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CENTER DISCUSSION PAPER NO. 63

CAPITAL AND WEALTH IN THE DEVELOPMENT PROCESS

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CAPITAL AND WEALTH IN THE DEVELOPMENT PROCESS

Stephen Hymer and Stephen Resnick*

A government of an underdeveloped country attempting to industrialize via a strategy of private enterprise must create a class of private entrepreneurs businessmen or capitalists to own and manage the industrial capital stock.¹ The essence of the private enterprise system is that a large share of the national wealth is privately owned. A macro decision on the part of state planners to increase capital formation in industry requires, therefore, a set of corresponding micro decisions on the part of the individual wealth owners to include industrial assets in their portfolio.

In the typical underdeveloped countries, the number of people having sufficient capital and sufficient organizational ability to undertake industrial activity is relatively small. A country may well have a large volume of aggregate savings but still be capital scarce with regard to manufacturing if it lacks a sufficient number of individuals with large concentrations of wealth willing and able to finance and manage the large-scale enterprise that characterizes modern industry. It is in this sense that capital accumulation means the development of capitalists.

The purpose of this essay is to examine the behavioral characteristics of the native capitalist in underdeveloped countries with a view to understanding the problems encountered by governments in their efforts to strengthen this sector and induce it to hold industrial assets. Except for

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¹ See, for example, Maurice Dobb, Studies in the Development of Capitalism.

brief side comments we shall not attempt in this essay to analyze the alternative development routes via foreign capital or state enterprise. In addition, we will not discuss in any detail the important problem of how a native capitalist class becomes more efficient in its operation of industrial firms. However, there may be the tendency to "learn-by-accumulating" in the sense that once this class begins seriously to own and manage industrial assets, it becomes more efficient in its entrepreneurial or managerial skills thus building-up, as it were, a stock of industrial talents.

The essay is divided into three sections. The first deals with the investment propensities of the capitalist sector. The second deals with the allocation of capital within the capital sector given the highly imperfect capital markets. A final section raises some questions for empirical research.

I. The Industrial Accumulation Function

In an appendix to his Theory of the Consumption Function, Milton Friedman makes a most interesting suggestion on the nature of economic development.

Perhaps the crucial role that has been assigned to the savings ratio in economic development should be assigned instead to the factors determining the form in which wealth is accumulated: to the investment rather than the savings process, as it were.¹

The analysis of this section attempts to follow this suggestion using a model developed by Tobin in his studies of individual and material wealth propensities in developed countries.² Our aim is to derive an industrial accumulation function relating the real level of investment in industrial assets I^3 to the real level of capitalist consumption C' and the real level of investment in other assets \dot{A} (= the real change in A where A is capitalist investment in other forms of wealth: gold, money, government securities, foreign assets, land, housing, consumer durables, etc.).

$$I = f(C', \dot{A}) \quad (1)$$

In other words, C' and \dot{A} from the point of view of the government, can be regarded as inputs required by the capitalist sector in order to induce it to accumulate a desired level of industrial capital.⁴ To derive this

¹M. Friedman, A Theory of the Consumption Function, p.

²J. Tobin, Manuscript.

³Industrial capital exceeds capitalist investment in industry to the extent that the banking system channels the savings of workers and professionals into business enterprises. We shall, however, avoid a detailed analysis of how the terms and availability of short term credit affect industrial investment decisions, and define K equal to capitalist net worth, keeping in mind that the true level of industrial assets, \hat{K} , exceeds K by some proportion. Since the line of credit available to the firm is typically proportional to total assets or net worth, the variance of $\frac{\hat{K}}{K}$ is likely to be small, and the qualitative error introduced into our analysis by this simplifying assumption is correspondingly small.

⁴Capitalist consumption produces capitalists just as workers consumption is an input required to produce labor power. See P. Schran, "A Model of Communist China" for a model taking into account the relationship between workers consumption and productivity. A similar model for a capitalist country would require an additional equation for capitalist consumption.

function we must analyze how a capitalist decides to allocate his income between savings and consumption and his savings between industrial assets and other assets.

