
PROBLEMS

*Ignorance, Poverty and Economic Backwardness in the Early Stages of European Industrialization: Variations on Alexander Gerschenkron's Grand Theme**

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Introduction

The most intellectually satisfying framework currently available for analyzing the early stages of European industrialization is unquestionably Alexander Gerschenkron's "relative backwardness" hypothesis. This work was Professor Gerschenkron's outstanding scholarly achievement and, with his recent death, it has become his intellectual legacy to our profession. The best way to honour him, however, is not to revere his contribution, but to use it, criticize it and vary the details of its assumptions and modes of application. Only in this way can the full potential of Gerschenkron's insights be realized. This is what Gerschenkron himself advocated when he noted that the study of deviations from his norm of industrialization could lead to a system "more complex but also more illuminating".¹ Thus it is in the spirit of striving to enrich a grand theme that this paper proposes some variations of the relative backwardness framework.

The origin of the relative backwardness hypothesis lies in Gerschenkron's observation that several important characteristics of the initial spurts of industrialization experienced by a number of important European countries were systematically related to their degree of relative backwardness (relative that

* Presented at the 1979 Cliometric Conference held at the University of Chicago. I wish to thank the participants in that conference for their comments and suggestions.

¹ ALEXANDER GERSCHENKRON, *Economic Backwardness in Historical Perspective* (Cambridge: Mass., 1962), p. 364.

is to the country or countries that had already industrialized) at the commencement of these spurts. Furthermore, as industrialization reduced a country's degree of relative backwardness, these characteristics also tended to change so as to resemble more closely those of the advanced countries.

In summary, Gerschenkron argued that a higher degree of relative backwardness was associated with (1) a more rapid early rate of industrialization;² (2) an increasing reliance for industrial finance first on bank loans, and then, as backwardness continued to increase, on state-financing; (3) increasing stress on size in both plant and firm; (4) increasing stress on capital, as opposed to consumption, goods; (5) increasing downward pressure on pre-existing consumption levels; (6) a declining role for agriculture as a source of demand for industrial products and (7) increasing reliance on "powerful ideologies" to justify industrialization.³

Going beyond mere correlation, Gerschenkron argued that these characteristics were causally related to the initial degree of relative backwardness. He argued his case in a way designed, as he put it, to satisfy our sense of "reasoned adequacy."⁴ His approach relies heavily on two interrelated concepts: the "advantages of backwardness" and the "substitutability of prerequisites."

The advantages of backwardness refer principally to the availability of scientific, technological and institutional innovations achieved in the more advanced countries, as well as the potential markets they present for the resources of the backward country. In addition, the advanced countries are a potential source of investment capital. Of course, there may also be some disadvantages of backwardness. Thus, for example, the progress of technology in the advanced countries may destroy as well as create markets for natural resources. Furthermore, beyond some level of backwardness, the factor proportions implicit in further advances in technology may be increasingly unsuited to the endowments of the relatively backward country. Finally, delayed industrialization may result in social and political developments antithetical to industrialization.⁵ Nonetheless, the modernization of some XIXth century European countries, which thereby increased the relative backwardness of other European countries, generally created a growing contrast between actual economic conditions and economic potential in the backward countries. Gerschenkron discussed this situation in terms of an increased ten-

² GERSCHENKRON, *Economics Backwardness*, p. 78.

³ *Economic Backwardness*, pp. 353-4.

⁴ GERSCHENKRON, *Continuity in History and Other Essays* (Cambridge: Mass., 1968), p. 94.

⁵ Among the advantages of backwardness, Gerschenkron emphasized new technology with some mention of "capital cheapening" abroad. (*Economic Backwardness*, p. 155). The disadvantages of backwardness he explicitly discussed refer mainly to the social and political difficulties. (*Economic Backwardness*, pp. 27-8).

sion between reality and possibility.⁶ In slightly different terms, I like to think of it as the creation of new economic opportunities for the backward countries.

Since the backward country has not yet shared in the advances made by relatively advanced countries, the former must lack some of the characteristics, or prerequisites, that permitted the advanced country to industrialize. Thus, if the backward country is to follow suit, it must either obtain, or more likely substitute for, these missing prerequisites. It was Gerschenkron's contention that the nature of these substitutions was causally and systematically related to the degree of preexisting economic backwardness. It was principally the nature of these substitutions which, in turn, were responsible for spurt characteristics 2-7 listed above.

The first, and most crucial, problem in rendering this framework operational lies in the definition of economic backwardness. The concept of backwardness must be defined in such a way that different investigators will consistently agree at least on the backwardness ordering of different countries. Gerschenkron of course realized that there are many different characteristics of a society that can be viewed as partial measures of its level of backwardness. Thus he presents an incomplete list as follows: "levels of output, the degree of technological progress achieved, the skill of the population, the degree of its literacy, (and) the standards of honesty and the time horizon of the entrepreneurs..."⁷ In principle he apparently wanted to combine these, and other, aspects of backwardness into an overall weighted index of backwardness. As I read him, his reason for not attempting to carry out such a task did not lie in theoretical reservations but rested on the impossibility of measuring all these variables and in determining the appropriate weights to be used.⁸

Gerschenkron's willingness to utilize a weighted average of different aspects of backwardness implies a belief that each of these aspects of backwardness had at least roughly the same effect on each of the separate characteristics of industrialization he investigated. This is a very strong assumption. Thus, for example, if low levels of income per se are associated with *rapid* rates of industrialization and a large average plant size while illiteracy per se is associated with *low* rates of industrialization and a large average plant size, then there is no set of weights that can usefully combine these two aspects of backwardness into a single overall index of backwardness.

Having granted the impossibility of ever constructing a weighted cardinal index of backwardness, Gerschenkron saved his system by arguing that the internal rank order, at least for the principal countries of XIXth century Europe, was "virtually identical" regardless of what aspect of backwardness was being

⁶ GERSCHENKRON, *Economic Backwardness*, p. 8.

⁷ *Economic Backwardness*, p. 44.

⁸ *Economic Backwardness*, p. 43.

measured.⁹ The ordering of these countries in terms of their overall backwardness level is therefore independent of the weighting system used. There thus exists a unique ordinal measure of backwardness among these countries. While a cardinal measure no doubt would be preferable, I agree that this approach makes economic backwardness an operational concept, at least for these particular countries. Certainly this approach to the measurement of backwardness has been good enough to allow Gerschenkron and others to achieve impressive insights into the nature of XIXth century European industrialization.

