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Working Paper

Falling labour share in Germany: a tribute to reforms?

Wirtschaftswissenschaftliche Beiträge, No. 107

Provided in Cooperation with:

Chair of Economic Order and Social Policy, Julius Maximilian University of Würzburg

Suggested Citation: Grömling, Michael (2010) : Falling labour share in Germany: a tribute to reforms?, Wirtschaftswissenschaftliche Beiträge, No. 107, Bayerische Julius-Maximilians-Universität Würzburg, Lehrstuhl für Volkswirtschaftslehre, insbes. Wirtschaftsordnung und Sozialpolitik, Würzburg

This Version is available at:

<https://hdl.handle.net/10419/32479>

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Bayerische Julius-Maximilians-Universität Würzburg

Wirtschaftswissenschaftliche Fakultät

**Falling Labour Share in Germany – a Tribute
to Reforms?**

Michael Grömling

Wirtschaftswissenschaftliche Beiträge
des Lehrstuhls für Volkswirtschaftslehre,
insbes. Wirtschaftsordnung und Sozialpolitik
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Nr. 107

2010

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Falling Labour Share in Germany – a Tribute to Reforms?

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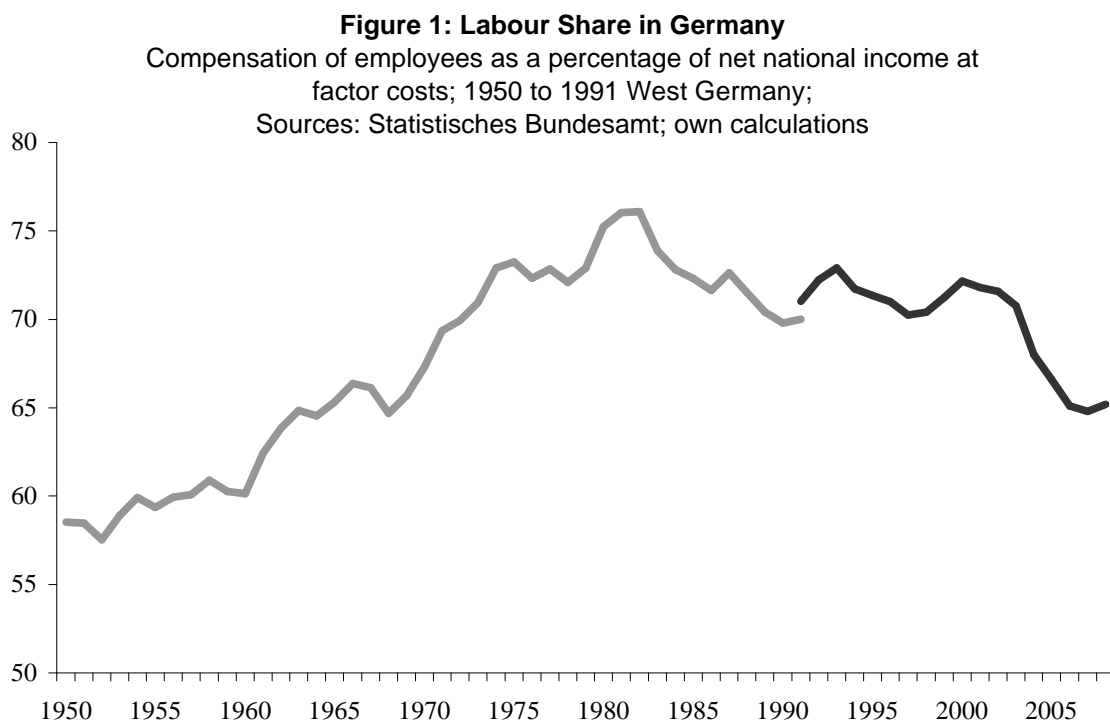
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1. Long-term Development of the German Labour Share

National income can be distributed among the economic actors according to different criteria. The income distribution by factor shares – called functional income distribution – focuses on the income of the two production factors labour and capital (including land and natural resources) and compares their share of total national income. The labour share is considered as a traditional measure of the income position of the production factor labour. It shows the employees' compensations as a percentage of net national income at factor costs.



