Long-Term Trends in Profitability: The Recovery of World War II

by

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INTRODUCTION

It has become accepted doctrine among economists that the rate of profit in the United States has declined since the mid-1960s. What is less a matter of agreement is whether this decline represents a stage in a long-term secular decline. In a recent article, Dumenil, Glick, and Rangel (1987) reviewed the existing empirical evidence on this topic and found that, independent of variation in the definition of the rate of profit, any series extending back to 1929 reveals a stable or increasing trend. Although two periods of serious decline exist (after World War I and in the late 1960s), they are connected by a "leap forward" during World War II. In fact, in any measure which does not subtract taxes from profit, World War II coincides with a considerable restoration of the rate of profit. This is an important anomaly for Marxists who predict a long-term declining tendency, yet it has never been addressed in the empirical literature on this topic.

There is no doubt that a restoration of the rate of profit discovered in the 1940s questions the relevance of Marx's famous thesis of a falling tendency of the rate of profit in capitalist economies. Certainly when Marx discussed the tendency of the rate of profit he acknowledged the important role of countertendencies. However, one would not expect the counter tendencies which Marx discussed to have such a concentrated impact over such a short span of time.

The purpose of the present study is to investigate more carefully this leap forward in profitability. In a first part, we will fully explore the statistical characteristics of the leap forward. Specifically, we will compare the leap forward with earlier and future fluctuations and trends in profitability (an effort will be made, in spite of the deficiencies of the data, to cover a period of 120 years). We will further determine whether the leap forward is invariant to the choice of the definition of the rate of profit or whether it can be explained by a specific choice of statistical categories. A second part will consider whether the leap forward is the expression of changes in the relative price of fixed capital, or a variation in the workweek of capital. The final part will explore whether the leap occured in specific industries, or whether it was a general feature of the economy. In the conclusion we will discuss a number of further alternative explanations.

Any analysis of the World War II period will be plagued by a lack of accurate data. In what follows we will draw on a variety of sources in order to fill in gaps and to check our calculations. The most reliable data come from the National Income and Products Accounts (NIPA, B.E.A. 1986(a)). These data are available since 1929 and stocks of capital from the Bureau of Economic Analysis (BEA, B.E.A. 1986(b)) since 1925. Unfortunately, NIPA does not allow a sectorial disaggretation for the years prior to World War II (with the exception of the broad decompositions between

Manufacturing and Nonmanufacturing industries). NIPA data for the whole economy begins in 1929. This makes a comparison between the 1920s and the post depression years impossible, since 1929, on the eve of the crash, was not necessarily representative of the decade of the 1920s. For these reasons we also utilize data from the IRS Source Book which compile balance sheets and income statements for corporations back to 1925 (with some changing definitions). Concerning longer historical trends, it is necessary to resort to specific series available from authoritative studies such as that of Raymond Goldsmith (GOLDSMITH R.W. 1955) for the capital stock, and Robert Gordon (GORDON R. 1986) for Gross National Product. The technical description of the series used is given in an appendix together with a list of the figures.

I - HISTORICAL TRENDS

The remarkable and sustained recovery during the 1940s is truly an anomaly when compared with the historical trend. In order to illustrate this phenomenon, section A will consider the long-term trend in the rate of profit since 1869. Section B then decomposes this rate of profit into the share of profits in total income and the output to capital ratio (what we will call the productivity of capital). A third section will compare our long-term profit rate series with the same rate of profit variable for an overlap of years, as a check on the accuracy of our data. Finally, we will consider the impact of taxation for these years.

A - THE RATE OF PROFIT SINCE 1869

In a previous article (DUMÉNIL G., GLICK M., RANGEL J. 1987) we reviewed the long-run studies of profitability and found those of Mage and Gillman to be the longest to date. Mage begins his profit rate series at the turn of the century. Although Gillman reports data back to the 1880s, he studies only the manufacturing sector and his data displays a large number of missing years. Recently published data now allow for the calculation of the rate of profit since 1869. To our knowledge, this is the first presentation of profit rate data for such a comprehensive span of years. Unfortunately, due to the lack of detailed data, our long-term measure, like Gillman and Mage, must utilize a broad definition of the rate of profit. Our profit variable includes all the income elements except wages. In particular, indirect business taxes and corporate profit taxes are included. The unit of analysis (total economy) also includes a number of components such as income of nonprofit institutions, other private businesses (rental income of persons), etc., which should ideally be deducted. Similar computations for more recent years show that the inclusion of these components does not affect the trend. However, we provide a correction for the wage equivalent of

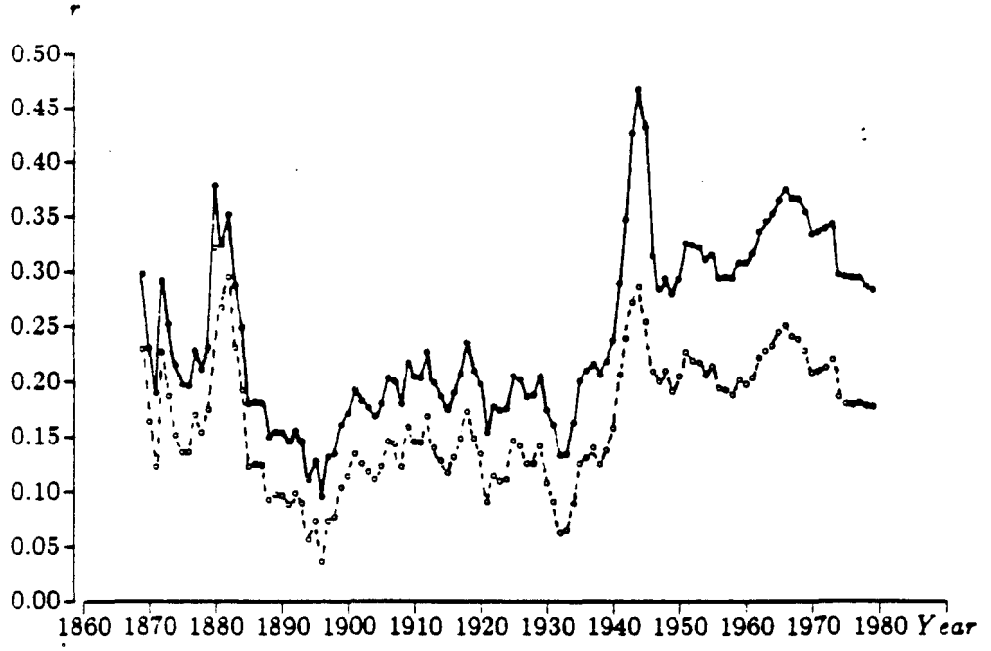

Figure 1 - The Rate of Profit (with Wage-equivalent) GNP (•) and Private NNP (○) (1869-1983)

the self-employed (see appendix), since their diminishing number represent a more important bias in these measurements.

The gross national product (GNP) is available from a recent study by Gordon (GORDON R. 1986). From this series we also compute "Private Net National Product" (private NNP). Income created by the Government is deducted from GNP, as well as depreciation. The stock of capital is from Goldsmith (GOLDSMITH R.W. 1955 and GOLDSMITH R.W. 1985). In the early years the increasing salarisation of workers was a crucial element in the transformations of distribution. We "correct" for this phenomenon in the manner explained in the appendix to DUMÉNIL G., LÉVY D. 1988.

The results of this computation are presented in figure 1. The difference in the trend of the two measures of the rate of profit, especially after World War II, is the effect of the increasing weight of the depreciation of fixed capital and the income generated by the state. Therefore, the ratio built with Private NNP (○) is probably more significant.

Figure 1 reveals that in the late 19th century, the rate of profit expresses strong oscillations. The peak around 1880 is related to a boom in GNP (see DUMÉNIL G., LÉVY D. 1988, figure 1). The rate of profit then plunges into the "depression" of the 1890s. From the turn of the century to the Great Depression, the trend in profitability

is flat. It is interesting to note that the decade of the 1920s does not correspond to a surge in profitability, as has been often contended, but instead to a rather low plateau, below the average of the previous period. Following the depression, the "leap forward" occurs which motivates our present investigation. After World War II, profitability reaches new heights. The features (the 1960s bulge and the decline) of this later period are well-known. The "leap forward" is an obvious exceptional event when viewed from the long-run perspective of figure 1.

In both cases, the World War II leap forward appears as an unprecedented recovery, and the high levels are maintained for more than 20 years, indicating that this recovery is not the expression of higher levels of capacity utilization.

B - THE SHARE OF PROFITS IN NATIONAL INCOME AND THE PRODUCTIVITY OF CAPITAL

In order to gain further insight in the puzzling occurence of the leap, it is often helpful to decompose the rate of profit as the product of the share of profits and the productivity of capital:

$$Profit\ rate = \frac{Profits}{Output} \times \frac{Output}{Capital}$$

The results of this decomposition are presented in figures 2 and 3. The definitions are those used in figure 1.