Poverty and Ignorance as Components of Backwardness

Despite the undoubted usefulness of this way of measuring backwardness, however, I do believe that it is also worthwhile to consider alternative measures. In particular I would argue that there is much to be said for decomposing backwardness into ignorance and poverty. In principle, the former refers to low per capita levels of human capital and the latter to low per capita levels of output or income. In practice, attempts to measure ignorance (or its opposite) have to rely on partial measures, such as literacy rates or estimates of per capita stocks of formal schooling. The hope is that these partial measures, in turn, are highly correlated with human capital stocks broadly defined.

My rationale for this division of the concept of economic backwardness is also twofold. First, I believe that the consequences of ignorance on the speed and character of a country's industrialization were, and still are, different from the consequences of poverty. Indeed, with regard to some of the characteristics of industrialization spurts I believe that the consequences of ignorance per se were virtually the opposite of the consequences of poverty per se. Secondly, there can be no doubt that there existed a number of nineteenth-century European countries, not listed by Gerschenkron,¹⁰ whose ranking would vary considerably depending on whether ignorance or poverty is used to measure backwardness. At the time of their initial industrialization spurt the Scandinavian countries and Scotland unquestionably ranked much higher in terms of human capital endowments than in terms of income per capita. The opposite was the case with regard to a number of Southern and Eastern European countries. Their income rankings were above their human capital rankings. I need hardly point out that the speed and nature (or even the existence or non-existence) of early industrialization spurts differed dramatically between these two groups of countries.

⁹ *Economic Backwardness*, p. 44.

¹⁰ Gerschenkron listed France, Germany, Austria, Italy and Russia in increasing order of backwardness. This order, he claimed, was "roughly identical" regardless of what measure of backwardness was used. (*Economic Backwardness*, p. 44). At least in terms of literacy, however, Germany was less backward than France.

Either of the two conditions listed above is sufficient to lend some support to my proposed disaggregation and the combination of the two makes a particularly strong case. To the extent that the consequences of ignorance differ significantly from those of poverty, the degree to which a country's ranking differed on the two scales will also have a major impact on the predicted nature of its industrialization experience.

Before passing on to other matters, it should be noted that ignorance and poverty are not truly separate measures of backwardness. Since human capital is a factor of production with, under virtually all historical circumstances, at least a positive average and probably a positive marginal productivity, higher levels of human capital will *ceteris paribus* result in higher levels of per capita income. Thus, in principle, it might be better to use some measure of the non-human capital determinants of output and income instead of output or income itself. Such a measure presumably would be some combination of the stock of physical capital, the level of applied technology, endowments of "valuable"¹¹ natural resources and the efficiency of various types of institutions, including the government and the legal code. Since I have no way of directly measuring these variables, however, I will simply note that when a country's poverty ranking differs from its ignorance ranking, it can be expected that there will be an even greater difference between its ignorance ranking and a ranking based on the non-human capital determinants of income.

This discussion has raised the point that one of the determinants of income levels is a country's endowments of valuable natural resources. It is certainly possible to doubt the wisdom of employing the lack of usable natural resources as even a partial measure of economic backwardness. To the extent backwardness implies a tension between the actual and the potential, or the existence of economic opportunities, poverty resulting solely from a lack of valuable natural resources should obviously be excluded from the measurement of backwardness. The difficulty in doing so, of course, lies in distinguishing between a lack of resources and a failure to exploit potentially valuable resources. Thus, for example, the increase in the potential value of Swedish forests and Danish meadows after 1850, resulting from the sharp increase in the British demand for timber and hearty breakfasts respectively, is obvious mainly because these opportunities were so quickly and thoroughly exploited. Finding and measuring unexploited opportunities is a very different matter. The same problem, of course, exists in measuring the *extent* to which a potentially valuable resource has been exploited.

In addition to these problems concerning the exact meaning and measure-

¹¹ "Valuable" in this context does not refer to the capitalized rental value of the resource but to its contribution to GNP. Thus, for example, in 1850 large quantities of high-priced Swedish cropland had a fertility level no higher than land considered unfit for cultivation in most of the United States.

ment of backwardness, there is the question of which phenomena to examine in the light of a country's degree of backwardness. In his writings Gerschenkron repeatedly stressed that he was studying industrialization, not economic growth in general. In particular, whenever quantitative measures were used, it was industrial and mining output, not GNP, that he relied on. Speaking more generally, however, I believe that it is not simply industry but the whole modern sector that is of interest; that is, the output of all types of goods and services using up-to-date technology and modern forms of economic organization. Of course, for the XIXth century, industrial production is by far the best available measure of modern economic activity. It is unquestionably a better measure than is GNP, just as the rate of growth of industrial output is a better measure of economic modernization than is the rate of growth of GNP. On the other hand, occasional problems do turn up. Thus, for example, the modern, co-operative dairy-oriented Danish agriculture that emerged towards the end of the XIXth century was certainly as "modern" in terms of technology and organization as was most industry. Indeed, the Danish co-operative dairy farm has legitimately been labeled an industrial enterprise.¹² The same thing can be said of Norwegian fishing and whaling and Swedish timbering. Only to a limited and varying extent, however, did these modern economic activities enter the industrial statistics.

A related question is the propriety of using nation states as the unit of analysis. Economic modernization was certainly as much a regional as a national phenomena. Nonetheless, Gerschenkron, with the concurrence of at least some of his critics,¹³ relied on national units of observation. Aside from the obvious statistical advantages, it is clear that the course of industrial development was to a considerable extent determined by government policies and national institutions. Nonetheless, when rates of industrialization are compared, at least for relatively brief periods, using national units of observation will tend to favour small countries. Thus, for example, if the Scandinavian countries were combined, their joint industrialization spurt would be somewhat slower and longer than the average of their individual spurts.

In his writings, Gerschenkron distinguished between autochthonous and derived industrialization. He applied the latter term to countries whose economies were "intertwined" and largely dependent on some other, larger and more advanced country. His specific example was Denmark. These countries were then dismissed from the analysis.¹⁴ Thus the fact that the economic modernization of some countries was largely triggered by a response to new demand in a more advanced country apparently excludes them from the Ger-

¹² HARALD WESTERGAARD, *Economic Development in Denmark* (Oxford, 1922), p. 71.

¹³ RONDO CAMERON, *Banking in the Early Stages of Industrialization* (New York, 1967), p. 5.

