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The Post 1960 Rate of Profit in Germany

**M. Ufuk Tutan, İzmir University of Economics
Al Campbell, University of Utah**

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**Izmir University of Economics
Department of Economics
Sakarya Cad. No:156
35330 Balçova _zmir
Turkey**

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Abstract

This paper investigates the economy-wide rate of profit in West Germany from 1960 to unification. We study the behaviors of the profit share and output-capital ratio, and develop a simple way of graphically presenting them so a reader can immediately see their relative contributions to the changes in the profit rate. Contrary to a (correct) conclusion drawn in a methodologically similar study on the United States, we find that for Germany in this period the profit share plays the dominant, though not exclusive, role in determining changes in the rate of profit, and the dominant explanation for changes in the rates of profit were wage squeezes and un-squeezes.

Key Words: Germany, Profit Rate, Profit Share, Output-Capital Ratio, Wage Squeeze
JEL Codes: D33, P17

M. Ufuk Tutan

**Department of Economics,
Izmir University of Economics,
Izmir, Turkey 35330**

**Al Campbell
Department of Economics,
University Of Utah,
Salt Lake City, Utah, USA 84112**

I. Introduction

The rate of profit is considered by most observers of capitalism as at least one important indicator of the health of the economic system, and many consider it the most important single indicator. The classical economists, and in particular Smith, Ricardo and Marx, believed for theoretical reasons that the rate of profit in a capitalist system would tend to fall over time. Although they did not develop any rigorous crisis theory, their general belief was that at least in the very long run this would lead to a breakdown of capitalism. For both classical and neoclassical, leaving aside the difference in their theories as to what determines the rate of profit, higher profit rates mean greater investment and higher growth rates are possible, both because they provided greater sources of funds for investment, and because they generated higher expectations of future profits and through that a greater desire to invest. Low rates of profit, on the other hand, not only cause slow growth, but also greatly increase the chances of recessions or depressions. Hence, regardless of if there is a long run tendency for the rate of profit to fall, there is general agreement among economists that a significant fall in the rate of profit may both reflect a worsening performance of, and generate problems for the performance of, a capitalist economy.

Two broad questions present themselves when considering the rate of profit in a given country in a given period, which we will address in this work. First, has the profit rate fallen, risen, or stayed about the same? And second, whichever of these is observed, why has it behaved that way?

A question presents itself as to how to measure the rate of profit. In fact, there is no such thing as “the” rate of profit; for different economic questions, one considers the

rate of profit somewhat differently. For example, one would remove taxes paid by private enterprises to the government from profits if one was interested in changes in the rate of private capital accumulation over time, while one would not remove them if one was concerned with changes in the share of the produced surplus retained by the workers. We will motivate in the appendix why we measure the rate of profit exactly the way we do.

There have not been a lot of studies in the English language literature that have presented full yearly results on the economy-wide (or even on the manufacturing) German rate of profit. We looked carefully at five: Armstrong, Glynn and Harrison (1991); Reati (1986); Poletayev (1992); Shaikh (1999); and Brenner (2002,1998). A first observation was that generally these studies were unclear beyond general statements about how they calculated the rates of profit they presented, which greatly limited the possibility to reproduce them to use in comparisons to study the effects of variations in methodologies and data sources. Addressing this defect, in the appendix we (briefly) indicate our exact methodology and data sources. Despite this limitation, one of us (Tutan, 2002) was able to construct graphical comparisons of our results with close approximations of their results. The results of these comparisons indicated what we found to be a surprising degree of robustness of the economy-wide rate of profit to somewhat different data and somewhat different definitions of the rate of profit. For those studies that presented the manufacturing rate of profit it was also very similar to our manufacturing rate of profit, but that was less surprising given the greater similarity of data sources and methodology for manufacturing.

Our results in this work will address the following questions.

1) How did the private economy-wide profit rate behaved in the Federal Republic of Germany from 1960 to unification? We note here again that there is fairly broad general agreement on the qualitative nature of this among most observers.

2) Is the observed private economy-wide profit rate behavior fairly homogenous between various major sectors of the economy (as a very rough argument about high capital and labor mobility within a national economy might suggest), or do major sectors of the economy have different profit rate behaviors? This is important for a number of reasons, including that historically many people have used data on the manufacturing sector as a proxy for the behavior of the full economy, since the data there has historically been much more complete than for the rest of the economy. Clearly if it turns out that the profit rate in the manufacturing sector behaves significantly differently from the rest of the economy, then such imputations should not be made.