The labour share was neither constant in West Germany from 1950 to 1990 nor did it steadily decline after 1991 in Germany (figure 1). Instead it increased from less than 60 per cent in the early 1950s to more than 76 per cent in the early 1980s before it declined until the mid-1980s. Since then it fluctuated between 71 to 72 per cent on average. Only in the last couple of years the labour's share of national income declined markedly. After 2004 it dropped below 70 per

cent hitting a new low of less than 65 per cent in 2007. In 2008 the value increased by 0.4 percentage points to 65.2 per cent. The decline of the labour share from 2004 to 2007 was the result of an increase of property and entrepreneurial income by 5 per cent annually while employees' compensations only rose by 2 per cent per annum.

The labour share has always been a problematic measure for the income distribution. Its calculation and interpretation is subject to some empirical pitfalls:

Statistical base: The European System of National Accounts (ESA, 1995) does not explicitly report employees' net national income at factor costs as the sum of employees' compensation and property and entrepreneurial income. Unlike other countries the German national accounts include net national income. While there are genuine data – particularly on wages and salaries paid by firms – in order to calculate the employees' compensations, the compilation of property and entrepreneurial incomes is based on various estimates and multiple differentiations (Essig, 2000; Gollin, 2002; Lequiller/Blades, 2006). They are an aggregate of very different incomes, including property incomes by private and public households – e. g. the operating surplus of the central bank. Even after several revisions of the national accounts the property and entrepreneurial incomes are not calculated originally. Moreover they are still a residual between net national income and employees' compensations (Braakmann et al., 2005). The aggregate, therefore, reflects all statistical inaccuracies and measurement errors of the national accounts.

Cross-distribution: Factor shares show the income of labour and capital as a percentage of national income. However, the labour share does not add up to the total income share of the factor labour and it does not allow a conclusion on the overall income position of the employees of a country, because employees also earn capital incomes – e. g. incomes from interest payments, dividends, rents. Particularly in case of an increasing relevance of capital incomes the labour share loses its importance for distributional matters (Krueger, 1999). On

the other side the capital income share cannot be interpreted as the profit share of firms, because it comprises for example property incomes of private households.

Labour income of self-employed persons: Self-employed persons and unpaid family workers also earn an income from their work. In national accounts this income is counted as capital income. Consequently the labour share does not comprise the total labour income of a country (Kravis, 1959; Gollin, 2002). Labour income would have a bigger share in total income if the income from work of self-employed and unpaid family workers were taken into account. Assuming that the self-employed and unpaid family workers were earning the same income from work per capita as a dependent employee, the total labour income share would be on average 8 to 10 percentage points higher than the conventional labour share in Germany. In addition, the assumption that a self-employed person earns the same average income from work as an employee might understate the amount of this calculated income. This qualifying measure has ranged close to its long-run average of 80 per cent, regardless of the relative high values in the mid-1970s and the early 1980s and the decline below 75 per cent in the last couple of years (Grömling, 2008). The share of all incomes from work (as a percentage of national income) was also more or less stable during the 1990s in Germany. In contrast to the development in West Germany up to 1991 the share of total income from work and the share of employees' compensations have diverged in Germany since 1991. This can be explained by a growing importance of self-employment in Germany. While the share of self-employed persons (including unpaid family workers) as a percentage of all labour market participants declined in West Germany from 30 per cent in 1950 to 10 per cent in the early 1990s, the share increased in Germany from 1991 to 2008 by 2 percentage points to 11.1 per cent. The huge decline in West Germany was the result of the secular structural change from agriculture towards manufacturing and the service sector. In contrast, particularly in 2004 and 2005 the growing number of self-employed persons resulted in an increasing share of self-