Figure 2 shows that the long-term trend in the profit share is upward. This corresponds with Marx's prediction of a long-term rising rate of surplus value. In addition, it is clear that the fluctuations in the rate of profit are mainly the result of fluctuations in the profit share. The movement of the profit share explains about one half of the leap forward. Figure 3 shows that the second half of the leap forward can be attributed to changes in the productivity of capital. Productivity decreased steadily, in spite of important fluctuations, until World War I, again in concert with Marx's hypothesis. A timid recovery was initiated during the 1920s and, then, the leap upward occured (from about .45 to .55) during the war.

C - THE RATE OF PROFIT SINCE THE LATE 1920s

In order to check the reliability of our previous long-run measure of the rate of profit, we compare it in this section with data from the National Accounts for the overlap period of 1929-1983. We define our NIPA rate of profit in the following way:

$$\frac{Net\ Profits\ before\ all\ Taxes}{Stock\ of\ Fixed\ Capital\ Net\ of\ Depreciation}$$

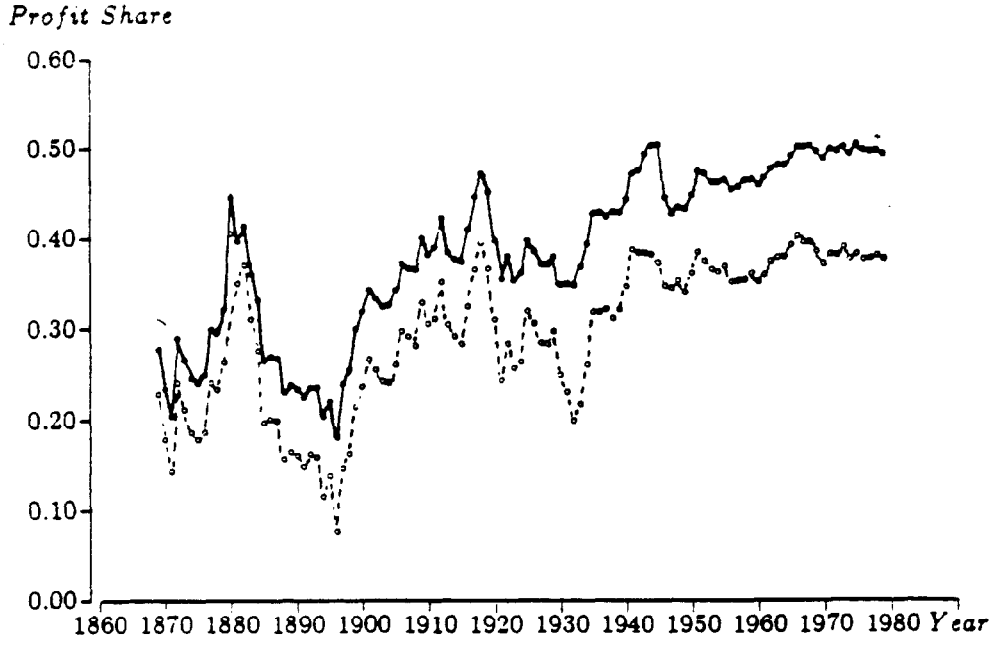

Figure 2 - The Share of Profits (with Wage-equivalent) GNP (•) and Private NNP (○) (1869-1983)

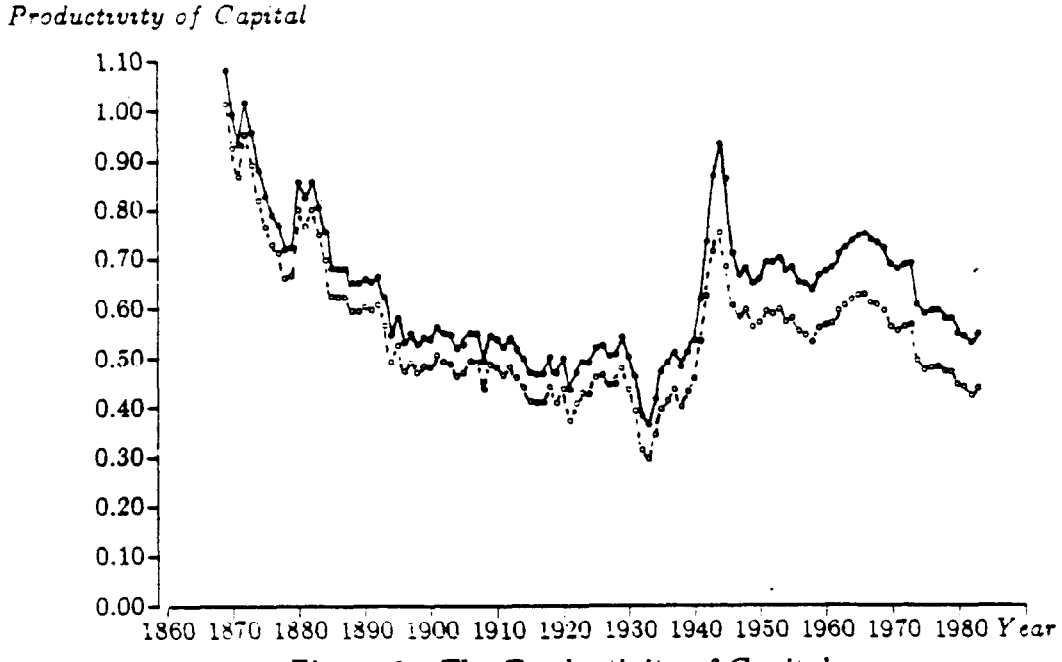

Figure 3 - The Productivity of Capital GNP (•) and Private NNP (○) (1869-1983)

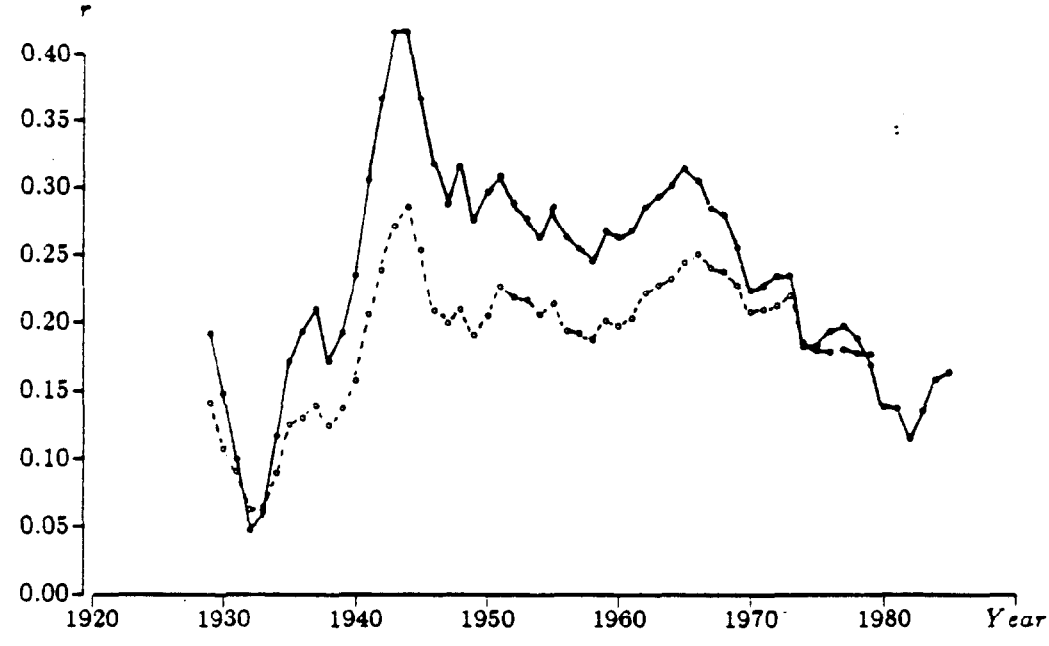

Figure 4 - The Rate of Profit
from NIPA-BEA (• 1929-1985) and as in Figure 1 (○ 1929-1979)