3) Are changes in the rate of profit caused more by “technological changes,” changes having to do with capital, or are they more caused by changes in the wage rates (relative to productivity)? We will perform a well known factoring of the rate of profit, briefly indicate limitations on this factoring concerning the “wage squeeze” vs “technological change” conceptual theoretical arguments, and then present some empirical results for West Germany in this period. In looking at data from the United States with the same methodology, Duménil and Lévy concluded, “We finally show that the decline in productivity of capital was the main factor in the fall of the rate of profit, though the decline in the share of profit also contributed to this evolution.” (2001b, abstract) We find basically the opposite result for the German economy. We reproduced their results

for the United States, and obtained exactly what they obtained: the difference is not in any methodological differences, the difference is in the markedly different behavior of the German and US economies in this regards.

II. Results

Figure 1 presents the economy-wide profit rate.

{Insert Figure 1 here}

As noted in question 1 above, this manifests the generally accepted “stylized facts” about the rate of profit since the 1960s that one has from the more studied U.S. data. One sees a general fall from the 1960s to a low point in 1981, and then a partial recovery during the 1980s. The recovery is about half of the losses since 1960, similar to the fall and recovery in the US from its highpoint in the 1960s, although Germany was falling from 1960 onwards while the U.S. was increasing in the 1960s until 1967. One also sees here the onset of a new drop in 1992 and 1993 - this was connected to the unification process, a massive “perturbation” to the system that we will not investigate in this work.

Next we pull the economy apart into two subsectors, manufacturing and nonmanufacturing, and consider the second question above, if the sectors are similar to each other in their behavior. Put another way the question is, can we look at the whole economy and consider its behavior to be representative of at least the major parts of the economy, or is it just a mathematical average of subsectors that behave fundamentally differently?

{Figure 2 here}

Figure 2 shows the profit rate in the manufacturing sector. Very roughly, one has the same pattern of decline until 1982, and then recovery in the 1980s. But there are

several obvious and important differences between the manufacturing sector and the full economy. First, both the drop and the recovery are more rapid. Such more rapid declines and recoveries in manufacturing than the rest of the economy is a result one sees in all developed economies. Second, the recovery is significantly weaker than in the total economy, recovering only about a third of its losses since the 1960s as opposed to a half. Finally, the recovery in manufacturing ends already in 1986, unlike the full economy that keeps recovering until 1991.

{Figure 3 here}

Finally, consider the nonmanufacturing sector, Figure 3. Here the behavior is quite different from both the economy as a whole and the manufacturing sector. First, the decline through the 1960s and early 1970s is much less sharp. Second, the recovery here can be thought of as beginning already in 1975, not in 1982 as the total economy or 1983 as in the manufacturing sector. And third, most strikingly, the recovery is both greater than the drop (even including the sharp drop in 1961), and it is sustained until 1992, with 1993 still being flat.

Hence we get a clear answer to the second question we posed above. The economy is not even roughly homogenous, and so it is not acceptable to take the manufacturing sector as a proxy for the whole economy. The fundamentally different behavior of the profit rate in the manufacturing sector from the nonmanufacturing sector over a thirty year period poses questions about the degree of capital and labor mobility even within a given unified national economy, which while not a subject of this work, constitute an important issue for a future investigation.

Once one has determined that the total economy is the mathematical average of two qualitatively different subsectors, an immediate question that arises is what their relative weights are in the total. Figure 4 gives the share of the two subsectors in the total capital stock.

{Figure 4 here}

One sees non manufacturing in fact has roughly twice the weight of manufacturing in the total profit rate in the 1960s, and climbs to three times the contribution by the 1990s. Given as we have seen that the rates of profit in manufacturing and nonmanufacturing behave qualitatively differently, this underlines the inappropriateness of using manufacturing, the significantly smaller of the two sectors, as a proxy for the whole economy.

We next consider the third question posed above. If we let Y =net output (net not only of depreciation but also of taxes to the government, since we are interested in private accumulation), P =profits, W =compensation to the workers, and K =the net capital stock, and we note that by the definition of profits $Y = P + W$, we can write the profit rate as

$$\frac{P}{K} = \left(\frac{P}{Y} \right) \left(\frac{Y}{K} \right) = \left(1 - \frac{W}{Y} \right) \left(\frac{Y}{K} \right)$$

which is the product of the profit share and the output-capital ratio.