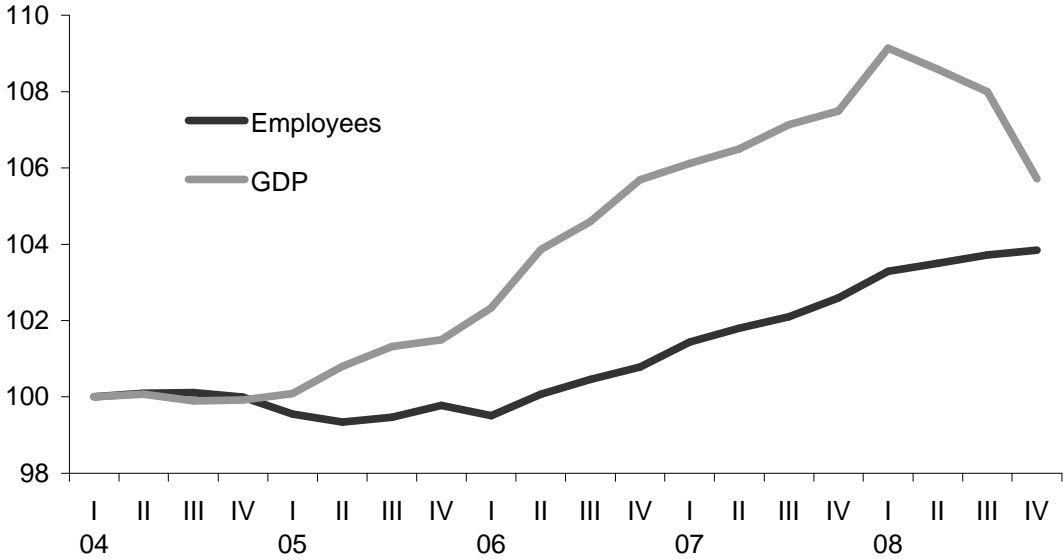
employed persons and an increasing share of capital incomes. In these two early years of the latest economic recovery in Germany the number of self-employed grew by 290,000 persons while the number of employees shrank by 160,000 persons. Only with the reinforcement of the upswing in 2006 the number of employees expanded stronger.

2. Labour Share and the Business Cycle

Figure 1 has already shown that the labour share strongly reacts to the macroeconomic development. The two peaks in West Germany in the mid-1970s and the early 1980s and the peak in Germany in 1993 signal that the labour share always sky-rocketed in cyclical downturns. This counter-cyclical course can also be observed in the USA (Young, 2004). It results not from highly volatile employees' compensations but from pronounced fluctuations of property and entrepreneurial incomes. From 1960 to 2008, the standard deviation of the annual changes of property and entrepreneurial incomes compared to employees' compensations was significantly higher. While nominal entrepreneurial and property incomes sometimes even declined in absolute terms – e.g. in the recession year 1993 – labour incomes rose even during economically bad times. This can be explained by the firms' behaviour. They tend to maintain employment in the beginning of a downturn. As a consequence the labour share increases in this period of already declining entrepreneurial incomes. In addition, unions are often successful in enforcing generous wage contracts at the end of an economic boom, so that wage and salary increases exceed productivity growth in the early phase of a downturn. The opposite happens during a recovery. When employment and employees' compensations start to pick up with a time lag, firms' profits and property incomes of private households have already recovered. Figure 2 demonstrates for the upswing from 2005 to 2007 and the downturn starting in 2008 that employment lagged behind production: While real GDP continuously increased from the beginning of 2005 the number of employees did not

start to pick up until the first quarter of 2006. On the other hand, while real GDP began to decline in the second quarter of 2008 employment continued to increase up to the fourth quarter in 2008 although at a decelerated pace.

Figure 2: Production and Employment in Germany
 Real GDP and number of employees, seasonally adjusted values;
 index first quarter 2004 = 100;
 Sources: Statistisches Bundesamt; own calculations



