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Market Concentration and the Labor Share in Germany

Highly innovative firms are commanding a growing share of the market in several industries. This trend not only has an impact on competition and prices – but it also affects the share of overall income going to labor. This, in turn, can exacerbate income inequality.

Over the last few decades, many countries have seen the share of national income allocated to wages – the labor share – fall. Germany is no exception to the trend, showing a 7 percent decline in the labor share from 1970 to 2014. This shift in the so-called functional income distribution can exacerbate income inequality if capital gains are concentrated at the upper end of the income distribution (ILO and OECD 2015). The decline in the labor share cannot be explained exclusively by factors such as increasing trade or technological innovations (Elsby et al. 2013, Lawrence 2015). A novel explanation is offered by Autor et al. (2017): They argue that the growing market power of “superstar” firms puts downward pressure on the labor share in the United States. Markets are increasingly subject to the “winner takes all” principle in which fewer firms are claiming larger shares of a market for themselves. Since wages make up an increasingly smaller share of value added within these superstar firms, the growing weight of these firms in many markets means they have considerable downward impact on the labor share in their respective industries.

In our study “Market concentration and the Labor Share in Germany,” we examine the extent to which this phenomenon has taken place in Germany. Our analysis draws on company microdata from the ORBIS database (Bureau van Dijk) and labor share data in various industries of the German economy that are provided by Germany’s Federal Statistical Office. Both datasets are for the years 2008-2016.

What are superstar firms?

According to Autor et al. (2017) and Van Reenen and Patterson (2017), superstar firms feature the following characteristics:

- They are particularly innovative and productive, which gives them a clear advantage over their competitors in terms of quality and costs.
- Because superstar firms are less labor intensive, labor makes up a smaller portion of their value added. The required workforce does not increase proportionally to firms' increase in value added.
- And while these companies do not pay lower wages than their competitors – the opposite is the case – wages are not rising apace with the enormous growth in productivity.

Current digital giants such as Google and Apple are therefore characterized as superstars. However, according to a study by the McKinsey Global Institute, the offline world also offers examples such as large supermarket or coffeehouse chains and pharmaceutical companies (Manyika et al. 2018). Suppliers with a competitive advantage are nothing new. Yet trends such as digitization and increased trade render such superstars more visible and accessible. This, in turn, increases price sensitivity, and (end) customers are much more likely to purchase the superior service or products offered by a superstar. With platforms in particular, network and scale effects play an important role as such superstars can set standards that provide them with a persistent advantage over the competition. According to Autor et al. (2017), it is not markups but the greater weight of superstars in an industry that is driving down the labor share: As these companies account for a growing share of overall value added within an industry and, at the same time, feature a lower labor share than do "normal" companies, the labor share across the entire industry falls. If this phenomenon takes place in several industries at the same time, the overall labor share also declines.

Analysis of market concentration and labor share in specific sectors

When superstar firms dominate an industry, market concentration is likely to increase. As in Autor et al. (2017), we measure concentration using the CR4 ratio, i.e., the top four firms' share of total industry revenues. Figure 1 charts trends in the market concentration of companies in Germany for specific industries.[1] It shows that

Figure 1: Market concentration in Germany, 2008-2016.

[1]For a simplified graphical depiction, the industries presented here are clustered: they are comprised of individual industries, weighted by the share of their gross value added in 2016.

after a period of decreasing competition intensity from 2008 to 2011, several industries have since become increasingly more concentrated. Concentration has not grown everywhere in Germany, as the example of the electronics sector shows. Germany's Monopolies Commission (Monopolkommission 2018), has also reported that concentration has not increased across the board in all industries.

It is therefore important to take a closer look at individual industries and labor share trends at that level: Does the labor share decline when concentration within an industry increases? Figure 2 illustrates this relationship with a scatterplot diagram. Each data point represents the combined change in market concentration and labor share within a specific industry over a specific time period (e.g., from 2008 to 2011). The changes shown – in percentage points – point to differences between the industrial and service industries in terms of their correlations: Whereas the industrial sector shows a slightly positive correlation between the variables, a strongly negative correlation is observed in the services sector.

Because Figure 2 does not document a statistically reliable relationship, we use regression analysis to further investigate market concentration and labor shares. The regressions allow us to take into account potential confounding variables and thereby allows for a more precise estimation. The statistical model chosen here takes into account time-invariant differences between sectors, which allows us to more reliably estimate effects. Table 1 reports estimates for the industrial and service sectors. Since we take the logarithm of the variables, the results can be interpreted in terms of percentage changes: In the services sector, an increase in market concentration of about 10 percent is associated with a decline in the labor share of about 0.5 percent (third row of the table). This effect is statistically significant at the 5 percent level. However, the slightly positive correlation observed in the industrial sector is not statistically significant. Overall, the findings suggest that employees' slice of an industry's economic pie shrinks as sales in the industry get more concentrated.