A few words of caution are needed in regards to the interpretation of this decomposition. Often this is thought of as the product of a term that reflects distribution times a term that reflects technical change. These concepts are generally appropriate, but one has to keep in mind possible economic scenarios that could generate contrary results. For example, suppose one had technical change that required new capital, raised output proportional to the capital increase, raised labor productivity, and no wage increases were

granted. Such a technical change would show up in the profit share term and not in the output capital-ratio (or without the assumption of proportional increases in Y and K it would show up in both). So a simplistic identification of the profit share term as an indicator for distributional change would in this case not be appropriate. As another example, one could have a rise in wages that could cause a change in the output-capital ratio. It might go up if an incentive wage theory behavior existed, or it might go down if satisficing labor behavior existed. So in this case a simplistic identification of the output-capital term as a proxy for technological changes would not be appropriate.

Keeping these cautionary comments in mind, we want to now ask the question - are changes in the rate of profit caused more by changes in the profit share, or are they caused more by changes in the output-capital ratio?

{Figure 5}

Figure 5 puts on a single graph the profit rate, the profit share and the output-capital ratios for the total economy, all as indexes normalized to 100 on a base year of 1981, the low point of the total economy rate of profit. The graph is constructed to easily and immediately visually indicate which factor has changes that contribute more to the long term fall in the profit rate to 1981 and the subsequent partial recovery.

From 1960 to 1981, the profit share dropped from 150 to 100 while the output-capital ratio dropped from 142 to 100. As both these numbers and the graph visually make clear, the two factors made nearly equal contributions to the over 50% drop in the profit rate from 213 to 100.¹

After 1981, however, we see the recovery was driven almost entirely by an improved profit share, with almost no improvement in “the efficiency of capital,” the output-capital ratio.

{Figure 6 here}

Consider now Figure 6 for the manufacturing sector. We use 1981 as the base year again even though manufacturing hit its low in 1982, to facilitate comparisons with the total economy (and there is little difference between 1981 and 1982 in any case). Here the results are even more striking than for the economy as a whole. Here the changes in the profit share are much larger than those in the output-capital ratio both before and after (considering first its sharp four year rise, and then its continued fall) 1981.

Note one thing in passing. The change in the output-capital ratio, both before and after 1981, is not much different here from what it was in the total economy: just shy of 40 before 1981, and almost no change after 1981. It looks much flatter here over the early period only because the scale has changed, that is, because the profit share changed so much over the period compared to the case of the whole economy.

{Figure 7}

In Figure 7 we look at the results for the nonmanufacturing part of the economy. After 1981, we see a result similar to the manufacturing results after 1981. The output-capital ratio changes almost not at all from 1981 to 1990, so it is the increase in the profit share that causes the nearly identical increase in the rate of profit. From 1991 to 1993 the profit rate growth slows and then declines slightly because of a similar behavior by the profit share, but its slowing and final decline are attenuated by the mild rise in the output-

capital ratio over those year. Before 1981, on the other hand, the behavior is very different in several ways from the pre 1981 behavior in manufacturing. Note that the output-capital ratio declines quite similarly to its decline in manufacturing; in nonmanufacturing from 140 to 100, in manufacturing from 134 to 100, both in more or less smooth declines. The reduction in the “efficiency of capital” was about the same in the manufacturing and nonmanufacturing parts of the economy from 1960 to 1981. But the profit share behavior is radically different. While it declined from 418 to 100 in manufacturing, it didn’t change at all over the whole period in nonmanufacturing, being at 100 in both 1960 and 1981.

So the radically different behavior of the profit shares in manufacturing and nonmanufacturing was the key to the different behaviors of the profit rates in the corresponding sectors before both before and after 1981. One can gain some additional understanding of the nature of this different behavior by looking at the actual profit shares.

{Figure 8 here}

Prior to 1981, one sees that in manufacturing the profit share started at 29.0 in 1960 and fell to 9.3 in 1981, while in nonmanufacturing the profit share was only 22.8 in 1960 but had the same value in 1981. And after 1981 they again were totally different in their behavior, manifesting a sustained increase in nonmanufacturing, significantly surpassing its highest values from the 1960s, while in manufacturing it achieved only a four year recovery and then fell again. Following the dramatic fall in manufacturing in 1992 and 1993, the two sectors were dramatically different, with the profit share in manufacturing being only just over 4% while in nonmanufacturing it was over 32%.

What we have then is that for understanding the causes for the long term changes over 1960 to 1991 in the German rate of profit, other than for explaining the changes from 1960 to 1981 in nonmanufacturing, the changes in the output-capital ratio turn out to be of distinctly secondary importance, and the central cause for the changes in the rates of profit are the changes in the profit shares. The equal contribution to the fall in the economy-wide rate of profit before 1981 from the profit share and the output-capital ratio is also seen to reflect the averaging of two parts of the economy that behaved diametrically opposite each other: in the non manufacturing sector the output-capital ratio fell by 29% while the profit share did not change at all, while in the much smaller manufacturing sector the output-capital ratio fell 24% but the profit share fell by 76%.

