot be avoided. Only if \( \dot{w} \) should happen to be the same as \( \dot{Z} \) is a steady-state rate of expansion with price stability possible. However, there is nothing in the nature of the corporate economy which would assure this result. With the rate of growth of money wages dependent on wage norms which are determined by socio-political rather than economic factors, the greater likelihood is that \( \dot{w} \) and \( \dot{Z} \) will each take a different value.

**THE CORPORATE ECONOMY WITH UNCERTAINTY**

The model just presented may provide a crucial insight into the nature of the inflationary problem faced by the American and other advanced market economies. However, the condition of steady state expansion which has been imposed, while simplifying the argument considerably, precludes an explanation of the other stylized fact of recent historical experience – the uneven rates of expansion by those same economies over the past several decades. Moreover, the argument may need to be modified once a steady state rate of expansion can no longer be assumed. It is therefore necessary to relax the assumption of a continuous constant rate of expansion by introducing, in succession, each of the three types of unforeseeable events which can be expected to displace a corporate economy from its steady-state growth path. These three types of unforeseeable events as already indicated, are major product innovations, inter-firm competition and changes in government policy. Only after elaborating on the model to include uncertainty in this precisely defined sense will it be possible to see what changes, if any, need to be made in the explanation just offered of what causes the secular rise in the price level within a corporate economy.

Major product innovations will lead to the emergence of entirely new industries, and thus to a change in the number of industries which comprise the corporate economy. If the product innovations occur continuously, they will make each of the \( n \) industries subject to a ‘product life cycle’ of youth, maturity and decline (Ong, 1981; Shapiro, 1981).

An industry, upon first emerging in the wake of a major product innovation (such as the development of railroad transportation, electrically powered motors or computers), will experience a period of rapid expansion during which the industry’s growth rate will exceed that of the economy as a whole as the product it supplies gradually succeeds in displacing an older group of products. The new product will displace the older group of products because of the entirely new uses to which it can be put and/or because of the lower cost at which it now enables an older set of needs to be met. This initial period of rapid growth will be followed by a period of maturity – the onset of which will be marked by the stabilization of market shares among a limited number of firms and during which the industry’s growth rate will more closely approximate that of
the economy as a whole. A final period of decline, during which the growth rate will fall significantly below that for the economy as a whole, perhaps even turning negative with the industry eventually disappearing, will complete the product life cycle and hence the life cycle of the industry itself.

The life cycle of individual industries which follows from recurrent product innovation will, when introduced into the model of a corporate economy, have two consequences of note. First, it means that the growth rate of individual industries—though not necessary of the economy as a whole—can no longer be assumed to be constant over time. Indeed, that growth rate, $g_i$, can be expected to accelerate initially, slow down subsequently and then actually fall corresponding to each industry’s period of youth, maturity and decline. As already implied, this variation in the industry growth rate over time will affect the size of the required mark-up, $m_i$, and hence produce a slight change in the corporate economy’s price vector. It will also, of course, require a change in the rate of investment within the same industries. Still, there would appear to be no reason why these adjustments in the other variables in the system which the variation in $g_i$ over time will necessitate cannot be made without interrupting the continuous constant expansion of the system as a whole. The adjustments in both the size of the mark-up and the rate of investment within individual industries will, after all, be slow and gradual. The second consequence of the recurrent product innovation will be the effect it is likely to have on the nature of inter-firm competition. Indeed, this second consequence follows from the first.

With recurrent product innovation, the megacorp can no longer expect to continue expanding, or even to survive, simply by retaining its share of the market in the industries to which it already belongs. Eventually, unless it succeeds in entering other industries—those which, being relatively new, are growing more rapidly than the economy as a whole and which, moreover, have not yet settled down into a stable oligopolistic pattern with fixed market shares—the megacorp will decline along with the industries in which it remains rooted. The competition among firms which is crucial to the megacorp’s long-term viability is therefore the competition to gain a foothold in the newer, more rapidly growing industries, so that, despite the life cycle of individual industries, the megacorp can continue expanding at the same rate as the economy or better. This competition will add significantly to the climate of uncertainty in which the megacorp, at the micro level, is forced to operate.