Productivity of Capital

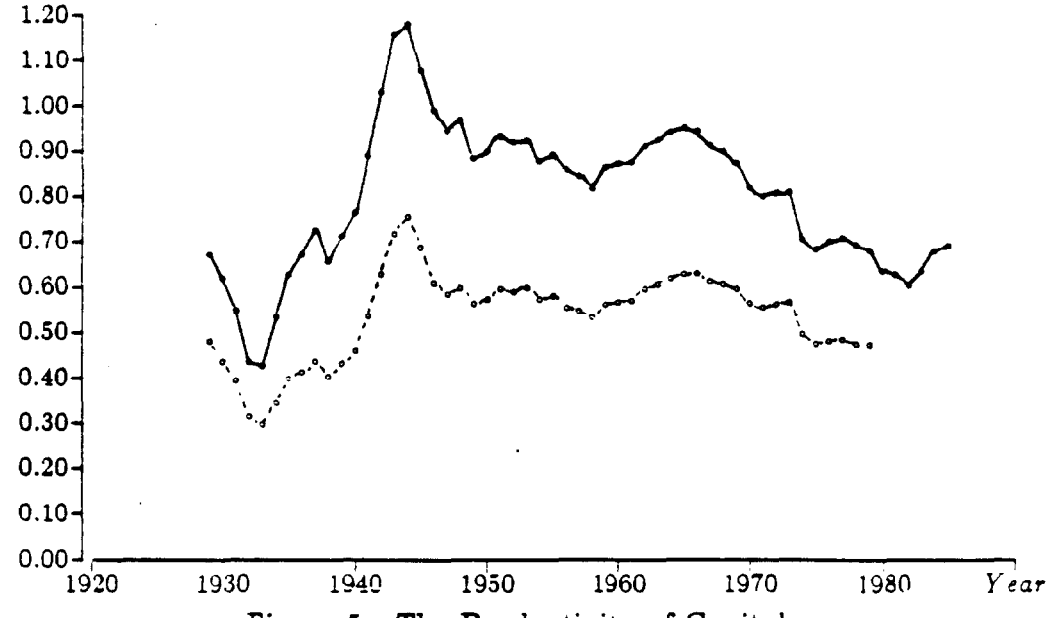

Figure 5 - The Productivity of Capital
from NIPA-BEA (• 1929-1985) and as in Figure 3 (○ 1929-1979)

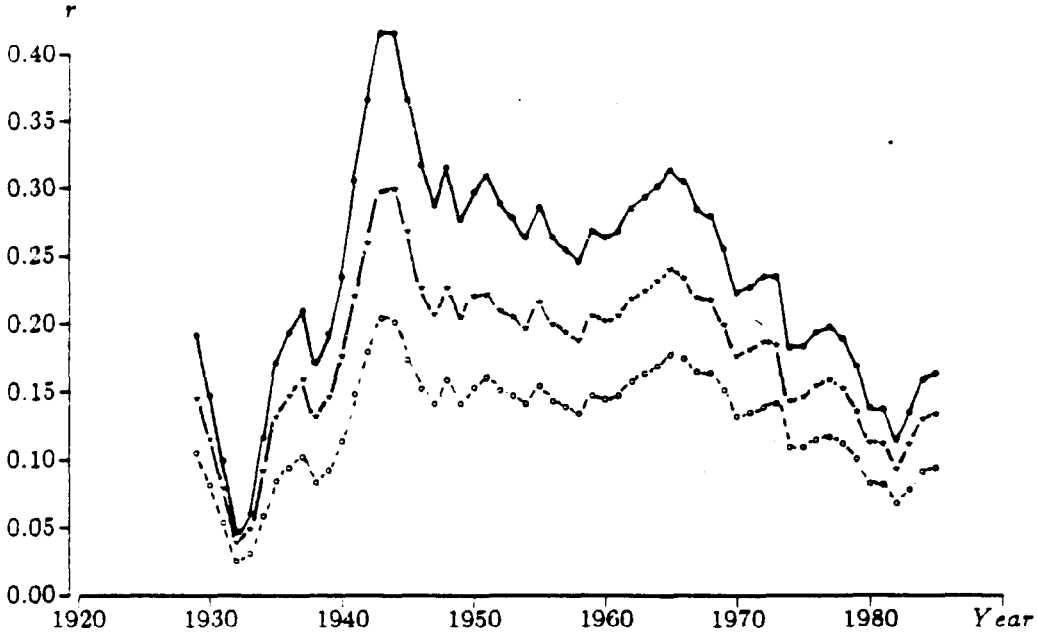

Figure 6 - The Rate of Profit from NIPA-BEA (Corporate and SPP): Profits over Net (as in Figure 4 •) and Gross (○) Capital, Net plus Inventories (×) (1929-1985)

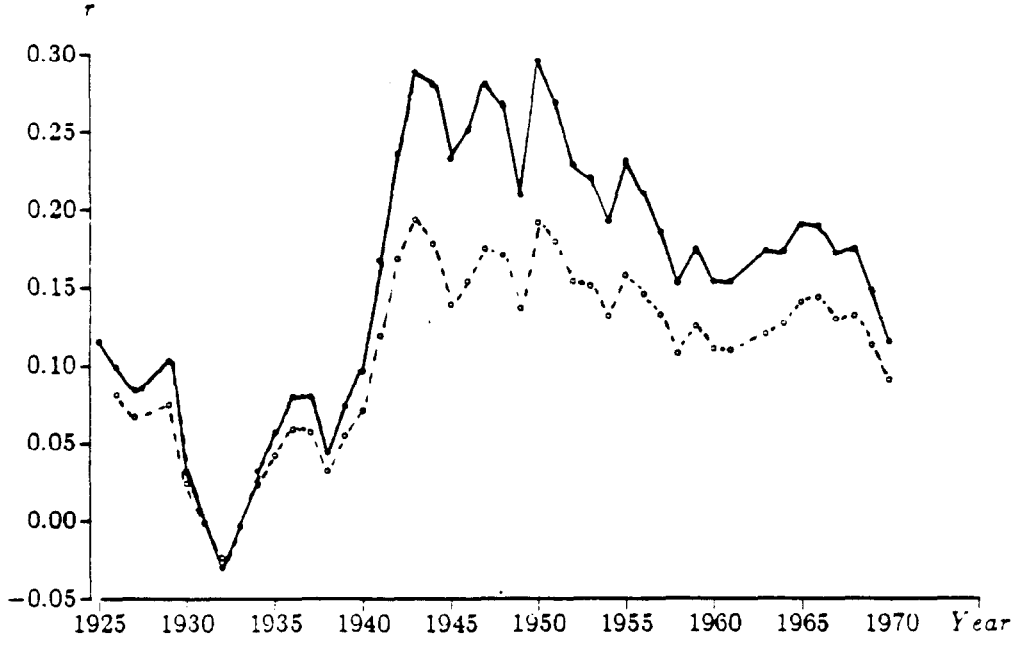

Figure 7 - The Rate of Profit from IRS (Corporate): Profits over Net Capital (• 1925-1970) and Equities (○ 1926-1970)

In addition, the following is of note:

1. The unit of analysis is limited to the Corporate Sector and Sole Proprietorships and Partnerships (SPP). Dubious components have been eliminated for from capital and profits (see the appendix to this study).
2. A wage-equivalent is constructed for the self-employed (a different rate of wages is computed for each industry).
3. The stock of capital includes both residential and nonresidential components, and Government Owned Privately Operated Capital.

This rate of profit is displayed in figure 4. On the basis of this computation, the leap is still apparent and its amplitude is similar to what we found earlier. The same observation can be made in figure 5 for the productivity of capital. The difference in levels for both computations is the effect of the different definitions (for example, the inclusion of net interest, the measure of fixed capital, etc.).

With the exception of the effect of taxation, which will be considered below, the leap forward survives any change in profit rate definition. In figure 6, three variants on the stock of capital (gross capital, net capital, net capital plus inventories) are displayed which again yield the same result.

Our profile of the rate of profit can be further checked by a comparison with data taken from the actual reported balance sheet and income statements of corporate firms taken from the IRS Source Book of Statistics. This data is available from 1925. The IRS data source also allows the consideration of different definitions of the rate of profit. Two such rates are displayed in figure 7: profits net of indirect business taxes and depreciation over *net fixed capital* or *Equity*. Again the reported movement is similar to the one observed above. In addition, the rates of profit built from the IRS data reveal that 1929 is not an exceptional starting point, but reflects the fact it is an average year of profitability. (The series starts in 1925, a peak year in the 1920s from the point of view of profitability.)

Our long-run data with the leap forward survives every comparison with more well-known data sources. The leap forward similarly survives both changing data sets and various definitions. Thus, this anomaly in the historical evolution of profitability must be taken seriously and cannot be ignored in future research.

D - THE IMPACT OF TAXATION

One important aspect of the leap forward in profitability is that it is completely absorbed by the state through taxation. In order to investigate this phenomenon, the unit of analysis must be restricted to the corporate sector (now 80 percent of total economy), for which both indirect business taxes and corporate profits taxes are available and can be separately investigated.