3. Labour Share and Growth

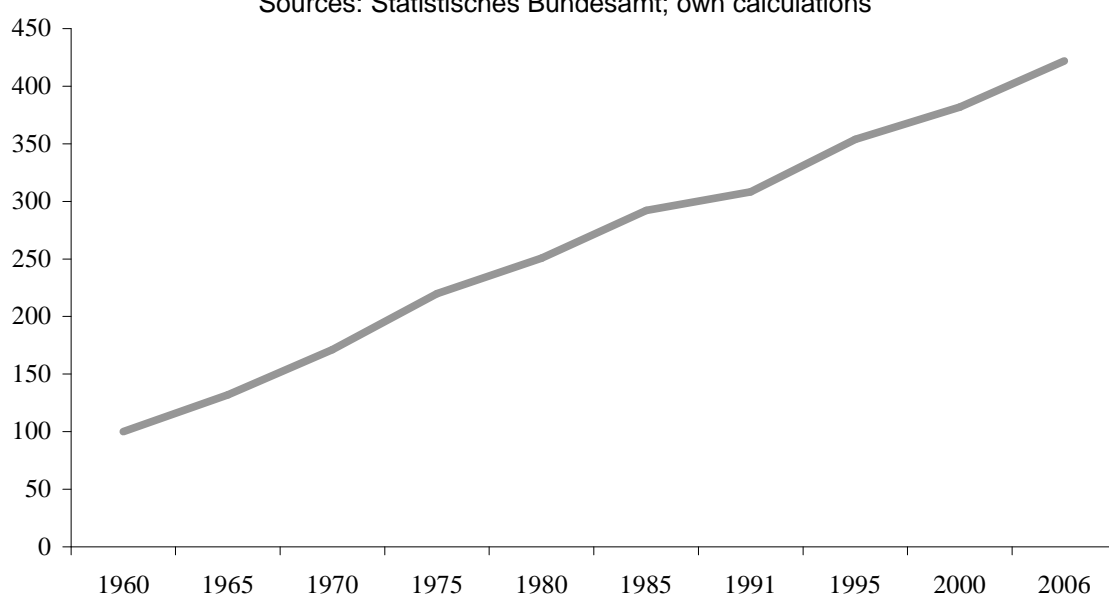
The long-run income share of a factor of production depends on the intensity by which this factor is used in the macroeconomic production process. In particular technological progress changes the relative factor use in the course of time and this influences the functional income distribution. Moreover, globalization reinforces technological change and its impact on factor shares (Guscina, 2006; Jaumotte/Tytell, 2007). Against this background technological progress can be seen as a process innovation. Having increasing material welfare in mind this means that with the same absolute amount of inputs a bigger output can be realised. In reality technological change has even gone along with a growing number of jobs. From 1970 to 1991 employment grew in West Germany by 4.7 million persons or almost 18 per cent. In Germany

in 2008 the number of labour market participants exceeded its level after the German reunification in 1991 by 1.7 million people. Compared to the employment trough in 1995 the number of jobs even increased by 2.9 million. And in comparison with the low in 2003 before the previous recovery employment has grown by 1.6 million persons. It will later be shown that the increasing number of persons in work was accompanied by an increasing number of unemployed persons.

In regard to the distributional effects labour-saving technological progress plays a dominant role. This type of technical advance goes along with an increasing capital-labour ratio. In fact, relative to the total number of all labour market participants in the West German business sector (L) the real capital stock (K) continuously rose from 1960 onward (figure 3). A growing labour input was endowed with more and more capital. At the same time low-qualified labour was in part substituted by capital. Both developments entailed that the factor labour lost importance in the macroeconomic factor combination.

Abb. 3: Capital-Labour Ratio in Germany

Price adjusted capital stock per labour market participant;
 chained index 1960 = 100; until 1990 West Germany
 Sources: Statistisches Bundesamt; own calculations



According to Hicks (1932) the so-called labour-saving technological progress can be integrated in this context (Kravis, 1959). Here the factor price ratio (w/r) and the capital-labour ratio (K/L) are decisive elements. Labour-saving technological advance is represented by an increasing capital-labour ratio. Hicks assumed that the ratio of the marginal productivity of labour to capital and thus the factor price ratio (w/r) are constant. From equation (1) follows that labour-saving technological change, which goes along with an increasing capital-labour ratio (K/L), and a constant factor price ratio (w/r) entails an increasing ratio of capital and labour income (R^n/W^n). Accordingly the labour share (W^n/Y^n) declines and the capital income share (R^n/Y^n) increases:

$$(1) \quad (R^n/W^n) = (r*K)/(w*L) = (K/L)/(w/r)$$

In accordance with this theoretical frame labour-saving technological change in combination with a constant factor price ratio leads to a declining labour share and consequently to a deterioration of the income position of the factor labour. However, this says nothing about the income development of the factor labour in absolute terms. Labour-saving technological progress need not necessarily result in unemployment. In neoclassical theory there is no technologically induced unemployment because flexible factor prices balance labour supply and labour demand. An increasing capital-labour ratio is compatible with full employment when technological change is seen as a way to enhance production by making use of all factors of production.