The uncertainty for the individual firm within one of the $k$ oligopolistic industries will already be greater than for the industry as a whole. This is because of the possibility that market shares may, in fact, change over time. Adding to the uncertainty faced by the individual firm is the possibly dis-appointing results from other types of investment, both any effort that might be made to reduce costs by replacing obsolete equipment and any effort that might be made to strengthen the firm’s market position through advertising, R & D and similar types of outlays. Not only are the returns from investment difficult to estimate, so, too, are the implicit costs of obtaining additional investment funds by increasing the mark-up within the industry. The long-run price elasticity of industry demand, the probability of entry by other firms and the likelihood of government intervention can only be guessed at. Still, as great as the uncertainty may be for the individual megacorp when it comes to committing itself in the way it must within one of the mature oligopolistic industries to which it already belongs, the uncertainty will be considerably less than that surrounding an effort by that firm to expand into a newer, more rapidly growing industry. This is because a megacorp intent on diversification has no way of knowing how many other firms are planning a similar move. Indeed, it may well be that only some of the firms preparing to enter the industry will be able to obtain the minimal market share they need in order to reach an efficient scale of operation, and this means that the other firms planning to enter the industry will be forced eventually to write off the investment as a loss.

Thus the corporate economy appears quite different from the micro perspective of an individual megacorp faced with the unforeseeable outcome of inter-firm competition—to gain a share of the newer, more rapidly expanding industries if not just to retain its share of the older markets—than it does from the macro perspective of someone viewing the system as a whole. Both the climate of uncertainty in which the individual megacorp finds itself and the stability of the system as a whole are, however, part of the same reality—the inter-firm competition (through investment, not price) being the source of the energy that drives the corporate economy forward along its steady-state growth path. It is just the difference in perspective that accounts for the two opposing views.

The result, so far, of introducing product innovation and inter-firm competition into the model of a corporate economy has been only to approximate more closely the climate of uncertainty in which the megacorp, at the micro level, is forced to operate. The macro model itself remains largely the same. In particular, there appears to be no reason to drop the strong assumption of steady state expansion by the system as a whole. The greater uncertainty surrounding investment when product innovation and inter-firm competition are taken into account can be assumed to be insufficient by itself to produce any systematic cyclical movement in the economy. While investment in the newer industries which have not yet matured into stable oligopolies may be uneven, these industries are likely to
account for too small a share of total investment to cause the economy as a whole to deviate significantly from its steady-state growth path. The failed expectations from other types of investment, meanwhile, are likely to largely offset one another—at least within the oligopolistic sector. To provide a credible explanation for the uneven rates of expansion actually experienced by the American and other advanced market economies, it is therefore necessary to introduce a third type of unforeseeable event—a change in government policy. First, however, it is necessary to introduce government itself into the model.

The government can be assumed to purchase a certain portion of the goods entering into final consumption, paying for these items out of its tax revenues plus whatever sums it, like the megacorp, chooses to borrow. There are thus three facets to the government’s fiscal policy: (1) determining the level of the government’s expenditures; (2) establishing one or more tax rates and (3) managing whatever debt has been accumulated. In addition, the government can be assumed to affect, through the open-market operations of the central bank, the growth in reserves by the commercial banking system. The extent to which it is willing to accommodate the need of the banking system for additional reserves is the nub of the government’s monetary policy (Forman, Groves and Eichner, 1982). Either or both of these two types of policy can be used by the government to slow down the economy’s rate of economic expansion. The government can be expected to take this step if it has been persuaded by economists that the reason for the secular rise in the price level is the ‘excess demand’ generated either by too large a budget deficit and/or by too rapid a growth in the money supply. While the accompanying cyclical downturn will have little effect on the price level—the rate of inflation is determined, within the model, by the growth of money wages relative to the growth of output per worker and the cyclical downturn need have no effect on the growth of money wages—it will lead to a fall in real output and employment.