This then puts on the research agenda the question: what caused the changes in the profit shares in Germany over this period? Further, why was the behavior of the profit share so different between the manufacturing and nonmanufacturing sectors before 1981?

Extending what we noted above, we have

$$\mathbf{Profit\ Share} = \left(\frac{P}{Y} \right) = \left(1 - \frac{W}{Y} \right) = \left(1 - \frac{W/L}{Y/L} \right)$$

where L is labor time, W/L is the “wage” (compensation) rate, and Y/L is labor productivity. Hence we get as a direct mathematical result that if gains in the wage rate exceed gains in labor productivity the profit share will go down, and conversely.

{Figures 9, 10 and 11 here}

Two related points present themselves from all three of these diagrams. First, both the labor productivity growth and the labor cost growth strike one as generally somewhat higher in the 1960s and the early 1970s than in the 1980s. Second, the increased presence of black bars below the zero line in the latter years (which means rising profit shares, and given the flat output-capital ratio, is the cause of profit rate recovery) is caused by the growth in wages falling even faster than the falling growth in labor productivity. There are differences between the three graphs, in line with the differences in the behavior of the two subsectors and their aggregate which we have already discussed above. However, one sees clearly the general pattern of profit rate recovery, where it occurred, being caused by pushing wage growth below the falling rate of growth of productivity. This rule is borne out as well by manufacturing where there was only a short lived recovery, again caused by this dramatic reduction in wage growth, which then experienced continued profit share and rate deterioration even in the face of low wage growth because labor productivity growth dropped through the floor.

III. Conclusions

We have found the following responses to the questions we posed at the end of section I.

- 1) The economy wide rate of profit fell from 1960 until 1981, and then recovered about one half its value before the negative effects of unification became strong after 1991.
- 2) The manufacturing sector of the economy and the nonmanufacturing sector of the economy behaved qualitatively differently. Both fell from 1960, but manufacturing fell much more precipitously. Nonmanufacturing began its recovery earlier and it was both much more sustained and stronger overall.

3) Long term changes in the rate of profit were caused much more by changes in the profit share than by changes in the output-capital ratio. This was true for manufacturing both before and after 1981, and it was true for nonmanufacturing after 1981. Hence it was true for the whole economy after 1981. Only before 1981 in the nonmanufacturing sector was the fall in the profit rate caused more by a fall in the output-capital ratio, and that was the result of an absence of change in the profit share as opposed to a particularly rapid (compared to manufacturing) fall in the output-capital ratio. In turn, increases in the profit share were (as they mathematically have to be) the result of more rapid growth in labor productivity than compensation, and conversely. Hence, given the general predominance of the contributions from changes in the profit shares to the changes in profit rates, the differences in the changes in the growth rates of labor compensation and labor productivity were in general the key (but not only) factor in changes in profits rates, both the declines and recoveries. While these changes in the differences between the rates of growth of labor productivity and compensation took place on a background where both labor productivity and compensation growth tended to be lower after the mid 1970s than they had been in the 1960s and early 1970s, the key to both the falls and recoveries were largely wage squeezes and un-squeezes, capital's success in pushing the rate of growth of labor compensation down below the rate of growth of labor productivity in the periods of recovery and its inability to do so in the periods that were characterized by falling rates of profit.

Appendix

Methodology and Data Used for Calculating the Rate of Profit

At the very broadest level, the concept of profit we use in this study is as follows: there is a certain part of the net output (gross output minus depreciation) produced that is directly available for private accumulation.

Hence our first step is to remove the sector of government from consideration, both its output and its capital stocks. For output, this leaves us with net private output. Next we remove business payments to government (business taxes, indirect business taxes and profit taxes), since this value is not available to private capital for accumulation. This is consistent with the recent studies by Duménil and Lévy (1999, appendix) and Robert Brenner (2002, 285-6). We will see below that we cannot remove profit taxes, since they are not available for our aggregation categories (or in a way that could be aggregate to our aggregation categories). Fortuitously these are significantly less than IBTs (Duménil and Lévy, 2001a, 3).

Third, we remove the “residential sector” from consideration. In standard macroeconomic data, one lists people’s homes as part of the capital stock. Clearly most people do not buy a home to maximize the return on the capital they invest in it. The dynamics of capital accumulation in this sector are entirely different from that of the rest of the private economy, in that they are not driven by a pursuit of a maximum return on capital. This correction is quantitatively very important: the residential sector represents roughly one half the capital stock, while it generates only a much smaller part of the value produced, so including it would generate a significantly different overall rate of

profit. In the data we use, this will involve removing “Dwellings” from the various categories we use, as detailed below.