The basic model is derived as follows. By definition the accumulation of industrial wealth is equal to the total income of the capitalist class Y' less its consumption and less its investment in non-industrial assets (in real terms).

$$I = Y' - C' - \dot{A} \quad (2)$$

the income of capitalist in a given period is equal to profits earned in industry plus the return from other assets

$$Y' = r_1 K + r_2 A \quad (3)$$

where r_1 and r_2 are the rates of return on K and A respectively (including capital appreciation). Consumption is some proportion of the level of income according to the capitalist consumption function

$$C' = cY', \quad s' = (1 - c)Y' = sY'. \quad (4)$$

Capitalist holdings of non-industrial assets is some fixed proportion of K according to the capitalist desires for portfolio balance

$$\begin{aligned} A &= \lambda K \quad \text{and} \\ \dot{A} &= \lambda I. \end{aligned} \quad (5)$$

Substituting equations 3 to 5 into 2 yields¹

$$I = \frac{s}{1+\lambda} Y = \frac{s}{1+\lambda} (r_1 K + r_2 A) \quad (6)$$

$$K^* = \frac{I}{K} = \frac{s}{1+\lambda} (r_1 + \lambda r_2). \quad (7)$$

¹We are assuming for simplicity that the values of λ and s are independent of the rates of return on capital. A more complicated model would take into account the relationship between these parameters and yields.

These equations show industrial accumulation as a function of the propensity to save (s), the propensity to invest in industry ($\frac{1}{1+\lambda}$) and the rates of return on capital (r_1 and r_2).¹

The values of the two key behavioral parameters c and λ depend upon the personality characteristics of capitalists--their thriftiness, foresight, conservatism, self restraint, venturesomeness, etc.--(as well as the yields on capital). The rates of return earned by capitalists on investments depend upon their skill in generating productive activity and the degree of help given by the government. Equation 6 when solved for r_1 gives the required rate of profit on industrial capital to induce a target rate of growth

$$r_1 = -\lambda r_2 + \frac{1+\lambda}{s} K^*.$$

In many countries, rapid accumulation of capital is costly because the under-developed capitalist class has a high propensity to consume, a high propensity to invest in unproductive assets, and a low capability of managing manufacturing enterprises.

The importance of s , the propensity to save, is well known and requires no further analysis. Following Friedman's suggestion, we will concentrate our analysis on λ . According to equation 6 and 7 the higher is λ , the lower will be the rate of accumulation of industrial capital if r_1 is greater than r_2 .² (If r_2 is greater than r_1 , the opposite is true.) In general the most interesting cases for analysis are those where r_1 is greater than r_2 and capitalists nonetheless desire to hold non-industrial assets in their portfolio in order to satisfy some objective other than the maximum rate of return such as risk avoidance or status.³

¹If $r_1 = r_2 = r$, then equation (7) simplifies to $K^* = rs$.

² $\frac{dK^*}{d\lambda} = \frac{s(r_2 - r_1)}{(1+\lambda)^2} < 0$ if $r_1 > r_2$.

³See footnote 1 on p. 4.

For example, capitalists will typically not place 100% of their wealth in a risky industrial venture but instead will hold a certain fraction in "safe" low yield securities such as savings accounts, government bonds, or money. As long as capitalists achieve this diversification through investment in local securities little real cost to the country is involved. The money deposited in savings accounts can be channelled back into productive investment provided the financial intermediaries are sufficiently developed (typically not the case in colonial economies). Similarly, the money invested in government bonds can be used by the government to subsidize industry or to finance infrastructure. Appropriate monetary policy and appropriate attention to the development of financial intermediaries can help provide capitalists with a high degree of individual security, i.e., portfolios weighted towards low-risk non-industrial securities, while encouraging investment in industry.¹