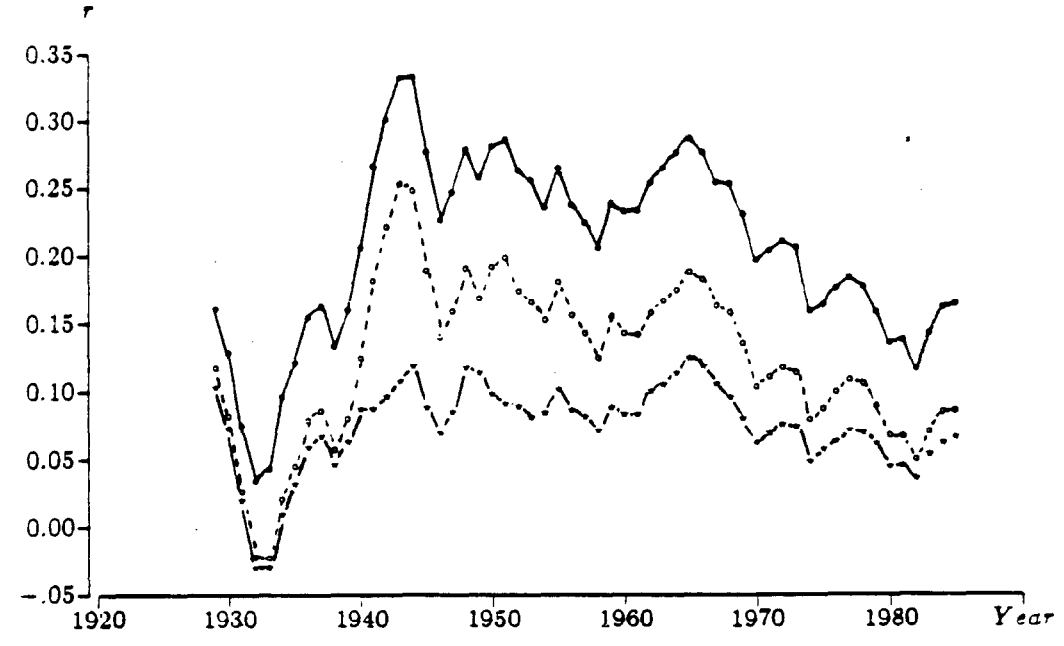

Figure 8 - The Rate of Profit from NIPA-BEA (Corporate): Profits Including Ind. Bus. and Corp. Prof. Taxes (•), Corp. Prof. Taxes (○), After all Taxes (⋆) (1929-1985)

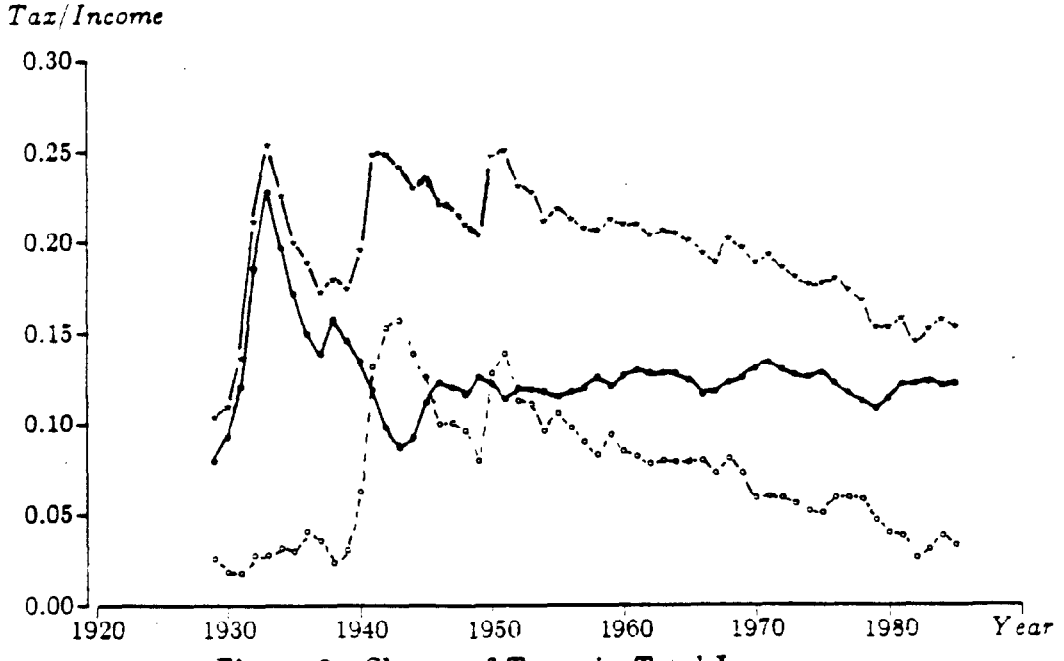

Figure 9 - Shares of Taxes in Total Income:
Ind. Business Taxes (•), Corporate Prof. Taxes (○), Both Taxes (⋆) (1929-1985)

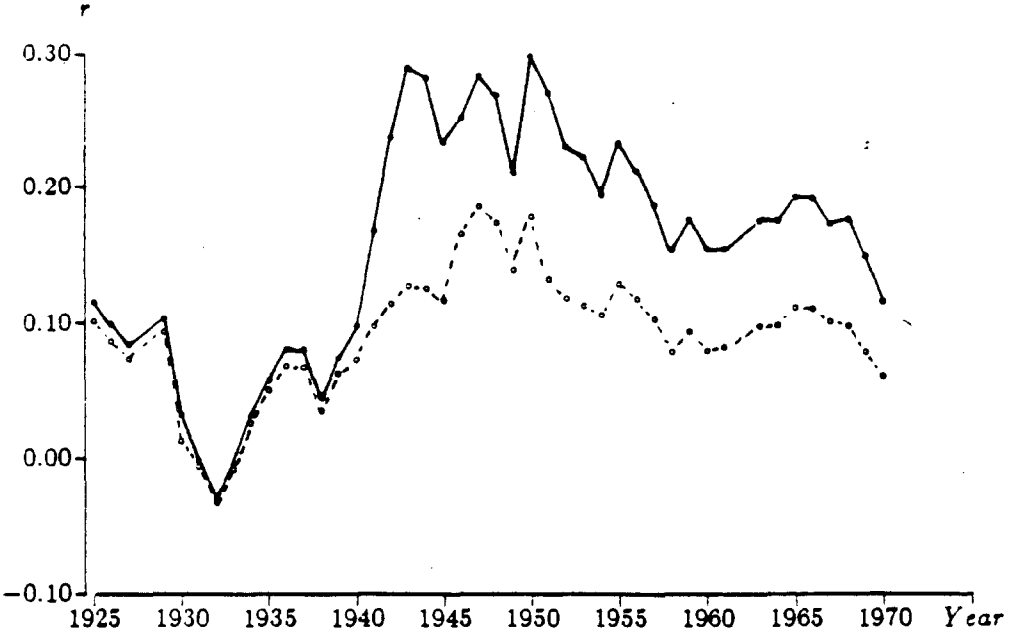

Figure 10 - The Rate of Profit from IRS (Corporate) : Profits before Corporate Prof. Taxes (•) and after all Taxes (c (1926-1970)

Figure 8 displays the profile of the rate of profit, for a definition of profits including all taxes (indirect business taxes plus corporate profits taxes). After deduction of indirect business taxes the leap is already eroded. If profits after all taxes are considered, the leap is offset totally.

In order to assess the relative impact of the two types of taxes, we compute the share of taxes in total income. The result of this computation is displayed in figure 9. Consider, first, indirect business taxes. If one abstracts from the rise of the actual rate of taxation during the Depression, this rate is increased, from 1929 to the post-World War II years, from about 7 percent to 13 percent. Subsequently, the ratio is stable up to the present period. Consider next corporate profits taxes. Abstracting from World War II, the rise from 1929 to the aftermath of the war, is dramatic: 2 or 3 percent compared to 10 percent. In the postwar years there is a steady decrease which continues into the present (3 or 4 percent).

Another important feature of the period under consideration is, thus, that *the share in the improvement of profitability absorded by the state during World War II has been steadily decreased throughout the 30 years following the war, since the 1950s.* From the mid-1960s onward, this relaxation of the tax burden has as acted as a powerful countertendency to the falling rate of profit (from the point of view of enterprises).

A similar picture can be obtained from IRS series, with respect to corporate profits taxes (cf. figure 10). After corporate profits taxes, the leap is approximately offset.

The leap forward in profitability and the high levels of taxation imposed by the Roosevelt administration financed the huge rise in state expenditures which accompanied the prosperity of the immediate postwar years. Without both the rise in profits and their distribution to the state the rise in state activities could not have been possible.

These historical facts regarding taxation do not explain the origin of the leap forward, but only the distribution of these profits. In the following section we will consider two competing explanations of the origin of the recovery.

II - TWO COMPETING EXPLANATIONS

In this part, we consider two possible explanations of the leap forward: changes in the relative price of fixed capital (section A) and the increase in the workweek of capital (section B). We do not believe these are the only possible explanations, instead, they are hypotheses often suggested as responsible for movements in the rate of profit. As we shall explain, they cannot account for the leap forward.