More important, insofar as the megacorp itself is concerned, the politically induced business cycle will add to the climate of uncertainty in which the firm must operate. Now, besides guessing correctly what are the newer, more rapidly growing industries into which it must eventually expand, the megacorp must gauge the impact of the government’s policies. In particular, it must be careful not to confuse a cyclical movement around the trend with a change in the trend itself. If, on the one hand, the megacorp views the slowdown in the economy as just another cyclical movement when in fact it portends a decline in the secular growth rate and, based on this false reading, it continues expanding capacity at the same rate, the megacorp will find itself with more capacity than it would like to have, even taking into account its need for a certain amount of reserve capacity. If, on the other hand, the slowdown is thought to represent a decline in the secular growth rate when in fact it is no more than just another cyclical movement, the megacorp may fail to expand its capacity as rapidly as the growth of industry sales requires. What makes it so difficult for the megacorp to correctly judge the situation is that whether the slowdown is just another cyclical movement or an actual change in trend will depend on what subsequent actions the government takes. If the government acts quickly and decisively to reverse its policies, the upshot will be little more than just another cyclical fluctuation in economic activity. However, if the government hesitates and then only languidly applies the necessary contra-cyclical antidote, the result will be a decline in the secular growth rate.

A similar type of confusion between a cyclical movement and a change in trend can touch off the wage–price inflationary spiral in the first place. As the economy recovers from a cyclical downturn, corporate cash flow can be expected to increase disproportionately. To the megacorp, this disproportionate rise in cash flow will merely offset the disproportionate decline in cash flow will merely offset the disproportionate decline in cash flow which, together with the cyclical downturn, preceded it. However, the trade unions, in coming to the bargaining table to negotiate a new labor contract, may view the disproportionate rise in cash flow as an increase in ‘capital’s share’ at the expense of labor and may insist on a more rapid rise in money wages. In other words, the trade unions may regard the disproportionate rise in cash flow as portending an increase in the secular growth rate while to the megacorp, the increased cash flow is simply part of the investment funds it must generate over the cycle to be assured of adequate financing for its capital budget. If the trade unions nonetheless succeed in obtaining their demands, the megacorp will feel that its unit labor costs have risen by the difference between the newly negotiated growth of money wages and the growth of output per worker, and it will insist on raising its prices accordingly. This rise in prices by megacorps in general will be viewed by the trade unions as reducing the real income of their members and, when the present contract expires, will be used by them as an argument for an even more rapid rise in money wages. In this way, a wage–price inflationary spiral can be touched off without any one party, either the megacorp or the trade unions with which it negotiates, being directly responsible. The underlying cause is a different judgment as to the secular or cyclical nature of the change in the rate of economic expansion.

It is, of course, the government that will have the final word in this matter. Depending on how soon it again changes its policies to slow down the economy, this in a vain effort to bring the inflationary spiral under control, it will produce
either just another cyclical movement around the same trend or a change in the trend itself. Thus by introducing into the model of a corporate economy the third, and final, type of unforeseeable event – a change in government policy – not only is it possible to explain what causes the uneven expansion of advanced market economies over time, it is also possible to shed some further light on the nature of the wage–price inflationary spiral in which those economies find themselves trapped. When the government responds to the inflationary situation created by a rate of growth of money wages in excess of the growth of output per worker by deliberately slowing down the economy, one is likely to observe not just continued inflation but a decline in economic activity as well.

By introducing into the model still other types of unforeseeable events – such as an unusually poor harvest that drives up the price of food or a shift in the terms of trade (through the emergence of OPEC or some similar cartel among primary producers) that increases the cost of imported raw materials – one can point out additional ways in which a wage–price spiral can either be touched off or exacerbated. Whatever the origins or further stimulus to a wage–price spiral, however, the government’s response of slowing down the rate of expansion by the corporate economy will only compound the problem of inflation by creating the problem of a cyclical downturn or, even worse, secular stagnation (Eichner, 1980). In this way, the model of a corporate economy is able to fully account for the recent experience of the American and other advanced market economies.

**NOTES**

5. Strictly speaking, the vintage equipment means that the firm’s average variable costs will rise as its reserve capacity is tapped. However, the rise in average variable costs is likely to be slight and, in any case, will be outweighed by the fall in average fixed costs because of the greater volume.

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