The problem in most underdeveloped countries, however, is that the desire for security on the part of capitalists cannot be met locally because of the dangers of inflation and unstable government and thus requires foreign investment for its satisfaction. In order to protect themselves against devaluation and revolution, capitalists want to hold a certain proportion of their wealth in foreign banks or foreign securities. This foreign investment involves a definite real cost of the country in the form of imports foregone and, therefore, slows down the rate of growth of the economy. The government has great diffi-

¹Since $A = \lambda K$ and λ is assumed to be fixed independent of changes in r_1 and r_2 , $K^* = A^*$. A relevant question concerns the expansion of A . If A is the bottleneck to additional real investment (in our fixed portfolio world), then how does the government ΔA to induce the capitalist to hold ΔK ? Here a change in institutional arrangements such as the government's encouragement of a developing financial intermediary sector may provide the necessary assets to satisfy portfolio balance. The attempt to create a private capitalist class should have as its dual the creation and furtherance of banks, insurance companies, etc. See, for example, J. Gurley and E. Shaw, "Financial Aspects of Economic Development," AER, September 1955.

culty counteracting this tendency since the desire to hold foreign assets is an increasing function of wealth and the greater the wealth of the capitalist class the more they will be willing to pay for the opportunity to hold foreign assets. Thus, there is an inherent contradiction between a policy to promote industry and a policy to prevent capital outflow. The growth of industry in a private enterprise economy implies a growth of private wealth and an increased desire to invest abroad. Attempts by the government to block capital outflow will therefore be offset, in part at least, by increasing subterfuges on the part of the private sector to obtain foreign assets. In the extreme case the government may itself have to bear totally the cost of these subterfuges.

Suppose the government is committed to a certain rate of industrial growth and prepared to provide the capitalist sector with whatever subsidization is necessary to achieve it. The required profit rate r_1 , and hence the required subsidy is a function of the target rate of growth and of λ . If capital controls can, in fact, lower λ by increasing the costs of investment, they lower the subsidy required to maintain the desired rate of growth. However, exchange controls may leave λ unaltered or even raise it since they create the expectation of increased control in the future and hence a greater attractiveness to foreign investment. Capital controls can thus create an environment that encourages capital flight in which case their cost, instead of being borne by the capitalist, is passed on to other sectors of the economy as the government increases r_1 , to offset the increase in λ .

Investment in land

One of the most important forms of non-industrial investment by the capitalists of underdeveloped countries is in real estate held for speculative purposes or to satisfy a traditional desire to be a land owner. Since land is

fixed in supply, no productive costs are associated with providing this asset to capitalists who wish a diversified portfolio. The cost to society comes rather from the increased consumption out of the real capital gains made on land speculation and the diversion of managerial talent from other industrial activities towards speculation.

Assume that the capitalist class maintains a fixed ratio between the value of land in his portfolio and the value of industrial capital.

$$A = PT = \lambda_1 K \quad (8)$$

where P is the ratio of the price of land to the price of capital and T is the fixed quantity of land. Since land is fixed in supply, the price of land must rise pari passu with capital accumulation in order to satisfy equation 8. In other words, P^* (the rate of growth of P) must equal K^* and

$$\dot{P}T = \lambda I \quad (9)$$

where $\dot{P}T$ equals real capital gains from capitalist holdings of land.¹

$$\dot{A} = \dot{P}T \quad (10)$$

$$r_2 A = \dot{P}T = \lambda_1 I. \quad (11)$$

Let us now assume that the consumption function of the capitalist class is

$$C' = C_1 Y' + C_2 r_2 A \quad (12)$$

where C_1 and C_2 represent the respective propensities to consume out of income, e.g., $Y' = r_1 K$, and wealth $r_2 A$. The accumulation of industrial wealth is

$$I = Y' - C' \quad (13)$$

¹Basically, the perfect land market we are assuming is like a Rembrandt market where the increased value of the Rembrandt makes the owner "richer" without having to sell the masterpiece. Here the very process of capitalist "investment" in land bids its price up, and we have a pure Pigou effect.