¹⁴ GERSCHENKRON, *Continuity in History*, p. 81.

schenkronian framework. For some reason that is unclear at least to me, exports to less advanced regions or countries do not cause the same difficulty. In any case, I believe it is a major shortcoming of any general theory of European industrialization to have to exclude cases where exports to more developed countries played a major or even a dominant role. It could be argued, for example, that the exclusion should apply at least to Norway and Sweden as well as to Denmark.

In terms of the "advantages of backwardness", the development of markets for a country's resources or products resulting from the modernization of some other country is not materially different from the development abroad of new technologies, economic institutions or pools of investment capital. Furthermore, I believe that the striking thing about the Scandinavian countries in the second half of the nineteenth century was not the high degree of their integration into the British economy but their large supplies of human capital, especially relative to their income levels. It was these high levels of human capital that allowed them to effectively and rapidly exploit the market opportunities that resulted from British development. They were not the only ones to have such opportunities. They just took particularly good advantage of them.

Industrial Spurts and the Distinction Between Poverty and Ignorance

I will now discuss the consequences on the various relationships Gerschenkron found between relative backwardness and the nature of industrial spurts that follow from the division of backwardness into poverty and ignorance. Gerschenkron's first observation was that the rate of a country's initial industrial spurt tended to be directly related to that country's pre-spurt level of relative backwardness. Gerschenkron explains this relationship by pointing to the "advantages of backwardness": the availability of new technology and institutions that can be adopted, foreign sources of capital that can be tapped and the availability of higher income foreign markets.

If backwardness is divided into poverty and ignorance it seems clear that these advantages derive overwhelmingly from aspects of backwardness other than a lack of human capital. It is backwardness in terms of low supplies of physical capital and unutilized technology that can most easily be compensated for. Shortages of human capital are much more of a problem. Indeed I believe that for a given level of per capita income, the lower the per capita stock of human capital the *slower* the rate of industrialization is likely to be. The basis for this assertion lies in two circumstances: one applying to the short run and one to the long run. First, to take rapid advantage of economic opportunities as they present themselves a country will in all probability need a labour force that has a high degree of both geographic and occupational mobility. A literate labor force, particularly if it has had

some previous contacts with markets and possibly with handicraft manufacturing, is much more likely to display such mobility than is an illiterate work force. By the same token, a literate population is more likely to generate an elastic supply of financial services (see below), and to produce an adequate supply of entrepreneurs. Finally, the rate of new technology will be an increasing function, not only of the available supply of previously unutilized technological opportunities, but also of the local supply of scientific and technical personnel available to adapt foreign science and technology to local conditions.

Over the longer run, rapid industrialization requires a rapid accumulation of both physical and human capital. To a considerable degree, the optimal growth mix of the two will depend on the mix existing before the industrial spurt. A country with a pre-existing disproportionately large supply of human capital can concentrate relatively more heavily on the accumulation of physical capital than can a country that started with relatively small supplies of human capital. This difference is important because the actual production, or importation, of physical capital is less troublesome than is the production or importation of human capital. As to the domestic production of human capital, it becomes increasingly difficult the greater is the extent to which the new generation's educational level is designed to exceed the level of its parents.¹⁵ In addition, the very rapid accumulation of human capital inevitably requires that education and training be provided for workers well beyond school age. This is inefficient, both because these persons will have less time left in the work force during which the training can be used and because the opportunity cost of their foregone labour is likely to exceed that of school children.

The alternative of importation is, of course, available both with regard to human and physical capital. Per unit, however, it tends to be a lot costlier for human than for physical capital. This is the case whether the importation of human capital consists of bringing in foreign experts or of exporting local students. Both processes are very expensive and troublesome as the OPEC, and other, countries are currently discovering.

This analysis thus predicts that while low incomes should indeed be associated with a rapid initial industrial spurt (if one occurs), for a given level of income, low levels of human capital will tend to slow down the rate of that spurt.

Probably the most famous of Gerschenkron's conclusions about the nature of industrialization is that concerning the sources of industrial finance. In the relatively most advanced countries, or at least those first to industrialize, such finance was supplied primarily from individual holdings of liquid assets later supplemented primarily by the retained earnings of industrial enterprises. In

¹⁵ DONALD O. PARSONS, "Intergenerational Wealth Transfers and Educational Decisions of Male Youth," *Quarterly Journal of Economics*, 89 (Nov. 1975), 603-17.

somewhat more backward countries, banks were the key source, once again supplemented by retained industrial earnings as growth proceeded. In even more backward countries, the government was originally the principal source of such financing, later supplemented by banks and retained earnings.¹⁶

Gerschenkron rationalized the observed substitution of banks for private financing as a response to the absence of large hoards of private liquid wealth together with a need for larger and larger initial lumps of capital. The need for these larger lumps resulted from several factors including increasing economies of scale, the need for larger "development blocks" to initiate industrialization and, perhaps, an increasing reliance on large scale production units to conserve on industrial labour and entrepreneurship in more backward countries. Thus, both the increasing need for lumps of capital and the diminishing availability of privately held hoards militated for increased reliance on banks and other financial institutions. At even greater levels of backwardness, however, Gerschenkron argued that a lack of popular acceptance of bank instruments and generally low levels of business ethics precluded reliance on banks. Thus, it became necessary for the government to become the principal initial source of industrial finance, if a successful spurt was to occur.¹⁷

I believe this analysis can be clarified by putting it in terms of the supply and demand for bank credit. In such a presentation, with the emphasis being on inter-country comparisons, the horizontal axis can best be visualized as being denominated in terms of the ratio of the banking system's total assets, or total lending, to GNP (or national income) and the vertical axis being denominated in terms of (real) interest rates. Obviously, in a given country the role of the banking system will be greater the further to the right the intersection of demand and supply curves occurs.

On this basis the position of a given country's demand curve for bank financing (as a % of GNP) will be further to the right the greater the optimal size of industrial plants and the greater the gap between optimal and actual levels of physical capital, and will be further to the left the greater the supply of private wealth hoards. All three of these factors can be expected to result in a rightward shift of the demand curve as backwardness in terms of income increases. In addition, to the extent that banks, or at least industrial banks, were a means of economizing on scarce entrepreneurial talent, backwardness in terms of human capital can also be expected to result in a somewhat greater demand for bank financing. The principal effect of a shortage of human capital, however, is to shift the supply curve of bank credit (again measured as a % of GNP) to the left. This is the case because an illiterate and generally uneducated population is especially unlikely to utilize paper money, much less hold bank deposits or other financial instruments. This reluctance will,

¹⁶ GERSCHENKRON, *Economic Backwardness*, p. 365.