A - NOMINAL AND REAL EFFECTS

It is often contended by Marxists that changes in the productivity of capital result from a fall in the relative price of fixed capital (an important countertendency listed by Marx). This is not the fact situation of the leap forward.

In figure 11, the relative price of capital as compared to GNP is plotted. From 1869 to 1925, only the ratio of the investment deflator to the GNP deflator is available. After 1925, it is also possible to compute the relative price of the stock of capital. The two ratios reveal the same upward trend. The rise of the price of capital goods has always been steeper than that of GNP, the reverse of the expected pattern. And in spite of important fluctuations, no rupture can be located during World War II. When the productivity of capital is measured in real terms (deflated numerator and denominator) in Figure 12, the leap forward becomes even more pronounced!

The Marxist literature rarely refers to the productivity of capital (a term we use for its recognition by economists) but instead to a less discussed variable: the "organic composition" of capital. In Marxist terms it is the ratio of constant to variable capital. Marx's presentation, in Volume III, however, assumes a flow model instead of a stock

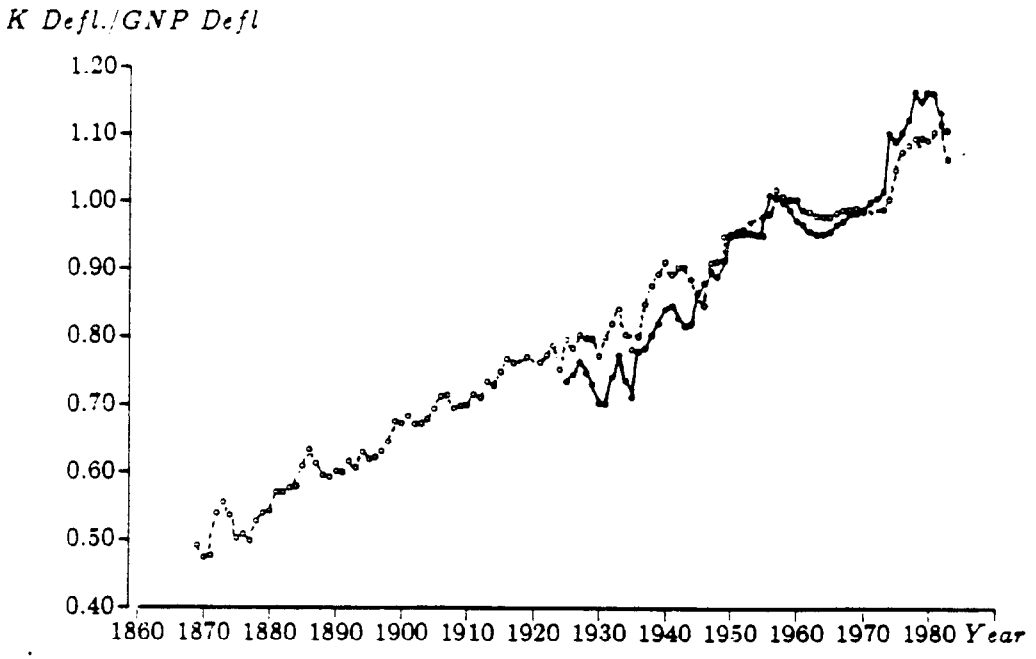

Figure 11 - Relative Price of Capital (•) and Investment (○) (1925-1985 (•), 1869-1985 (○))

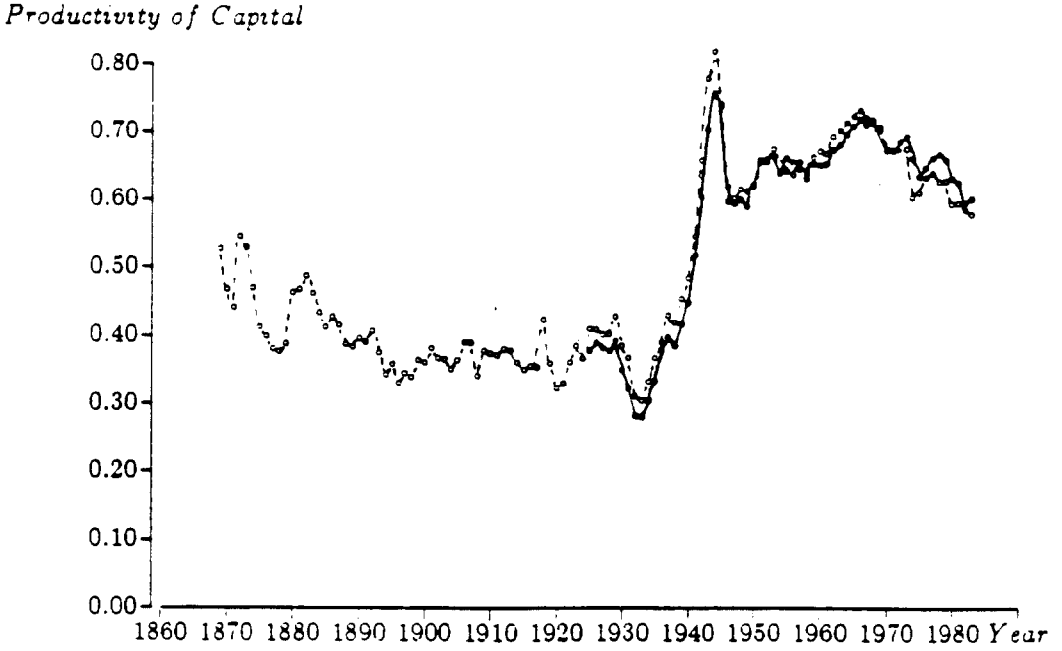

Figure 12 - Productivity of Capital in Real Terms (Private NNP) Deflators and Periods as in Figure 11.

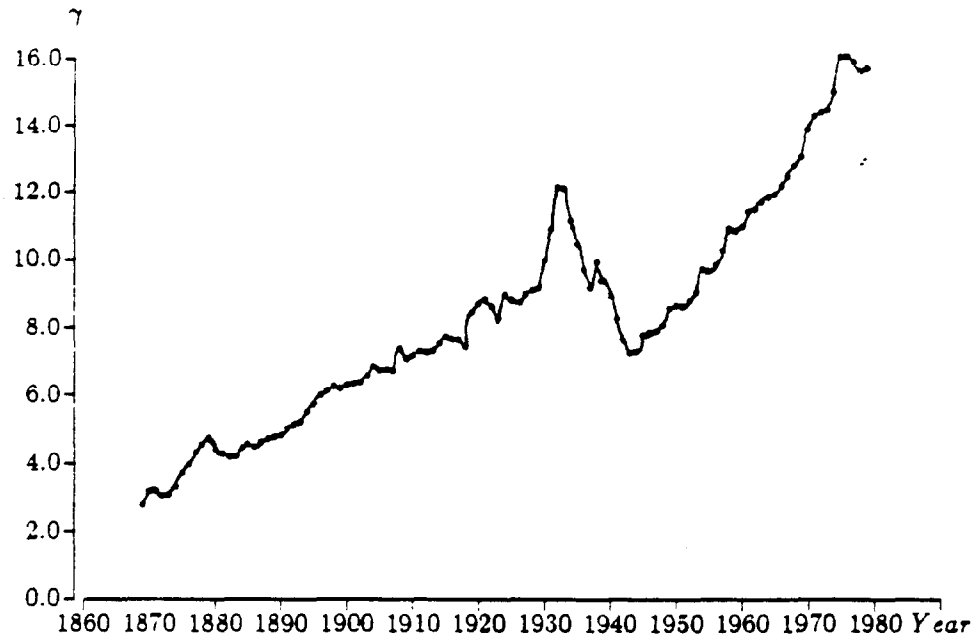

Figure 13 - The Organic Composition of Capital (1869-1983)