Substituting Equations 11 and 12 into 13 yields

$$I = \frac{s_1 r_1 K}{(1 + c_2 \lambda_1)} \quad (14)$$

$$K^* = \frac{s_1 r_1}{(1 + c_2 \lambda_1)} \quad (15)^1$$

The propensity to invest in land thus slows down the rate of capital accumulation for a given rate of profit and the importance of this factor is greater the higher the propensity to consume.

$$\frac{dK^*}{d\lambda_1} = - \frac{r_1 s_1 c_2}{(1 + c_2 \lambda_1)^2}$$

In this connection it is interesting to note Keynes' observation:

That the world after several millennia of steady individual savings, is so poor as it is in accumulated capital assets, is to be explained, in my opinion, neither by the improvident propensities of mankind, nor even by the destruction of war, but by the high liquidity premiums formerly attached to the ownership of land and now attaching to money.²

The provision of other assets held by capitalists--housing and other durable consumer goods--have a direct cost to the country in terms of foreign exchange and domestic resources. To the extent that industrial capitalists finance housing and durables used by other sectors of the economy, their investment is productive since they add to national income. To the extent the capitalists finance consumer durables used for their own consumption, their investment must be viewed, in terms of the accumulation function, as one of the costs of obtaining industrial assets.

¹Equation 15 parallels precisely the one derived by Tobin in his analysis of the effect of the propensity to hold money on consumption.

²General Theory, p. 242.

II. Imperfect Capital Markets and the Allocation of Capital Within the Capitalist Sector

The models of the previous section dealt with the capitalist sector in aggregate terms. For many purposes it is necessary to recognize explicitly that the national wealth is composed of many separate capitals (or fortunes), that is, of many separate concentrations of wealth each under the control of specific individuals or families. This would not matter if capital markets were perfect and capital moved freely via financial intermediaries from any specific investor to any specific investment. However, in underdeveloped countries capital markets are highly imperfect and there are strong associations between specific capitals and specific enterprises.¹ In many cases, enterprise can

¹The association between a particular firm and a particular capitalist, i.e., a particular concentration of wealth, is strongest in small industrial enterprises but in general tends to hold true for larger firms as well. The small workshop and the small and medium size factory is typically under the strong control of one entrepreneur whose family holds all the equity securities and whose members supply most of the organizational or professional needs. Some entrepreneurs may have several enterprises under their command but seldom will the ownership and management of a single factory be distributed widely. Very large enterprises, if organized along corporate lines can have a diversity in ownership. The corporate form allows wealth owners to spread their capital among several enterprises and allows entrepreneurs to obtain their capital from many sources. This type of organization can only flourish in advanced economies where there are many large firms and broad capital markets.

The correspondence between firms and capitalists can be explained in terms of costs of obtaining information. The net worth of a corporation comprises its physical capital plus its special advantages in technology, marketing, management, etc. The firm can usually borrow from banks and other financial intermediaries a certain proportion of the value of its tangible assets. To borrow on the invisible assets is far more difficult because of the great cost of communicating the value of these advantages to outside creditors. The larger the firm, the larger its record of successful operations, the less its fortunes are tied to particular individuals, the easier it will be able to disseminate relevant information and to obtain willing buyers of its equity securities. A small firm has very limited opportunities to borrow beyond its tangible assets and even a large firm in a country with a narrow capital market might find it costly to sell equity securities.

only grow as fast as their particular owners accumulate personal wealth and can only diversify as fast as their particular owners can acquire the skills of operating in another industry. The rate of return is thus not equalized throughout the economy and some sectors are capital scarce while others have a surplus. Our aim in this section is to analyze the inefficiencies in the allocation of capital that result from separation of capitals and to relate the degree of inefficiency to the rate of growth.¹

In order to highlight the importance of imperfect capital markets we shall assume as a first approximation that capital cannot move at all from one industry to another. Investment in each industry must, therefore, be financed solely out of profits earned in that industry and we assume that the representative firm in the i^{th} industry has its own industrial accumulation function.

$$K_i^* = \frac{s_i}{v_i} (P_i - W_i a_i) = \frac{s_i}{v_i} \pi_i \quad (16)$$

where K_i^* is the rate of capital accumulation of the i^{th} industry, s_i is its savings rate, v_i capital output ratio, P_i its price per unit of output, w_i its wage rate, a_i its labor requirements per unit of output, and π_i its profit per unit of output.