4. Labour Share and Reforms

In spite of an increasing capital-labour ratio the German labour share has shown no marked decline over a long period – regardless of some short ups and downs (see figure 1). The West German labour share in the early 1980s exceeded its 1960 level by 10 percentage points.

Particularly in the early 1980s it increased to more than 75 per cent – contrary to theoretical conclusions. From 1991 to 2003 the German labour share oscillated mildly between 70 to 72 per cent. Its standard deviation was 0.8 per cent around a mean of 71.4 per cent. Moreover the factor price ratio was not constant in the long run. In contrast to the theory unfolded in chapter 3 the factor price ratio has shown a pronounced increase (Grömling, 2001, 64).

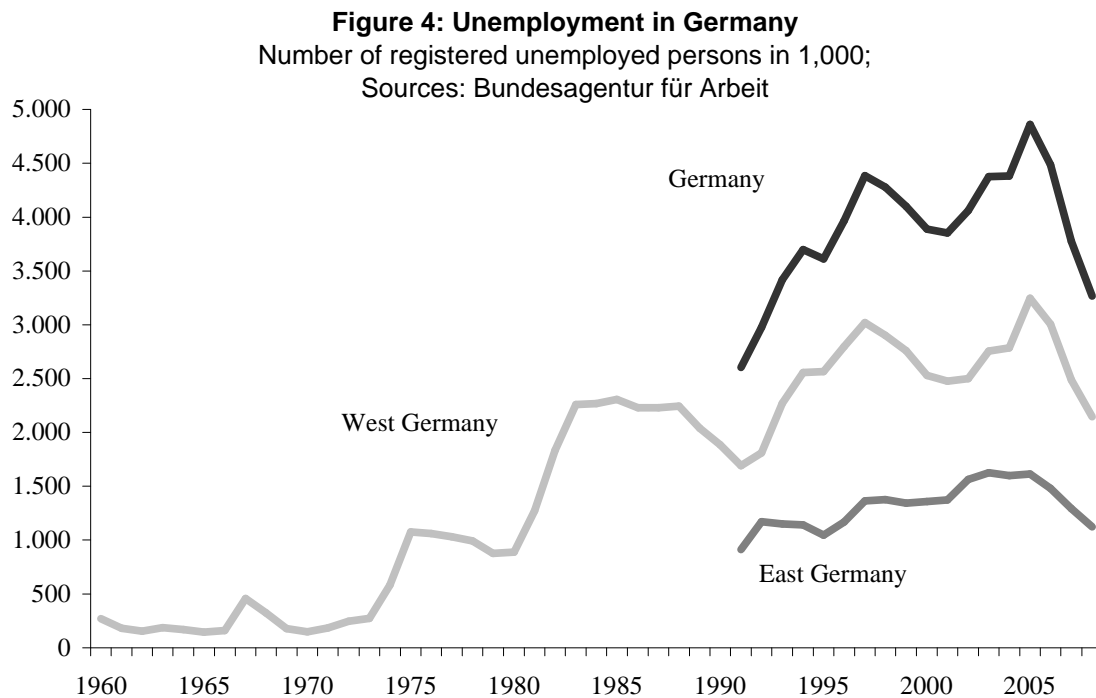
Equation (1) can be rewritten:

$$(2) \quad (W^n/R^n) = (w/r) \cdot (L/K).$$

According to equation (2) a more or less constant labour share (W^n/Y^n) or constant ratio of factor incomes (W^n/R^n) in West Germany was accomplished because the rise in the factor price ratio (w/r) almost compensated the decline of the relative labour input (L/K) or the corresponding rise of the capital-labour ratio (K/L). On first sight this suggests that the theoretically expected distributional effects of technological progress at the cost of the income position of the factor labour could be avoided by an increase of relative labour costs (w/r). But this ignores the other side of that development: On the one hand the rise of the factor price ratio has obviously counteracted a decline of the labour share. On the other hand it has caused a declining use of labour in Germany's macroeconomic production process. The capital-labour ratio in West Germany has not only increased because labour was more and more endowed with additional capital but also because labour was in part substituted by capital. This process of factor substitution can be explained by the relative increase in the price of labour. High union power in combination with manifold activities of the German welfare state – e.g. leading to increasing non-wage labour costs – has increased the price of labour over a long time. The fact that labour became more expensive initiated a process of rising capital intensity. In addition it also triggered a decelerated growth of total capital formation (Giersch et al., 1992; Berthold et al., 2002; Blanchard, 2006). In an open economy an enduring excessive wage policy leads to a shift of capital to other locations in particular in sectors