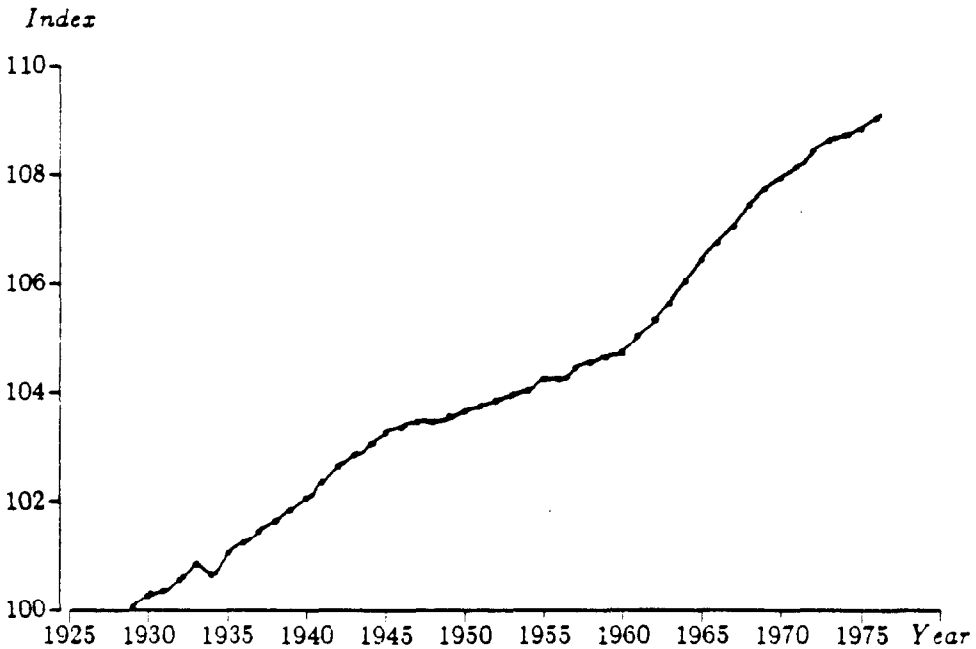

Figure 14 - Average Weekly Hours of Fixed Capital Total Nonfarm Business (1929-1976)

model, as suggested by his analysis in Volume II. Thus, it is commonly held that the organic composition should be measured as the ratio of fixed capital in constant dollars to the total stock of employment corrected by the duration of labor, *i.e.*, the amount of labor.[1] This ratio is measured in real terms.

This stock based measure of the organic composition of capital is displayed in figure 13. The difference in the trends before and after World War II is striking. The rupture corresponding to the leap forward in profitability is again apparent, during the war.

B - THE WORKWEEK OF CAPITAL

A second possible explanation for the leap forward in profitability is an increased utilization of fixed capital due to the extension of the workweek of fixed capital. A series of average weekly hours of fixed capital use has recently been made available by Murray Foss (FOSS M. 1984, Table 1. page 8). This series is plotted in figure 14. Although a steady trend upward is observable in this figure, no leap upward is revealed during World War II. Although Foss did not have explicit data for the war years and extrapolated from the available data before and after the war, the existing data show that the size of changes in the utilization of fixed capital is not sufficient to account for a phenomenon the scale of the leap forward.

The increased workweek of capital accounts for a rise of about only 10 percent of the historical trend of the productivity of capital between 1929 and 1976. Thus, other economic phenomena account for a much more important share of the leap forward.

III - AN ANALYSIS BY INDUSTRY

In this section we attempt to more specifically locate the sectorial source of the recovery. Using the NIPA data base we can only distinguish between manufacturing and nonmanufacturing sectors. The investigation of the difference between these two sectors will be the object of section A below. However, on the basis of IRS data. it is possible to make a finer analysis by decomposing the economy into 8 industries. This will be presented in section B.

[1] *In the flow model total value is divided into the components* $c - v - s$, *In the stock model, introduced in Volume II of Capital, this flow approach is combined with the view that, at a given instant, capital exists under the three forms of,* P, *productive capital,* C, *commodity capital, and,* M, *money capital. In the flow model, the organic composition of capital is defined as* c/v, *and in the stock model, it can be measured as* Productive capital/ Total stock of employment.

A - MANUFACTURING AND NONMANUFACTURING INDUSTRIES

Figure 15 displays the rate of profit for both the manufacturing and the nonmanufacturing sectors. Profits are calculated after indirect business taxes and net of depreciation. A correction for the wage-equivalent of self-employed has been made. The difference between Manufacturing and Nonmanufacturing industries is striking. In 1929, the rate of profit within Manufacturing is about 40 percent whereas, outside, of Manufacturing, it is below 10 percent! In the 1950s, the gap is still dramatic. It is then gradually reduced to the present. In addition, three further observations should be made:

1. *There is no leap forward in profitability for Manufacturing industries*, only a bulge during World War II. The rate of profit in 1929 is greater than the average rates for the early post-World War II years.
2. As we already observed, the World War II leap forward is reduced when profits after indirect business taxes are considered. But it is still evident within Nonmanufacturing industries.
3. Further computations not presented here show that different definitions of the rate of profit yield the same result (for example, using historical cost of fixed capital).

We consider now the same decomposition using IRS data base. The results are presented in figure 16. Here we find a discrepancy between the results we obtain from the IRS data base and the NIPA data base. As figure 16 illustrates, in the IRS data base, the leap forward appears in both manufacturing and nonmanufacturing. This is a result of the high level of reported profit in manufacturing in the NIPA data base compared to the IRS data base.

It is evident that the definitions of the rate of profit in the two data bases are different. In particular, the stock of capital in IRS series is measured on an historical basis. Nevertheless, this difference alone could not account for the real lack of consistency between the two sources.

To further this investigation we compare separately the profit and capital series in the two data sources (NIPA-BEA and IRS). Profits are always measured after indirect business taxes. Capital is defined as net capital at *historical cost*. The results of these computations are presented in figures 18 and 19. It is clear from figure 18 that the difference observed are not the expression of divergent measures of profits. In 1929, the ratio of the two profit series is equal to about 1.25. This value is similar or even greater than those obtained after World War II. The divergence between the two measures of profit cannot account for the higher profitability in 1929 obtained in the NIPA-BEA series. Conververly, figure 19, vividly shows that the measures of the capital stock differ markedly. The value of the stock of capital at historical cost, and net of depreciation, is always lower in NIPA-BEA than in IRS accounts. Since the

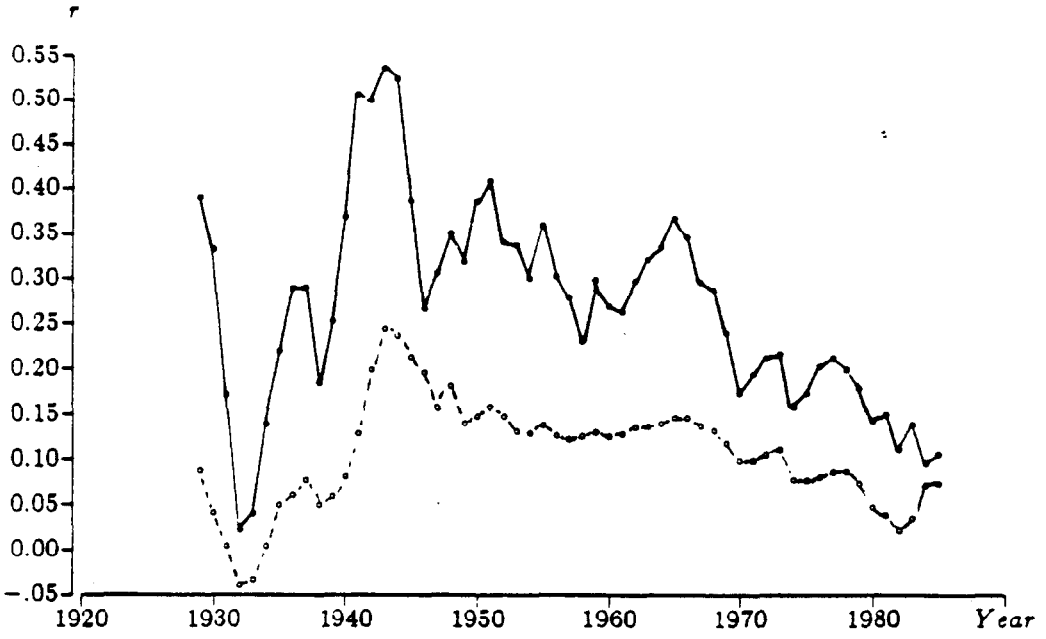

Figure 15 - The Rate of Profit on Fixed Capital from NIPA-BEA Manufacturing and Nonmanufacturing Industries (1929-1985)