Our goal is to relate these individual industrial accumulation functions to the aggregate industrial accumulation function. It is best to begin by analyzing the theory of prices and profits for a single industry. The assumption of industry specific industrial accumulation functions can be easily seen to yield a theory of price determination closely akin to Marshall's theory of industry

¹Here is an interesting relationship between this sector and our previous model. Here, for example, it will be shown that capitalists must earn quasi-rents in sufficient amounts to induce a required rate of growth. This is similar to the land model where capitalists must earn capital gains on land holdings to induce the required capital formation. In addition, in this section, the slowest growing industry determines the growth of the system but there is an interesting question of what would happen with entry. This, in turn, is not too dissimilar to asking respectively how A expands or having if possible an increase in hectares (T) in our previous models.

equilibrium in the intermediate run for a growing economy. In this theory, prices play a dual role. They are the means for balancing supply and demand and also a "signal" for changes in supply. Figure 1 illustrates how the intermediate run theory is related to short run and long run equilibria. A shift in demand from D^1 to D^2 causes a sharp rise in price -rom \bar{P} to P^1 along a short run inelastic supply curve. This is the theory of price determination in the short run. The rise in price is followed by a gradual fall from P^1 to P^2 to P^3 to P^4 and so on as successive adjustments are made until long run equilibrium is reached when P reaches \bar{P} the normal supply price of the industry.

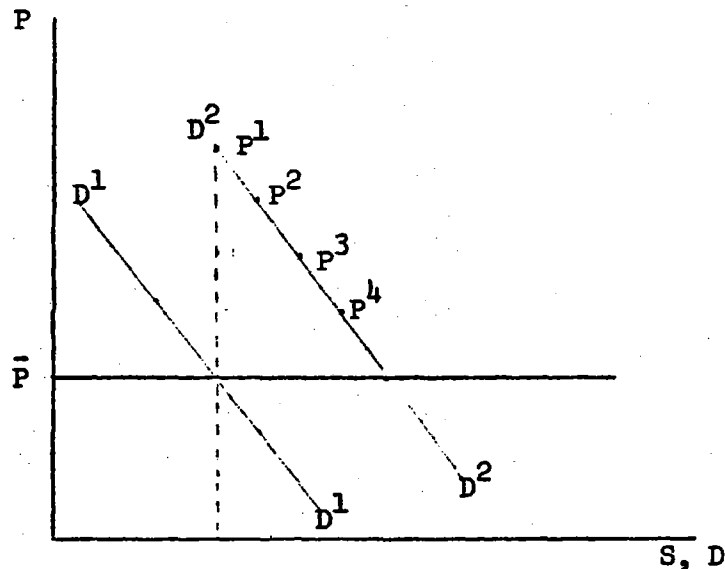


FIGURE 1

Intermediate run price theory is concerned with the path of prices through time which depends upon the reaction function relating the rate of changes in supply, S^* , to the difference between current market price P and normal price (\bar{P}).

$$S^* = r(P - \bar{P}) \quad (17)$$

The higher the discrepancy between current market price and the normal price the greater the profit rate and hence the greater the incentive to expand and

the greater the funds for expansion. Given a once and for all shift in demand, the time path of prices during the adjustment process can be determined by solving the differential equation of the reaction function. In a growing economy, demand is continuously shifting and the system never reaches long run equilibrium but is always in some intermediate equilibrium. The level of prices can therefore be constant, rising, or falling depending upon the rate of expansion of demand relative to the reaction function.