Hence when we use the term “economy wide” or “total economy” we mean the “total private nonresidential economy after business taxes.”.

Following from these comments, our conceptual representation of the rate of profit for this study is

$$\text{Profit Rate} = (\text{Private Nonresidential Output} - \text{Depreciation} - \text{Worker Compensation} - \text{IBTs}) / (\text{Net Private Nonresidential Capital Stock})$$

The treatment of “Worker Compensation” requires some explanation. OECD data includes a category “compensation” (COM), but this only includes compensation to employees. Self employed individuals are left with net revenue after they pay costs, which conceptually could be thought of as the sum of their “wages” and their “profits,” although of course neither of these has concrete meaning for these agents. The question arise of how to divide that net revenue, which is included in the economy-wide output figures, in a way that indicates how much of it is available for allocation for accumulation, how much of it should be treated like profits. We treat the self employed as receiving the same average compensation as employees receive for their labor, and treat the net revenue they receive beyond that as profits. For consideration of profits available for accumulation, this is clearly better than to not make any correction to the given compensation figure, which would treat the full net revenue of the self employed as profits. Again, this is the same correction for this effect used in the recent studies by Duménil and Lévy (2001a:16 - 17) and Brenner (2002:285-6), and hence as well as being theoretically appropriate, this procedure makes our results comparable with theirs.

To operationalize the above concepts we have used standard OECD data sets, to facilitate (subsequent) cross country comparisons. Data used in this study comes from the OECD National Accounts Detailed Tables, 1960/1997, 1999 Edition, Volume II: we used the CD version, 1999 Edition. The Net Capital Stock data comes from OECD Flows and Stocks of Fixed Capital, specifically the 1997 edition for the data for 1971 - 1993, and the 1983 edition for the data for 1960 - 1970.

In terms of OECD variables, the “compensation correction” is as follows. OECD data has a category EM (“employment”, which is the same as FTE, Full Time Equivalent, in the BEA data for the U.S.) that gives the number of employees it would require, if they all worked full time, to work the same number of hours as actual employees (who do not all work full time) worked. They also have a category TE (“total employment”, which is the same as PEP, People Engaged in Production, in the BEA data for the U.S.), which adds the number of self employed people to EM. Hence the number of self employed people is TE - EM. We can then construct a proxy for “wages” paid to the self employed as $(COM/EM)(TE-EM)$, and hence corrected compensation (CCOM), the compensation to both employees and self employed, is $CCOM = (COM)(1+(TE-EM)/EM) = (COM)(TE/EM)$.

In summary: the operational definition of the rate of profit we use, with everything cited in this section from the above mentioned CD of OECD *National Accounts Detailed Tables* unless otherwise stated. is then

$$PR = \{GDP-GDP,Dwel-(CFC-CFC,Dwel)-CCOM-(IBT-IBT,Dwel)\}/NCS$$

where PR = the net profit rate

GDP = the private gross domestic product, line “C.GDP.Total Industries” in table 12

GDP,Dwel = the GDP contribution for housing, line “C.GDP.....Dwellings” in table 12

CFC = the depreciation of capital, line “CFC.Total Industries” in table 13

CFC,Dwel = the depreciation of dwellings’ capital, line “CFC.....Dwellings” in table 13

CCOM = compensation to employees plus imputed compensation to the self employed, $CCOM = (COM)(TE/EM)$

COM = compensation to employees, line “COM.Total Industries” in table 13 (note that the line “COM.....Dwellings” has no data in it)

EM = employment, line “EM.Total Industries” in table 15 (note that the line “EM.....Dwellings has no data)

TE = “total employment,” the number of self employed plus EM, line “TE.Total Industries” in table 15 (note that the line “TE.....Dwellings” has no data)

IBT = indirect business tax, line “ITX.Total Industries” in table 13

IBT,Dwel = indirect business tax on dwellings, line “ITX.....Dwellings” in table 13

NCS = net capital stock. For manufacturing, it is in table 14, line “Net capital stock, manufacturing.” For total industries, it is in OECD, 1983:22-3 and OECD, 1997:34-5.

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1. Specifically, the changes in the profit rate index must be the sum of the changes in the factor indexes plus the interaction term. In this case, the profit share dropped 50 and the output-capital ratio dropped 42, so the interaction term is $(.5)(.42)(100)=21$. This gives a total change of $50+42+21=113$, which is just what the profit index changed, from 213 to 100.