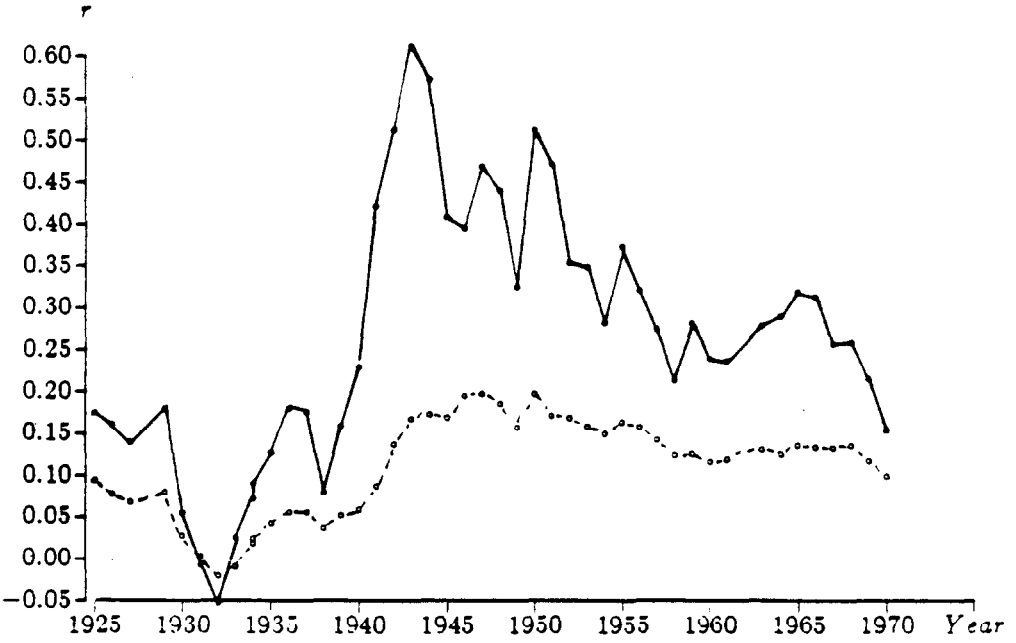

Figure 16 - The Rate of Profit on Fixed Capital from IRS Manufacturing and Nonmanufacturing Industries (1925-1970)

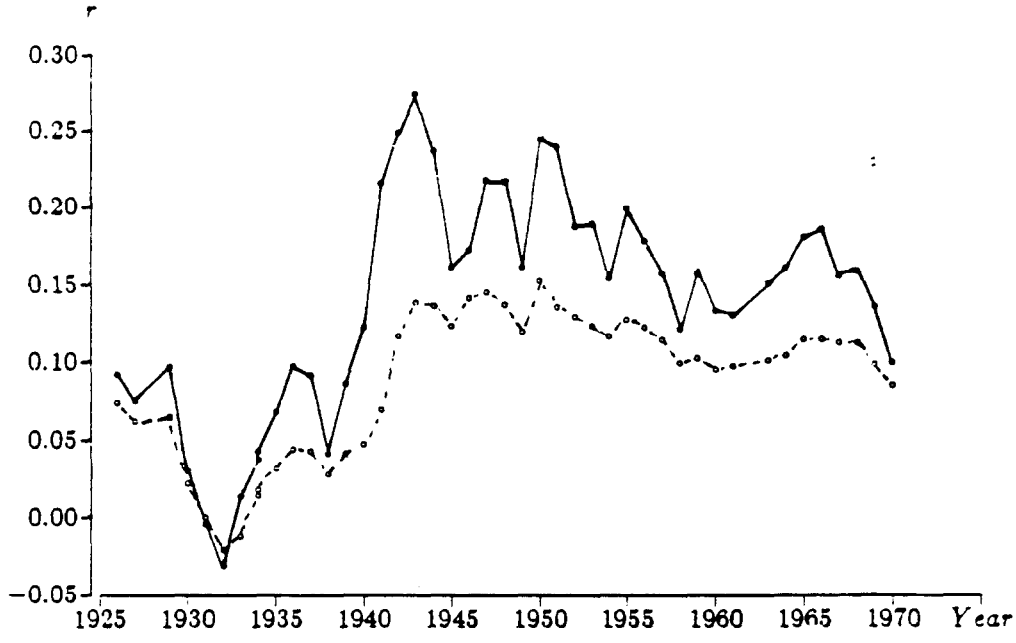

Figure 17 - The Rate of Profit on Equities from IRS Manufacturing and Nonmanufacturing Industries (1925-1970)

1960s the ratio fluctuates between .80 and .85. However, the striking observation is that this ratio was equal to .50 in 1929. Thus, *the divergent measurements of capital within the two data set is at the origin of the different assessments of the rate of profit in 1929.*

Independently of the source used, the gap between the rate of profit in Manufacturing and the other sectors is puzzling. A portion of this difference is due to the measure of capital used in the definitions of the rate of profit. We know from previous research (cf. GLICK M. 1985) that rates of profit measured on equity are more equalized between industries than rates of return measured on the stock of fixed capital.

The value of equity is available from IRS data. The rates of profit for Manufacturing and Nonmanufacturing using a measure of the rate of profit on equity is displayed in figure 17. The difference between the two sectors is considerably reduced, but the leap forward in profitability is still apparent for *both* sectors.

B - EIGHT INDUSTRIES (IRS)

Using IRS data, it is possible to breakdown the Nonmanufacturing sector of the

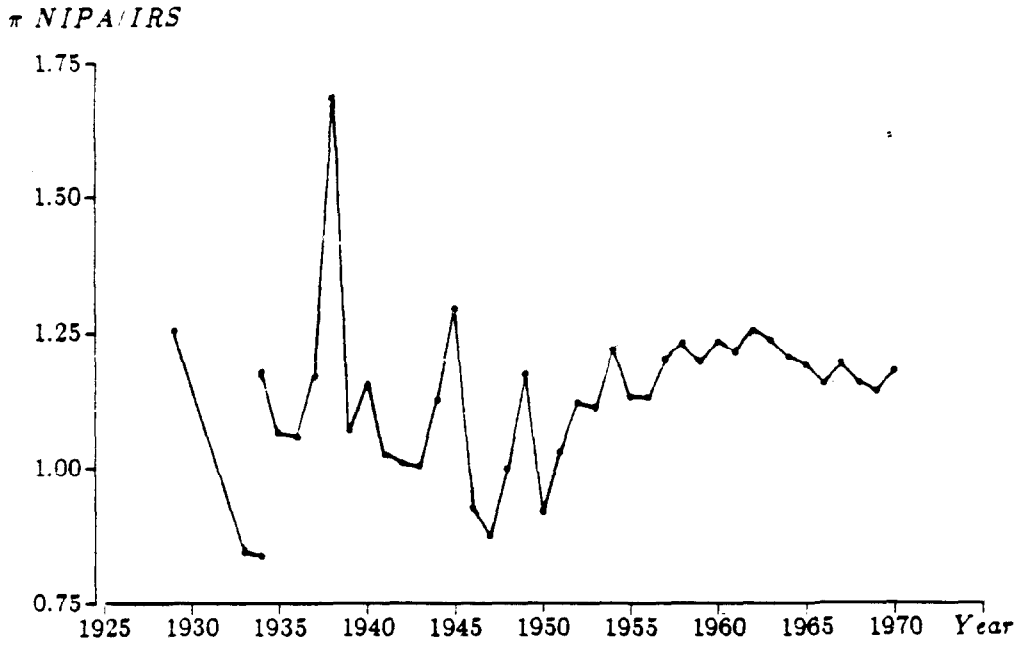

Figure 18 - Ratio of two Measures of Profits: NIPA-BLS/IRS Profits after Ind. Business Taxes, Manufacturing (1929-1970)

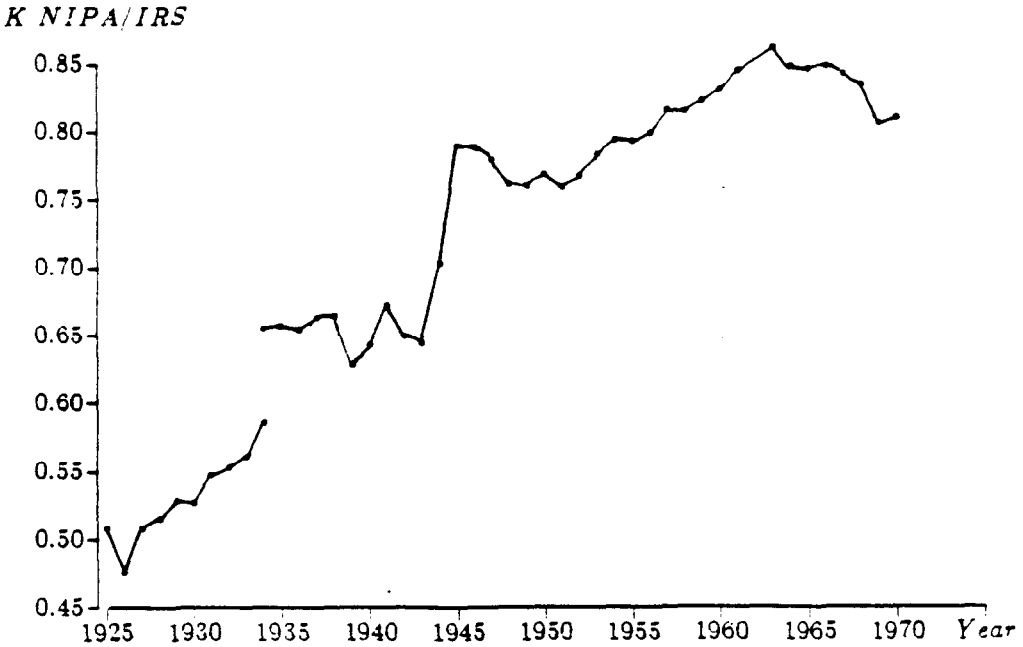

Figure 19 - Ratio of two Measures of Capital: NIPA-BLS/IRS Net Capital at Historical Cost, Manufacturing (1929-1970)