For example, since demand is a function of price and income, the rate of growth of demand (D^*) will be a function of the rate of growth of prices (P^*) and income (Y^*)

$$D^* = e_p P^* + e_y Y^* \quad (18)$$

where e_p and e_y are price and income elasticities. Since the rate of growth of supply must equal the rate of growth of demand

$$r(P - \bar{P}) = e_p P^* + e_y Y^* \quad (19)$$

and

$$P^* = \frac{r}{e_p} [(P - \bar{P}) - \frac{e_y}{r} Y^*] \quad (20)$$

Thus price will rise or fall, i.e. P^* will be positive or negative, according to whether the current market price P exceeds the normal price \bar{P} by less or more than $\frac{e_y}{r} Y^*$ (recall that e_p is a negative number). If the rate of growth remains constant and the elasticities are stable, the system will move towards a constant price which will be a function of the rate of growth of income.

The important point about this model is that prices are a function of the rate of growth of demand since supplies must earn quasi rents or excess profits in sufficient amounts to induce the required rate of growth. From the point of view of a government setting a target rate of growth, an industry (or a capitalist) is efficient or not according to the amount of excess profit it requires to grow in

step with the national plan. Inverting equation 16 shows prices and profit rates required for a given rate of growth

$$P_i = \frac{v_i}{s_i} K_i^* + w_i a_i \quad (21)$$

$$\pi_i = \frac{v_i}{s_i} K_i^* \quad (22)$$

$$r_i = \frac{\pi_i Q_i}{K_i} = \frac{v_i}{s_i} K_i \quad (23)$$

where r_i is the i^{th} industry's profit rate. Alternatively we could determine the level of capitalist consumption as a function of the level of investment.

$$C_i = \frac{c_i}{s_i} I \quad (24)$$

The growth of different industries are interdependent since they are linked in production and consumption and the production of steel output, for example, must keep pace with the production of fabricated metal products while the production of shoes must keep pace with the production of clothing. If industries are related vertically or horizontally such that their growth rates are equal, ($K_i^* = K_j^* = G$), prices must adjust so that the profit rates are proportionate to their savings rates

$$\frac{P_i}{P_j} = \frac{w_i a_i + \frac{v_i}{s_i} G}{w_j a_j + \frac{v_j}{s_j} G} \quad (25)$$

$$\frac{\pi_i}{\pi_j} = \frac{s_j}{s_i} \frac{v_i}{v_j} \quad (26)$$

$$\frac{r_i}{r_j} = \frac{s_j}{s_i} \quad (27)$$

According to this model the profit rates will differ from industry to industry in proportion to differences in productivity and savings rate. Ironically,

the firm with the low propensity to save will earn a higher profit rate. The sluggish firm has, as it were, to be bribed by super profits to keep pace with other firms. The greater the rate of growth the greater the difference in profit rates.

$$r_i - r_j = \left(\frac{1}{s_i} - \frac{1}{s_j} \right) G$$

This sets up a tension in the system which can be removed in capital flows into the industry with the low savings rate.¹ If capital moved perfectly (freely), the rate of return would be equalized for both industries and the over all rate of profit (and rate of consumption) required to achieve a target rate of growth would be lower than in the case of imperfect markets. The relevant equations in this case would be:

$$r = r_i = r_j = \frac{G}{s_i(1-\lambda) + s_j\lambda} = \frac{G}{s_i + (s_j - s_i)\lambda}$$

where λ is the share of the j^{th} wealth-holder (assumed to have the higher savings rate) in the i^{th} industry. Unlike the previous case, the capital of each individual can be spread over both industries. Through time λ will rise because of the faster growth of wealth of individuals arising from this higher savings rate. The profit rate required to achieve a target rate of growth will thus decline. In other words, the average savings rate, which always lies between the savings rate of the two wealth holders will rise and approach the savings rate of the most aggressive capitalist instead of being continuously dragged down by the sluggish one.²

¹Another adjustment process which we shall not spell out in detail occurs through changing prices. As equation 25 shows, relative prices are a function of the rate of growth. A change in relative prices will dampen demand for the bottleneck sector where price is rising and hence relieve pressure. The strength of this process will depend upon elasticities of substitutes.