¹⁷ *Economic Backwardness*, pp. 19-20.

of course, reduce the ability of the banking system to provide substantial levels of financing. As backwardness, in these terms, gets severe enough, little or no domestic bank financing will be available despite an extremely high level of demand for it. Some capital imports might be attracted by the resulting high interest rates but state guarantees or other government action was usually needed to obtain a large scale flow of foreign capital. Thus, if industrialization was to occur under such circumstances, the government had to step in to facilitate capital imports and to raise capital through taxation, domestic borrowing or inflationary money creation.

It should be noted that it is mainly absolute, not relative, backwardness in terms of human capital (illiteracy, lack of schooling and a lack of acquaintance with financial instruments) that impedes the development of the financial sector. In terms of XIXth century European industrialization this distinction does not matter too much because the later industrializers (Austria, Italy and Russia — but not Scandinavia) were both relatively and absolutely backwards in terms of human capital. That is, compared with Scotland, Belgium, Switzerland, Germany and France, their human capital levels were probably as low or lower when they had their industrial spurts as had been the case with their predecessors. England was clearly an exception, but then bank financing had played only a limited role in industrial financing during England's original spurt.

Historically the supply of financial services has also been seriously constrained in a number of countries by government regulations. Such restrictive policies, however, have tended to reflect popular views towards banks and paper money. Popular attitudes in this sphere, in turn, were usually a combined result of the extent and of the nature of the population's past experiences with banks and paper money and of the general level of education. Thus, I would argue that governments in poor countries were less likely to be unduly restrictive in their banking policies if their populations were relatively well educated and had had some, non-disastrous, experience with banks and paper money.

The upshot of this discussion is a prediction that banks, and the financial sector in general, should have played a particularly important role in the industrialization of those countries that were very backwards in terms of income but less backwards, or not backwards at all, in terms of human capital. On the other hand, the government can be expected to have played a particularly important initial role in those countries that suffered from great backwardness in terms of human capital.

Gerschenkron claimed that increasing backwardness was associated with large scale of firms and plants as well as a greater (physical) capital intensity in production. To some extent these phenomena were the result of the simple fact that technological advance required larger and larger units of production (increasing economies of scale). Thus, late-comers were virtually certain to

start with larger plant sizes than had their predecessors when the latter's industrialization had begun. More important, however, is the fact that large and (physical) capital intensive units of production and organization economized on human capital. Thus countries that were especially backward in terms of human capital, for a given level of poverty, can be expected to have opted for larger and more capital intensive units. The appropriate dynamic response to such a situation, of course, would be to accumulate human capital, rapidly whether through domestic production (i.e. education) or importation. As noted above, however, this tended to be a slow and expensive process. Such a country thus faced a long delay, and high per unit costs, in accumulating the desired level of human capital. In the meantime, this disequilibrium situation could be partly compensated for by relying on otherwise excessively large and capital intensive production units.

Gerschenkron also noted that more backward countries tended to put relatively more emphasis on capital, as opposed to consumption, goods within the industrial sector. Part of this can be attributed to the fact that the more rapid the rate of industrial growth, the more machinery and equipment has to be accumulated, combined with the fact that the more backward (poorer) a country was the more rapidly it tended to industrialize. That is, greater backwardness generated more high return investment opportunities and therefore a higher rate of capital accumulation. Machinery and equipment, however, can be imported as well as produced domestically. Thus, the extent to which there existed export opportunities for industrial consumer goods that could finance imports of machinery and equipment certainly played a large role in determining the relative emphasis on capital and consumer goods in production. It is not clear, however, that the relative extent of such opportunities had very much to do with either type of backwardness. A failure of agriculture to modernize simultaneously with the industrial spurt, of course, will also make it more difficult to finance the importation of capital goods with agricultural exports. Such a failure, in turn, is likely to be associated with an illiterate and uneducated peasantry — i.e., ignorance.

The next Gerschenkronian observation was that industrialization tended to involve greater downward pressure on the population's consumption level the greater was the initial degree of backwardness. Once again, it can be argued that the greater the availability of economic opportunities, the higher the resulting rate of return on national savings. I believe, however, that the principal reason for this phenomena was that the government was more likely to play a direct role in raising capital in backward countries, particularly if the backwardness was greatest in terms of human capital. Because of their ability to use force, governments are in a position to generate levels of national savings higher than those market institutions can achieve. Furthermore, because of its lower efficiency in raising, allocating and utilizing resources it also seems likely that a government-directed industrialization spurt will require more

resources (i.e. domestic savings or capital imports) to achieve a given rate of growth. Finally a failure of agriculture to increase its productivity in step with the growth of industry, a likely result of a low initial endowment of human capital, will make it more difficult to mobilize resources for investment without severely squeezing the rural population's consumption levels. Thus the greater consumption squeeze during early industrialization observed by Gerschenkron in very backward countries is especially likely to have occurred in countries whose backwardness was more pronounced in human capital than in income terms. It was especially in such countries that the government played a prominent role and where agricultural productivity and income failed to grow rapidly concurrently with industrialization.

Clearly Gerschenkron's observation that the agricultural sector's contribution to industrialization as a consumer of industrial goods was smaller the greater the degree of backwardness, is largely a result of the failure of agricultural incomes to increase rapidly. Thus, once again, this phenomenon should be more prominent in countries whose backwardness was more pronounced in terms of human capital than in terms of income. The same can be said for Gerschenkron's final observation that stronger ideologies accompanied industrialization in more backward countries. Strong ideologies, of course, were used to persuade a reluctant population to accept government actions that conflicted with their personal interests or preferences. An economy basically operating with free markets and private institutions will have relatively little need for such strong ideologies. Their usefulness in terms of persuading people to alter their actions in a free market economy is very limited. Since a major role for the government and an unusually large reduction in pre-existing consumption levels were especially associated with backwardness in human capital terms, strong ideologies can also be expected to have been associated with that variety of backwardness.

Quantitative Evidence

Given the shortage and limited cross-country comparability of quantitative evidence on European human capital stocks in the XIXth century, as well as the rather sweeping and speculative nature of the foregoing discussion, the following quantitative evaluation regrettably, but inevitably, will be preliminary and sketchy.