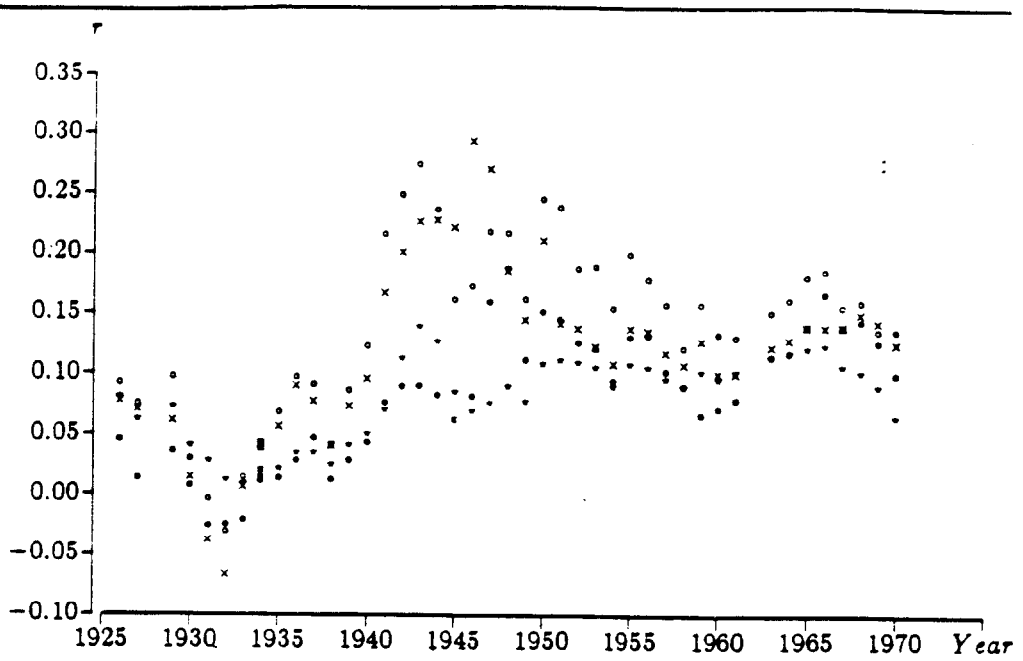

Figure 20 - The Rate of Profit from IRS:
Mining (•), Manuf. (○), Public Util. and Transp. (⋆), Trade (×) (1925-1970)

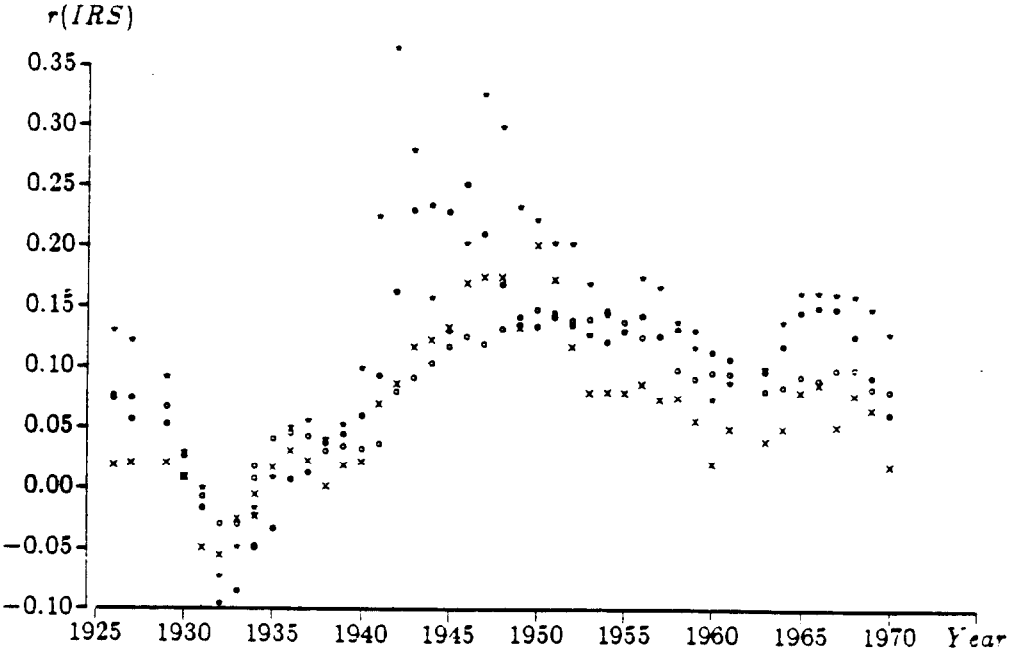

Figure 21 - The Rate of Profit from IRS:
Services (•), Finance (○), Construction (⋆), Agriculture (×) (1925-1970)

present in every measure of the rate of profit (before taxes) that we have calculated, and it is not confined to a specific industry or group of industries. Rather, it is common to every economic sector, with the exception of the manufacturing sector in the NIPA data base.

The explanation for this phenomenon has been elusive. In this study it has been shown that two plausible explanations are not satisfactory. First, the leap is not the effect of a change in relative prices. In real terms, the recovery during the war is further exaggerated. Second, the leap forward is not the effect of the extension of the workweek of capital.

In both the Marxian and the Keynesian literature on macroeconomics the relatively high levels of profitability after World War II have been occassionally referred to, but not in the context of a secular trend. However, the explanations usually hinge on three types of mechanisms: competition, demand, and imperialism. For example:

1. Paul Baran and Paul Sweezy in their study on Monopoly Capitalism (BARAN P., SWEEZY P. 1966) contended that Marx's law of the tendency for the rate of profit to fall was only characteristic of the competitive stage of capitalism. Under monoploy capitalism a converse law of the increase of the surplus was at work.
2. The idea that a high level of demand resulted in an increased profitability has been defended in various contexts. Emphasis is often placed on the demand side effect of state expenditures or on the rules which govern the formation of wages.[2]
3. The third group of explanations refer to the possible effect of transfers of surplus value from abroad through the mechanisms of imperialism. Transfers of surplus value can correspond to the terms of exchange on imports and exports, or to the export of capital.

We do not consider any of these traditional explanations to be fruitful avenues of future research. Concerning the Monopoly Capital explanation, there is no reason based on this approach to expect a concentrated leap forward at the end of the depression. Even if there was a rise in monopoly, in our opinion, such a rise would only change the distribution of total profit and could not increase its total mass. Concerning demand, it is certainly true that it is an important factor in determining profitability. However, the leap forward was not a demand determined phenomenon. Although there was a rise in capacity utilization during the war, after the war the high profitability was maintained despite a return to normal usage of capacity utilization (i.e., 80 percent). Finally, although international transfers certainly play a role in the evolution of profitability in the United States, the size of these effects does not appear

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[2] *The concept of "Fordism" in the analyses of the Regulation School (*AGLIETTA M. 1976, BOYER R., MISTRAL J. 1978, *and* LIPIETZ A. 1979*) has been criticized in* DUMÉNIL G., LÉVY D. 1988. *However, one can remark here that this type of explanation does not really address the issue of the leap, a phenomenon which occured in a few years during the war.*

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to be significant enough to account for such a sudden and drastic transformation as the leap forward that we have described.

In our view, future research should focus on the utilization of capital, but not in the sense of firm capacity utilization. Utilization of capital refers here to the structural ability of firms to obtain a certain output on the basis of a given stock of capital. This ability is a reflection of a complex set of technological, organizational, and managerial mechanisms. The empirical evidence we have suggests the following periodization of these structural factors:

1. The productivity of capital clearly decreased until 1900 (cf. figure 3), while the growth of business investment to GNP was interrupted at the same time. A first rupture occurred at the turn of the century.
2. A second period contains the turn of the century up to World War II, during which there was a rather stable productivity of capital.
3. Finally, during World War II, a set of specific political and economic conditions allowed new achievements in output to take place. State planning sought the elimination of idle capacity throughout the economy. For several years, the rules which under ordinary circumstances (costs, uncertainty with respect to demand, etc), restrain the utilization of capacity to normal levels below 100 percent were transformed. Production was only limited by the mere physical availability of resources.

Future research is certainly necessary to more fully understand the mechanisms which underlie the recovery of profitability. We have tried to offer some guidance in this conclusion as to where we believe further investigation would be most fruitful. The main contribution of this paper has been to expose the dimensions and characteristics of the recovery of profitability in the World War II years and after. This phenomenon has critical importance for any analysis of long-run secular trends in the U.S. rate of profit, yet it has surprisingly evaded attention until now.

FIGURES AND SOURCES

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