²The usual two-sector models of growth (FINDLAY, UZAWA, etc.) assume that profit rates are equalized between industries and, in this way, "solve" the problem of relative price determination. This is not a realistic assumption and it would be interesting to test the sensitivity of their results to this particular assumption.

In practice, capital markets are neither completely perfect nor completely imperfect. The strength and speed of the secondary adjustment process to equalize the rate of returns between industries depends upon the effectiveness of financial intermediaries and the quality of business enterprise. These are likely to develop through time via a process of learning by doing. The ability to move capital into the places where it is scarce is limited by the industry specific nature of entrepreneurial skills. It is the nature of entrepreneurs to seek out those industries in which they have an advantage and to accumulate through time a stock of specialized knowledge which gives them a quasi monopoly position in their specialized activity and quasi rents as income.¹ These skills are to some extent transferable but time is required for entrepreneurs to learn of opportunities in other industries and to build up the required specialized skills. In general the larger more successful enterprises will have greater flexibility and a higher propensity to diversify into other industries. The more developed the industrial capitalist sector and the more flexible its talents the greater the tendency for competition to equalize the rate of return. In a sense, the test of the industrialization program is its success in developing flexible entrepreneurs. As Hirschman² has pointed out, there is an irreversibility to this process: a bottleneck tends to call forth entrepreneurial talent which may remain after the bottleneck has been broken.

¹See J. Bain, Barriers to New Competition.

²Hirschman, Strategy of Economic Growth.

III. Conclusion

The industrialization program of underdeveloped countries are usually predicated on an infant entrepreneur argument. In the typical case the capitalist sector is not sufficiently productive to generate by itself a profit level consistent with the desired rate of industrial development. Instead, the government attempts hot-house fashion to manufacture businessmen or capitalists. Various government instruments--tariff protection, subsidies, tax credits, infrastructure--are used to raise the price received by the capitalists for his output or to lower the price he pays for his input. These aids, the burden of which falls on the rural population and the urban labor force, can be viewed as an investment in capitalist learning. Industrial development by this strategy is, therefore, a race between the amount of surplus that can be extracted from the rest of the economy and the speed with which capitalists increase their productivity and their productive savings.

Usually, a long and costly process is involved, especially where colonialism frustrated the development of a native bourgeois. The task would be much easier if the capitalist sector could itself produce the goods required for wages, investment, and capital consumption. Manufacturing could then proceed largely on its own steam. Its only trading relationship with the rest of the economy would be to acquire industrial labor, which in the typical underdeveloped countries is in excess supply backed up by a large reserve army, and its major problem would be to improve productivity--a natural consequence of learning by doing. The problem of industrialization, is, however, much more difficult because the goods needed for both investment and consumption cannot be satisfied by the output of the manufacturing sector. In the early stages of industrialization manufacturing enterprises concentrate on consumer goods catering to mass markets--processed food, beverages, tobacco, textiles, etc.--and

must rely on agriculture for raw materials and on the export sector for the imported capital goods used by industry and the sophisticated consumption goods required by high income capitalists. The capitalist sector must produce goods of sufficient quality to induce the rest of the economy to supply the needed inputs for its accumulation and consumption. This means that it is not sufficient for it to merely learn how to produce a few goods with relative efficiency; it must rather learn how to produce a large variety of goods needed by the rest of the economy and to create new goods which act as an incentive to other sectors or as an intermediate good that lowers the costs. Without this dynamic quality of increasing variety and improved adaptation to local needs the problems of creating a high elasticity of supply from rural areas becomes exceedingly difficult.¹ Moreover, the labor required by the capitalist sector is not merely the direct labor required by the manufacturing sector, which is very small, but the indirect requirements of all the supporting services. This includes labor in transportation and distribution connected with urban and rural exchange and the large numbers engaged in a variety of other urban service and manufacturing activities ranging from cigarette and water vendors to small crafts and artisan shops. These workers are functional to the system and not merely a sponge to avoid unemployment. This can be seen in the following simple framework.