Table 1, largely based on the work of Carlo Cipolla, contains an attempt to order a large number of European countries on the basis of their adult literacy (the ability to read) rates in 1850. The basic premiss of this ordering is that adult literacy rates were a good index of per capita human capital stocks in the middle of the XIXth century.

Naturally data of this type for such an early period involves a substantial element of uncertainty. I am, however, convinced of the accuracy not only of the three basic literacy groups, but also of most of the intragroup rankings.

TABLE 1

LITERACY AND INCOME IN EUROPE

Adult Literacy Ordering	(General Ranking)	GNP Per Capita (U.S. Dollars, 1960 prices)	
GROUP I	1850	1913	1970
(literacy above 70%)			
Sweden (90%)	Very low	680	3,411
Denmark	Low	862	2,716
Norway	Low	749	3,495
Switzerland	High	964	2,661
Germany (80%)	Medium to Low	743	2,873 ¹
Scotland	High	965 ²	2,284 ²
Finland	Very low	520	2,797
Holland	High	754	3,334
GROUP II			
(literacy above 50%)			
England and Wales (70%)	Very high	965 ²	2,284 ²
Belgium	High	894	2,654
France (60%)	Medium	689	3,029
Austria (Cisleithania)	Medium	498 ³	2,168
GROUP III			
(literacy less than 50%)			
Spain (25%)	Medium to low	367	1,179
Italy (20%-25%)	Low	441	1,694
Hungary	Low	498 ³	1,851
Romania	Very low	336	1,360
Portugal	Low	292	1,247
Serbia	Very low (1860)	284	1,182 ⁴
Greece	Very low	322	1,769
Bulgaria	Very low	263	1,755
Russian Empire (5%-10%)	Very low	326	1,887 ⁵

Notes: ¹ West Germany. ² United Kingdom. ³ Austria-Hungary. ⁴ Yugoslavia. ⁵ USSR.

Source: Literacy: CARLO CIPOLLA, *Literacy and Development in the West* (Baltimore, 1969, pp. 113-5.

Income: 1850, My judgments are based on a general reading of the literature on European economic history. Specific references tending to support various of my general rankings include the following: B. R. MITCHELL, *European Historical Statistics, 1750-1970* (New York, 1975), sections on national incomes and on populations, WILLIAM COLE and PHYLLIS DEANE, "The Growth of National Incomes," in HROTHGAR HABAKKUK and MICHAEL POSTAN, eds., *The Cambridge Economic History of Europe, Vol. VI, Part. I* (Cambridge, 1965), p. 27, ALAN MILWARD and S.B. SAUL, *The Economic Development of Continental Europe (Totowa, New Jersey, 1973)*, pp. 367, 464-5, 488-9 and 531-2, O. JOHANSSON, *The Gross Domestic Product of Sweden* (Stockholm, 1967), tables 58 and 60. A. GERSCHENKRON, *Economic Backwardness in Historical Perspective* (Cambridge, 1962), pp. 44, JOEL MOKYR, *Industrialization in the Low Countries*, (New Haven, 1976), p. 261, and R. CAMERON, *Banking in the Early Stages of Development* (New York, 1967), pp. 94 and 101.

1913 and 1970, PAUL BAIROCH, "Europe's Gross National Product: 1800-1975," *The Journal of European Economic History* (5), Fall 1976, pp. 286 and 307. Bairoch also presents estimates of per capita GNP's going back to 1800. In my view, however, these numbers have too many uncertainties to be used.

There can be little doubt that Sweden was at the head of the literacy league and that Norway, Denmark, Germany and Switzerland were all well above the 30% illiteracy mark. Similarly, in the middle group, England and Wales at approximately 1/3 adult illiteracy certainly had a lead over Belgium, France and Austria (minus Hungary). Similarly, in the lowest group, Italy, Spain and Hungary were certainly near the top, with the Russian Empire somewhere near the bottom. Cipolla also estimated that Europe without Russia had an overall adult illiteracy rate of about 45-50%. Including Russia, he estimates the rate at 55-60%.¹⁸

In those cases where it is possible to make reasonable estimates of the percentage of elementary school age children actually attending school, the literacy ordering is almost totally confirmed.¹⁹ Schooling is, of course, a better measure of human capital stocks than is literacy because literacy achieved outside of school is likely to be accompanied by lesser amounts of other knowledge, such as writing and arithmetic. It is also of interest to know how many years the average student attended school. On the other hand, the stock of schooling existing in 1850 was not the result of school attendance in that year but of school attendance during approximately the previous half century. Unfortunately such data for the first half of the XIXth century is not readily available. It does seem reasonable, however, in view of the relatively recent (a few decades at most) existence of anything resembling universal, elementary education in the most literate countries, and the fact that these most literate countries had long stressed literacy as a religious duty, that their lead was somewhat larger in terms of literacy than in terms of per capita formal schooling.

To the casual observer, what is perhaps the most striking aspect of this literacy ranking is that it corresponds so well to the post World War II income ranking of these countries. Of the top literacy countries of 1850, only Scotland is not one of the top per capita income countries today. In addition, France, Belgium and Russia rank somewhat higher in current income than they did in 1850 literacy. The per capita incomes of Spain and Portugal, on the other hand, have probably fallen slightly behind some countries who were even more illiterate than they in 1850. Overall, however, literacy in 1850 is an amazingly good predictor of per capita income in the 1970s.

It is absolutely clear, however, that relative literacy in 1850 is not a particularly good predictor of relative income in 1850. The problem is getting sufficiently reliable per capita income data to determine just how bad such predictions would be. Certainly any attempt to quantify per capita incomes in 1850 constitutes, at best, an exercise in spurious accuracy. Indeed, even for countries such as Sweden for whom carefully prepared numbers are available

¹⁸ CARLO CIPOLLA, *Literacy and Development in the West* (Baltimore, 1969), pp. 113-5.

¹⁹ These calculations were based on the school enrolment and population data contained in B.R. MITCHELL, *European Historical Statistics, 1750-1970* (New York, 1975).

back to 1861, there is undoubtedly a tendency to underestimate the value of agricultural output. Despite these difficulties, however, I believe we know which countries in 1850 were rich, which were poor and which were in between. My best judgment on this question is contained in Table I.