where labour and therefore wages play a dominant role. Accordingly unemployment has increased step by step in West Germany since the mid-1970s (figure 4).

Thus, the long-run rise of the capital-labour ratio in West Germany and Germany shown in figure 3 was accompanied by the increase in employment as mentioned in chapter 3. Simultaneously the number of unemployed persons has increased and the macroeconomic capital formation has weakened. This development can be regarded as evidence for an inefficient factor use and an institutional deterioration – e.g. less competitive locational business conditions in an international context.



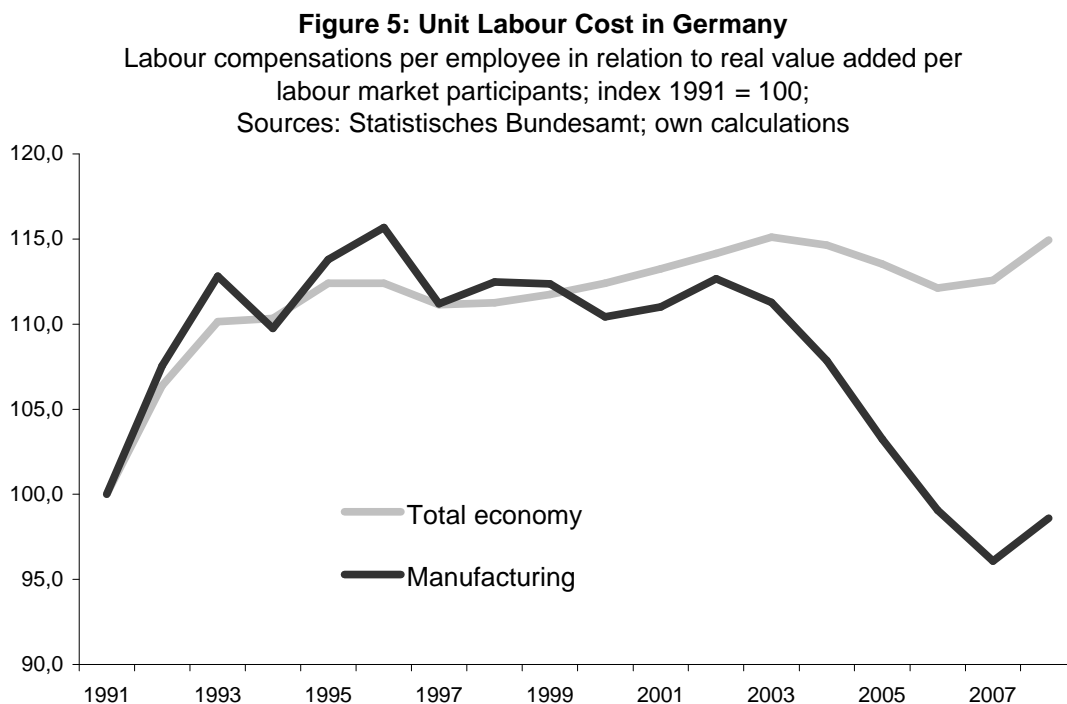
On the one hand the distributional arrangement in Germany has stabilised the functional income distribution by an increase of relative labour costs (w/r). On the other hand the (relative) use of labour as a production input has diminished – by increasing unemployment and by declining working hours (Grömling, 2008).

The decline of the labour share in Germany since 2004 poses the question whether this is the result of cyclical effects or of structural changes and reforms. As a common feature of an economic upswing entrepreneurial and property incomes (as reported in the national accounts) have shown a pronounced recovery. From 2004 to 2008 they increased on average by 5.2 per cent annually. Figure 2 has shown that employment gained momentum with a time lag of one year. In regard to the number of employees the recovery did not start until 2006.