$$\frac{L_z}{L_m} = \frac{a_1 Z}{a_2 M}$$

This shows that the ratio of labor in Z--the small scale services and manufactures--to labor in modern manufacturing (L_z/L_m) is equal to the ratio of con-

¹See S. Hymer and S. Resnick, "A Model of the Agrarian Economy," American Economic Review, forthcoming.

sumption of Z to consumption of M weighted by their productivities (a_1 and a_2). Labor productivity in manufacturing is much higher than productivity in Z (i.e., $a_2 < a_1$) and in the early stages of industrialization when production is concentrated on light consumer durables, M is much smaller than Z. Hence L_z is much greater than L_m because of all the washermen, servants, tailors, carpenters needed to meet the demands of capitalist consumption, the demands of industrial workers consumption, and the demands of the people in the Z sector itself. The import of this for industrialization is that the costs of urbanization which can be lessened only by providing a wider variety of goods to replace small scale production or by providing goods which lower the costs of urban living.

These are the problems of industrialization. The important variable in judging the efficiency of a given strategy is the standard of living of the majority of the population during the transition period and after. How much must the rural and urban population bear, how will the burden be distributed, how long will it take? The choice between alternative strategies must be based on an estimate of the costs of subsidizing capitalists--foreign, local or state--relative to the speed with which they learn to improve their efficiency and their innovating ability.

The theoretical explorations of this paper have focused on a number of important features of the national capitalist sector. The paper has had to be speculative because of the lack of empirical studies of key parameters. The fact that government policy is made and debated in the absence of this information suggests that a serious study of the costs of various strategies for industrialization has not been made. We may briefly outline three important avenues of research suggested by the models examined in this paper.

First, there is the need to estimate the consumption function and the portfolio balances of the capitalist sector in order to calculate the requirements of forced industrialization.

Second, it is necessary to estimate the opportunity costs of industrialization by calculating the burden on the rural sector and the urban sector from the demands made upon them by capitalists.

Third, research is needed on the relationship of size to productivity, and on the propensities of capitalists to grow and diversify, and the effect of government policy on the size distribution and industrial composition of firms.

Research into other strategies is also needed. Instead of developing a native bourgeoisie, the government could buy the skills of owning and managing capital from foreign corporations. Just as international trade allows a country to use the production possibilities curve of a foreign nation, direct foreign investment allows a country to use another country's capitalist class for its own development. The comparative cost of the two methods both in the short and long run should be estimated in order to ascertain the appropriate mix.

In general, the advantage of foreign capital is that it comes ready-made. The disadvantage is that it doesn't adapt itself to the environment sufficiently and develop instruments for local searching and decision making. Hence, as much as it is needed in the short run, it is not a sufficient long run strategy.

An interesting line of investigation would be to compare various parameters of capitalist development with those obtaining in socialist states. Since private ownership of industry is not permitted, leakage of profits into

capitalist consumption, land speculation, foreign assets, etc., is avoided. In addition, wages to industrial workers and professionals are typically more restrained. The saving in these regards should be compared to the relative productivity of state vs. private enterprises to determine the net cost or benefit of the different strategies.

Lastly, socialist countries usually organize enterprises on a very large scale and substitute state planning for the decentralized decision making of individual entrepreneurs. Comparison must be made between the difficulties of planning and the difficulties arising from imperfect capital markets as discussed in Section II of this paper. The different forms of business organization used in socialist countries probably also have an important effect on the composition of output, for example, leading to large scale capital intensive production, i.e., heavy industry. The change in output in the small sector resulting from collectivization should also be examined.

We have consciously tried to keep out of this discussion the political dimensions of the various instruments of industrialization--large capital, small capital, foreign capital, state capital. The choice between various strategies obviously cannot be (and is not) made simply on the economic grounds analyzed in this essay.