While it may be possible to quibble over the details of my per capita income and literacy rankings for 1850, the general pattern seems unassailable. England and Wales certainly had the highest per capita GNP in Europe in 1850, but were only in the middle literacy group. The other income leaders, Holland, Belgium, Switzerland and Scotland, came from both the high and the medium literacy groups while Austria (without Hungary) and France probably were in both the middle income and the middle literacy groups. The most striking point, however, is that a number of high literacy countries (Scandinavia, Finland and Germany) were low in income. Quite likely per capita incomes of some of these countries were as low, or even lower, than the per capita incomes of the most prosperous of the low literacy countries (e.g. Spain and Italy).

As expected, by 1913, the picture seems more reasonable. As a group, it was unquestionably the poor, high literacy countries that grew the fastest. Even Finland, the odd man out in this group, probably kept pace with the high income countries as a group. Except for rapidly growing Switzerland, all the high income, high literacy countries grew at a more modest pace than the poor, high literacy countries. As for the low literacy countries, this group's growth rate was clearly slower than that of the others, with Russia, Romania and Italy probably doing least badly.²⁰

Reversing the perspective, we can inquire what, if any, changes occurred, in the human capital or literacy ordering between 1850 and 1914. In fact, the ranking on a literacy basis was virtually the same in 1914 as it had been in 1850. Of course, there had been a general advance in literacy. The principal result of this was a reduction in the spread among the high and moderately literate countries and an increase in the spread among the low literacy countries. Russia appears to have been a major gainer within the last group.

By 1913, it is also possible to calculate an approximate measure of the relative stock of formal schooling for most of these countries. Such a calculation results in these countries falling into three general groups. The high schooling group includes Sweden, Norway, Denmark, Germany, France, Scotland, Switzerland, Cisleithania, the Netherlands and England and Wales. The

²⁰ Sources generally supporting these conclusions include SIMON KUZNETS, "Quantitative Aspects of the Economic Growth of Nations, Part I," *Economic Development and Cultural Change*, Vol. V, No. 1, October 1956, p. 15 and WILLIAM COLE and PHYLLIS DEANE, "The Growth of National Incomes," in HROTHGAR HABAKKUK and MICHAEL POSTAN, eds., *The Cambridge Economic History of Europe, Vol. VI, Part I* (Cambridge, 1965), p. 26.

last two bring up the rear in this category. A second, intermediate group, is led by Belgium, followed by Spain, Italy and Hungary. Although sufficient data was not available on Russia, what evidence there is does suggest that she was at the lower end of this group or just below it. A final, low schooling group was lead by Bulgaria and also included Finland, Portugal, Romania and Serbia.²¹

The unexpected inclusion of Finland in the low schooling group requires some further comment.²² Her very high literacy rate, combined with low schooling levels, indicates that much education was still going on in the home, even after 1900. The implication of this is that literacy rates tend to overestimate, and per capita schooling levels tend to underestimate, Finnish human capital stocks. This result seems to accord well with the observation that Finnish per capita GNP in 1913 was low relative to the country's literacy level but high relative to the per capita stock of formal schooling.

Two conclusions emerge from this discussion. First, the substantial divergence between the ranking of European countries in terms of human capital and in terms of per capita GNP that existed in 1850 has been more or less continually declining ever since. Secondly, this decline has overwhelmingly been the result of a re-structuring of the per capita GNP ranking, making it conform very closely to the original human capital ranking.

As was pointed out above, however, Gerschenkron's principal concern was with industrial growth, not per capita GNP. Even my somewhat more general concern with the modern economic sector by no means corresponds directly with per capita GNP growth. Of course, in the long run, say fifty years following the start of rapid modernization or industrialization, per capita GNP growth and the rate of growth of modern economic activity are likely to correspond fairly closely. If we are concerned with the beginnings of industrialization, or with the nature of "industrialization spurts", however, per capita GNP is not very useful. Thus, it seems reasonable also to look at this group of countries explicitly in terms of their industrialization, or modernization, spurts.

To begin this discussion, I will limit myself to those spurts mentioned

²¹ This index was constructed from data in MITCHELL, *European Historical Statistics*. School enrolments in 1910, 1900, 1890, and 1880 were summed and divided by population in 1913. When data for all the years were not available, neighbouring years or extrapolation were used. For this, and other (migration, accuracy of data, etc.) reasons, these results are only approximations. In view of the huge differences between the results for the three basic groups, however, I have no doubts about the group each country belongs in.

²² The low per capita stock of schooling in Finland was entirely the result of low enrolments in formal primary schools. Per capita enrolments in secondary schools and universities were at levels that would have placed Finland in the highly schooled group of countries. See MITCHELL, *European Historical Statistics*, pp. 20, 754, and 772.

by Gerschenkron. The top literacy group of 1850 contains two countries, Sweden (very poor) and Germany (poor), that Gerschenkron credited with very impressive industrial spurts. Although, to my knowledge, Gerschenkron only mentioned Swedish industrialization in an aside, he does credit this country with the fastest XIXth century European industrial spurt.²³ Scotland presumably experienced an industrial spurt as part of the "original" British industrialization. The middle literacy group, in addition to the original industrializer, England and Wales, also includes France, which had a spurt that was almost simultaneous with, but slower than, that in Germany and Austria (Cisleithania) which had a good deal of industrialization but no spurt (or a "spurt that failed").²⁴ The low literacy group includes Italy, with a delayed and unexpectedly slow spurt, Bulgaria, with some industrialization, but no spurt, and Russia, with Gerschenkron's classic government directed and financed spurt "under conditions of extreme backwardness".

At least some of the other countries can also be classified by the nature, or absence, of their spurts. As noted above, Gerschenkron disqualifies Denmark from his model on the grounds that it was too tightly tied to the British economy. I believe, however, that the agricultural revolution experienced in Denmark during the 1880s constituted at least a modernization spurt. To the transformation of agriculture can be added a 7% growth rate of industrial production during the period 1890-97.²⁵

Norway, although possibly enjoying a slightly higher, and also growing, level of per capita income, cannot be said to have had an industrial spurt before 1900. The opportunities associated with the large scale introduction of electrical technology into industry around the turn of the century, however, were eagerly grasped by the Norwegians (with the help of some prominent Swedish bankers and industrialists and with ample supplies of foreign capital).²⁶ It does not seem unreasonable to label these developments an "industrial spurt".

Among the highly and moderately literate countries, only Holland, Switzerland and Belgium remain unaccounted for. Of these, Holland was a high income, high literacy country that did not experience any period of really rapid industrialization. It had prospered as much, or more, than any other country on the basis of pre-industrial technology, with a heavy emphasis on commercial services and intensive agriculture. Its response to the new opportunities was a relatively slow, balanced adoption of new technology. As a result, while

²³ GERSCHENKRON, *Economic Backwardness*, p. 78.