Labour market institutions and their reforms influence the income distribution by its impact on employment (Checchi/Garcia-Penalosa, 2008). In 2004 – at least in regard to manufacturing’s development – Germany escaped from the longest period of stagnation in the post-war era. A booming world economy in combination with corporate restructuring induced an economic recovery (Grömling, 2009). In addition the so-called Agenda 2010, an important rearrangement of economic policy in 2003, led to structural improvements and a more dynamic growth potential (Deutsche Bundesbank, 2007). The long stagnation after the bursting of the “New Economy” bubble, the oil price shock and the slackening world economy made reforms in the areas of economic, social and wage policy necessary. At the peak of the economic stagnation the German government in 2003 took the first steps of its Agenda 2010 in order to modernise labour market institutions. The following measures and guidelines were part of this reform program (Deutsche Bundesbank, 2007, pp. 37–38): introducing strict work requirements for welfare recipients able to work, strengthening the risk-insurance nature of unemployment benefits and lowering social security contributions, curtailing the generous early retirement schemes and increasing the statutory retirement age, allowing more flexible use of temporary employment and working time schedules. Some of these measures have increased the willingness to take up a job, some have encouraged firms to demand more labour. Moreover, a changing work environment due to globalization,

sectoral structural changes, more individualised ways of living and working and the aging population have influenced wage bargaining behaviour (Bental/Demougin, 2006).

The decline of the labour share is also the result of wage moderation in Germany in recent years. This is demonstrated by the development of unit labour costs, which shows the change of labour costs in relation to productivity progress. In interpreting unit labour costs one has to be aware of its endogeneity. Huge increases of labour costs might induce a high productivity growth. This is the case when primarily low-qualified employees lose their job because of rising compensations. Thus unit labour costs might decline even in times of sky-rocketing labour costs.



The labour share can be interpreted as unit labour costs – but only approximately. The labour share is equivalent to the ratio of real wages (w/p) to labour productivity (Y/L):

$$(3) \quad (W^n/Y^n) = (w*L)/(p*Y) = (w/p)/(Y/L)$$

Unit labour costs (ULC) are defined as the ratio of nominal employees' compensations per employee $((w \cdot A)/A)$ to labour productivity (Y/L) . The latter relates the price-adjusted value added of all sectors (Y) to the number of all labour market participants (L) . The self-employed must be taken into account because GDP is not only produced by employees. Y represents in equation (3) national income and in equation (4) gross domestic product (GDP). In Germany in 2008 GDP amounted to almost 2,490 billion Euro and national income only to 1,880 billion Euro. The difference of 610 billion Euro can be explained by net primary incomes from the rest of the world, consumption of fixed capital and taxes net of subsidies on production and imports.

$$(4) \quad \text{ULC} = ((w \cdot A)/A)/(Y/L)$$

Assuming that the number of employees (A) and the number of all labour market participants (L) coincide – in reality they differ by almost 4.5 million people in Germany – unit labour costs can be rewritten as:

$$(5) \quad \text{ULC} = (w \cdot A)/Y = w/(Y/A)$$

Based on that limiting assumption the difference between unit labour costs and the labour share results from the fact that unit labour costs take into account real total value added (GDP) and the labour share considers nominal national income. Regardless of the income difference (GDP vs. national income) and employment difference (all labour market participants vs. employees) labour shares reflect the ratio of real wages to labour productivity while unit labour costs show the ratio of nominal wages to labour productivity. Against the background of the aforementioned restrictions the development of the labour share equals that of unit labour costs only in the case of constant producer prices. However, on a macroeconomic level this has not been the case in Germany recently. From 2004 to 2008 the GDP deflator as a measure of the price development of all domestically produced goods and

services increased on average by 1.1 per cent annually. Around two thirds of the different dynamic of the labour share and unit labour costs result from this price effect.

A quarter of the difference can be explained from the diverging development of GDP and national income. The remaining part stems from the deviating dynamic in the number of employees and the total number of labour market participants. Chapter 1 has already shown that particularly in 2004 and 2005 the growing number of self-employed persons led to an increasing share of self-employed as a percentage of all labour market participants and thus to an increasing share of capital incomes. In these two early years of the latest economic recovery the number of self-employed grew by 290,000 persons while the number of employees shrank by 160,000 persons. The reforms of the labour and product markets in Germany made it easier to stimulate the emergence of self-employment and small-sized companies. Only with the acceleration of the upswing in 2006 the number of employees started to expand stronger.

Only by neglecting the above mentioned three differences the development of unit labour costs allows the following conclusions on the direction of the labour share. From 1992 to 2003 nominal wage increases $((w \cdot A)/A)$ regularly surpassed productivity growth (Y/L) in Germany (see also figure 5). The only exception was 1997. As a result unit labour costs increased on average by 1.2 per cent per year. However, most of the unit labour cost dynamic happened in the early years of the German reunification in the first half of the 1990s. Regardless of small fluctuations, the labour share was constant during that period. In contrast, from 2004 to 2006 unit labour costs declined – particularly sharp in the manufacturing sector. Nominal compensations per employee in all sectors grew on average by 0.9 percentage points slower than productivity. This was less the result of higher productivity growth but more of a moderate increase of compensations per employee. Productivity growth in the period 2004 to 2006 resembled the average of the period 1992 to 2003. The latest productivity increase even

took place while employment rose on average by 0.3 per cent per year. At the same time the labour share declined sharply. Moreover the factor price ratio has not increased – in particular on the background of the low and almost constant level of interest rates.

The wage moderation in combination with labour market reforms has enhanced the price competitiveness of German firms. This has enabled the economy to profit from the booming global demand by rising German exports and an increasing export surplus. Last but not least the reforms and the wage moderation triggered the recovery of the labour market. Job creation (figure 2) and a remarkable decline of unemployment (figure 4) should be good evidence for that thesis. In 2008 job creation and the reduction of unemployment continued despite the emerging cyclical decline in the wake of the financial market crisis and its impairment on the real economy. In accordance with the theoretical framing the capital-labour ratio has increased as a result of a pronounced recovery of domestic investment after 2004. In contrast to preceding decades the empirical evidence for Germany from 2004 to 2007 matches the theoretical assertion – the labour share declines in case of an increasing capital-labour ratio in combination with a more or less stable factor price ratio. However, this should not be seen as a distributional deterioration because the counterpart was a strong recovery of the German labour market.

The period of a falling labour share ended in 2007. In 2007 and particularly in 2008 unit labour costs increased. While compensations per employee rose by 2 per cent in 2008 – the highest increase since the first half of the 1990s – productivity declined for the first time since 1991. The latter can be explained by the deceleration of production combined with an ongoing expansion of employment (see figure 2).

5. Concluding Remarks

After a long period of stability the labour share – as a traditional albeit problematic measure of the functional income distribution – declined sharply from 70 to less than 65 per cent from 2004 to 2007. This cannot only be explained by the cyclical recovery which resulted in a pronounced improvement of entrepreneurial and property income. Moreover, structural reforms have diminished the importance of employees' compensations in the macroeconomic income structure. This was in part the result of a moderate wage policy as reflected in declining unit labour costs. In combination with labour market reforms more than 1.6 million new jobs were created since the latest trough in 2003 – among those more than 1.2 million new jobs for employees. The number of unemployed has declined from its peak of almost 4.9 million persons in 2005 to 3.2 million in 2008 (annual averages). This development contrasts with the long-run development in West Germany and in Germany, which was coined by a more or less stable labour share. A stable labour share can be the result of excessive wage growth. The macroeconomic opportunity costs are increasing unemployment. In contrast, the development from 2004 to 2007 has shown that a declining labour share in times of technological innovations cannot be interpreted as an undesirable distributional development. The benefits are more jobs and less unemployed people – not to mention the absolute increase in labour incomes.

Last but not least it is important to mention that the labour share is only a restricted measure to assess the income distribution in an economy. Factor shares describe a distributional situation which reduces the macroeconomic production process and the corresponding incomes to only two factors of production. The growing importance of the cross distribution of factor incomes on the personal or household level is neglected. Moreover the definition of labour in the labour share focuses only on employees. Therefore changing modes of

employment – as a result of more self-employment and the individualization of work – is not adequately mirrored in the income position of the factor labour.

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