²⁴ See, GERSCHENKRON, *An Economic Spurt that Failed* (Princeton, 1977).

²⁵ A MILWARD and S.B. SAUL, *The Economic Development of Continental Europe* (Totowa, 1973), p. 511.

²⁶ See OLLE GASSLANDER, *History of Stockholms Enskilda Bank to 1914* (Stockholm, 1962), Chps. XIX and XXIV.

remaining among the high income countries, Holland's relative income position unquestionably declined.

Belgium and Switzerland, on the other hand, had already experienced substantial amounts of industrialization before 1850. By then "they were among the most industrialized countries in Europe".²⁷ As a result, they had achieved, and continued to maintain, positions among the European income elite.

Of the low income, low literacy countries not discussed by Gerschenkron, it seems fair to say that none of them experienced a serious industrial spurt before World War I. While some of them experienced more industrialization and modernization than others, none were able to parlay "the advantages of backwardness" into rapid industrialization.

The experiences of some of these countries deserve to be more carefully scrutinized in terms of the distinction between ignorance and poverty. The first country where such a contrast between ignorance and poverty is of interest is Scotland. Scotland's industrial revolution came shortly after that of England, but it was more rapid. As a result, the originally much poorer northern part of Britain was reasonably close to income parity by 1850.²⁸ The most striking aspect of this performance is that while pre-industrial Scotland was much poorer than pre-industrial England, in terms of per capita levels of literacy, education and scientific and technical achievements and manpower, Scotland, despite the primitive Highlands, was ahead. Indeed, a case can be made that England's industrialization was facilitated by the importation of human capital from its poverty stricken neighbour. Of course this movement of human capital and technology was facilitated by a common language and by political unity.

Aside from its great speed, the most interesting aspect of Scottish industrialization and modernization is the critical role played by the banking system. Unquestionably, the Scottish banking system was relatively larger and more efficient than its English counterpart. This superiority of the Scottish banking system was the joint product of a greater demand for bank financing, resulting from a relative absence of private liquid wealth holdings, a greater supply of bank financing, resulting from greater public confidence in bank instruments, and, finally, less restrictive government regulation. At least relative to England, the lack of government restriction of the Scottish banking system seems to have been largely an historical accident. It must also be granted that the Scottish banks were in a position to exploit the English by relying on specie held in London for the bulk of their reserves.²⁹

²⁷ MILWARD and SAUL, *Economic Development*, p. 464.

²⁸ CAMERON, *Banking*, p. 94 and S.G.E. LYTHE and J. BUTY, *An Economic History of Scotland* (Glasgow, 1975), p. 106.

²⁹ S.G. CHECKLAND, *Scottish Banking: A History, 1695-1973* (Glasgow, 1975), pp. 193-5, 381-4.

According to most observers, including Gerschenkron, rapid industrialization commenced at roughly the same time, during the early 1850's, in France and Germany. Unquestionably the rate of industrialization was faster in Germany. This contrast of course has been a favourite topic of economic historians for almost a century. Inevitably some things must also be said about it here.

In 1850 France almost certainly enjoyed a somewhat higher per capital level of income than did Germany. Germany, on the other hand, was substantially ahead of France in terms of human capital, at least if literacy is used as the measure of human capital stocks. Compared to the previously industrialized countries, Great Britain, Belgium and Switzerland, France was clearly behind all of them in terms of income, and behind Great Britain and Switzerland in terms of literacy, while Germany lagged only in terms of income.

Since Germany initially had a lower level of income but a higher level of human capital (or at least literacy) than France, my approach *certis paribus* predicts a more rapid rate of industrialization for Germany. It would be silly however, to maintain that all of the factors affecting the relative rate of industrialization in the two countries are encompassed in such a model. At least two popular explanations for France's slower rate of industrialization, the difference in coal supplies and the differing wisdom of government policies, have little or nothing to do with the relative backwardness approach. On the other hand, a number of other commonly presented explanations for France's lag are related to a shortage of human capital. Such is the case for the undoubted weakness of the French financial system, the inelasticity of supply of industrial labour in France, the slow rate of growth of productivity in French agriculture, the alleged short-comings of French entrepreneurs, as well as the weaknesses of French technical and scientific education and research.³⁰

Some additional remarks are in order concerning other characteristics of the industrial spurts in France and Germany. The most obvious Gerschenkronian characteristic that differed sharply between the two countries was the role of the banks. Germany is usually presented as the classic case of the banking system making a major contribution to industrialization, while France is usually thought of as the exact opposite. To some degree, the failure of the French banks can be attributed to unduly restrictive government policies and German success attributed to unusually attractive domestic investment opportunities. On the other hand, government policies toward banks usually reflect the degree of acceptance of banks and bank instruments by the general population. In addition, the greater literacy of the German population, and their greater willingness to substitute bank instruments for specie, certainly helped the German banks serve the economy.

As for the other characteristics of industrial spurts under various degrees of backwardness, I am unable to say very much. Indeed whether the government

³⁰ GERSCHENKRON, *Economic Backwardness*, pp. 11-12, 19, 23 and 65.

played a larger role in France or in Germany, whether there was more downward pressure on consumption levels in France than in Germany or whether German nationalism was a "stronger" ideology than was French St. Simo-nism are all matters subject to dispute.

It does seem likely, however, that plants and firms were on average larger in Germany than in France and that German industry specialized more on capital goods than did French industry. I believe, however, that these phenomena were the result of Germany's natural resource endowments, not her degree of backwardness. The varying degree of economies of scale in various industries and the extent to which different resources are suited to the production of capital or consumption goods were the principal determinants. Thus, my previous conclusion that greater supplies of human capital should have resulted in less emphasis on large scale plant and firm does not concern me in this case because the conditions that yield that result (a need to conserve on entrepreneurial talent and disciplined industrial labour) apply more to France than they do to Germany.

The Scandinavian countries all experienced important periods of industrialization, or at least economic modernization, and income growth before World War I. Sweden had the highest rate of growth of per capita income in Europe between 1860 and World War I and Denmark had the highest rate of growth of total GNP over the same period.³¹ As noted above, Sweden also had the most rapid industrial spurt identified by Gerschenkron.

The exact degree of Sweden's relative backwardness in terms of income of course will vary somewhat depending on what year is taken as the start of rapid modernization or industrial spurring. Swedish economic historians generally choose 1850 or 1870 as the starting point, while Gerschenkron was particularly impressed by the rate of industrialization between 1888 and 1896.³² Sweden's per capita GNP was approximately the same percentage of that of Europe's industrial leaders in 1890 as it had been in 1850 or 1870, but relative to other unindustrialized countries her position had improved. With regard to human capital, Sweden was not the least bit backward relative to the industrial leaders at any point after 1850.

As I would predict for a country with a high degree of backwardness in terms of per capita income and no backwardness in terms of human capital, Swedish industrialization was extremely rapid, with the banking system playing a key role. In addition, Swedish industrialization was not marked by any particular emphasis on large scale in plant or firm, by an especially large role for the government, by any particular emphasis on capital goods, by a sharp re-

³¹ W. COLE and P. DEANNE, "The Growth of National Incomes", in H. J. HABAKKUK and M. POSTAN, eds., *The Cambridge Economic History of Europe*, Vol. IV, Part I (Cambridge, 1965), p. 26.

³² GERSCHENKRON, *Economic Backwardness*, p. 78.

duction in pre-existing consumption levels, by reliance on a "strong" ideology or by a failure of agriculture to support industrialization. All of these features, which Gerschenkron associated with backwardness in general, I associate with ignorance.

Denmark and Norway were similar to Sweden in terms of human capital endowments but may have had somewhat higher income levels throughout the 1850-1913 period. Compared to the European leaders in industrialization, they trailed in terms of income but not in terms of human capital. Their spurts of industrialization, or modernization in Denmark's case, were somewhat less rapid than that in Sweden. While the role of the commercial banks was distinctly smaller in Norway and Denmark than in Sweden, their overall financial systems played even larger roles than did the overall Swedish financial system.³³ The greater role of savings banks and mortgage institutions, both of which tend to be associated with agricultural and other non strictly industrial investments, in Denmark and Norway compared with Sweden, explains this situation.³⁴ In regard to the other characteristics of their spurts, the experience of Denmark and Norway were very similar to that of Sweden.

Austria-Hungary, Italy and Bulgaria all shared several characteristics. First of all, throughout the period under review, these three countries were substantially backward both in terms of income and in terms of human capital stocks. (Austria-Hungary was less backward than Italy which was less backward than Bulgaria). In addition, while they all experienced some degree of industrialization and economic modernization, they all either failed to have a Gerschenkronian spurt (Austria-Hungary and Bulgaria) or had a delayed and disappointingly slow one (Italy)³⁵ In both the Austria-Hungarian and the Italian cases, Gerschenkron credits much of the industrialization that did occur to the efforts of investment banks. To a very considerable extent these banks were of foreign origin and under foreign control.³⁶

Gerschenkron blamed the failure, or disappointingly slow pace, of industrialization in these countries on a combination of inaction and unwise action on the part of the various governments. I believe that this contention is correct, at least in the following sense: the substantial economic opportunities for rapid industrialization that these countries had open to them as a result of their relatively low incomes (unexploited modern technology, potential foreign markets, foreign supplies of capital, etc.) could not be rapidly or fully exploited by relying solely, or even largely, on market forces because these countries were also suffering from low per capita stocks of human capital. Rapid ad-

³³ L.G. SANDBERG, "Banking and Economic Growth in Sweden Before World War I," *The Journal of Economic History*, 38 (Sept. 1978), pp. 675-8.

³⁴ "Banking and Economic Growth", pp. 676-9.

³⁵ GERSCHENKRON, *Economic Backwardness*, p. 363.

³⁶ *Economic Backwardness*, pp. 87-8 and GERSCHENKRON, *Spurt that Failed*, p. 47.

vance, therefore, depended on strong, and well advised, government action. I need hardly add that such strong government action would have been very costly in terms of a sharp, if temporary, reduction in current consumption levels.

Russia, of course, is the classic example of a country that did generate a rapid industrial spurt in the face of a great shortage of human capital by relying heavily on government action. At the time of its initial spurt in the 1880's, Russia was close to the bottom in Europe both in terms of income and literacy. This was true despite the fact that illiteracy in Russia was probably declining faster than in much of Southern Europe.³⁷ Thus, only strong government action could overcome the lack of human capital and, even so, the rates of industrialization and modernization could not match those achieved in Scandinavia and Germany.³⁸

Conclusion

This review of European experience with industrialization in the XIXth century gives at least provisional support to my contention that Gerschenkron's relative backwardness hypothesis can be enriched by dividing backwardness into the separate concepts of ignorance and poverty. In summary, my conclusion is that relatively low levels of per capita income were associated with the development of opportunities for rapid industrialization and economic modernization. To the extent that low incomes were the result of an absence of usable natural resources, such a shortage, of course, did not represent an opportunity. Generally speaking, however, industrialization, income growth and technical advance in the leading countries tended to increase the value of resources located in the backward areas.

The ability rapidly and effectively to exploit these opportunities, however, was inhibited by a lack of human capital. This constraint was an especially serious drag on rapid economic modernization or industrialization because both the rapid domestic production of and the large scale importation of human capital are very inefficient, at least compared to the production or importation of physical capital. To alleviate such a human capital bottleneck required "substituting" with generally less efficient alternatives. The most powerful such substitutions invariably required government action. The government could partially substitute for the missing human capital needed for an efficient fi-

³⁷ CIPOLLA, *Literacy and Development*, p. 93.

³⁸ This conclusion requires some *ceteris paribus* assumptions. In particular it requires that the varying rates of industrialization in these countries were not to any substantial degree the result of the varying suitability of their natural resource endowments to the technological and market opportunities that developed in concert with their industrial spurts. I believe this to be the case.

nancial system, for a missing supply of workers eager to work in industry, and for a lack of entrepreneurs, as well as a lack of willingness by private persons to save and invest. Such government action, however, was likely to result in a very substantial reduction in general consumption levels, defended, of course, by some very strong ideology. The need for a major reduction in consumption levels came from several sources. First of all, the economy was simultaneously substituting physical for human capital and engaging in expensive (and inefficient) programmes rapidly to increase human capital stocks through production and importation. Secondly, the lack of pre-existing human capital made it very likely that productivity was stagnating in the nonindustrial sectors. Resources for industrialization, therefore, had to come largely out of pre-existing income levels. Finally, the government itself was likely to introduce major allocative inefficiencies into the economy both through its taxing and through its expenditure policies.