Productivity and digitization

Market distortion is another possible explanation for the results. Here, increasing concentration that is accompanied by a declining labor share

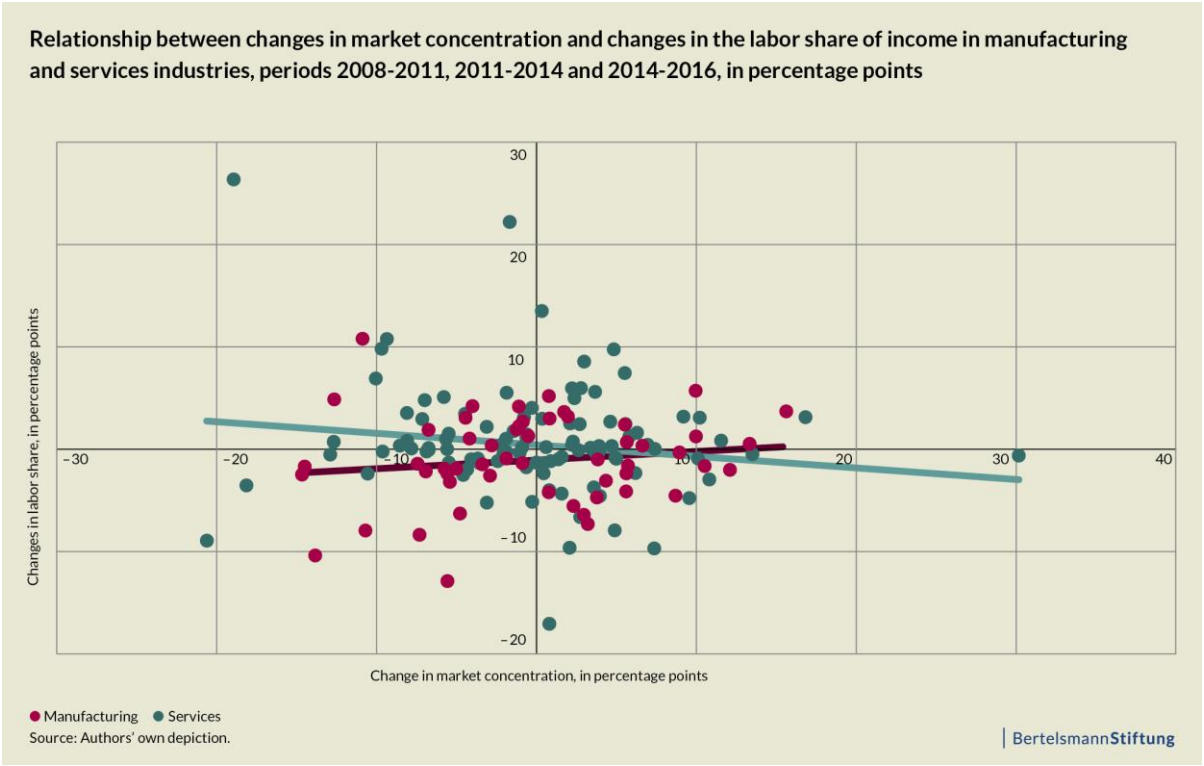

Figure 2: Scatterplot diagram of changes in market concentration and labor share, 2008-2016.

are a consequence of cartel formation – not the emergence of highly productive superstar firms.

Results from regression analysis, model (1)
Dependent variable: Changes in labor share (log)

Independent variables	Specification 1	Specification 2
Change in market concentration (log)	−0.022 (0.024)	
in manufacturing		0.041 (0.070)
in services		−0.047** (0.022)
Constant	0.004 (0.009)	0.004 (0.010)
Industry fixed effects	yes	yes
Number of observations	**159**	**159**

Note: Values in parentheses indicate standard errors. Asterisks show statistical significance of coefficients at 10%, 5% and 1% levels. Estimation is based on OLS and uses robust standard errors.

Table 1: Regression analysis, labor share on market concentration.

In this case, companies reduce the labor share solely by means of markups (De Loecker and Eeckhout 2017). The industry-level analysis of productivity is used to test this claim: Akin to Autor et al. (2017), a simultaneous increase in both concentration and labor productivity across a given industry would point to the growing importance of superstar firms. Table 2 indicates the relationship between the two measures: In the service sector, an increase in concentration is linked to an increase in labor productivity (specification 2). This finding is consistent with the hypothesis of emerging superstar firms – not with that of unproductive cartels with a strong command of the market.

An analysis of digitization take-up also supports the superstar firm hypothesis. This analysis draws on patent data to measure trends in digitization take-up at the industry level. The regression model involving digitization suggests that the more digitized a given industry, the greater the decline in the labor share resulting from increased concentration. Since superstar firms are less labor-intensive and therefore, arguably, leverage digitization's productivity potential more effectively than "normal" firms, this finding supports the superstar firm hypothesis.

Concentration and wage effects

Our statistical analysis estimates how much the labor share will fall if market concentration increases over a given period of time. But how would the labor share and the underlying wages in individual industries have developed if market concentration were to remain unchanged? To answer this question, we use the regression coefficients from the main analysis for a back-of-the-envelope calculation. It assumes that concentration in the specified time periods between 2008 and 2016 would have remained stable. All else equal, we derive an alternative path of the labor share that we then use to calculate a hypothetical trend for wages from 2008 to 2016. This hypothetical trend is then compared with the actual wage trend for each industry.

Figure 3 shows the average cumulative wage effects of concentration (per employee) on the specific industry by comparing hypothetical with actual wages. Where concentration intensifies, actual wages are lower than hypothetical wages. Here, the increase in the concentration of employees in the public goods services industry, which includes portions of the hospital sector and waste disposal administration, has led to a cumulative loss in wage increases amounting to 2,192 euro (inflation adjusted) between 2008 and 2016. In storage and logistics, which includes the container industry, cumulative wage losses from 2008 to 2016 as a result of concentration amount

Results from regression analysis, model (2)
Dependent variable: Change in labor productivity (log)

Independent variables	Specification 1	Specification 2
Change in market concentration (log)	−0.004 (0.004)	
in manufacturing		−0.074 (0.053)
in services		0.023*** (0.008)
Constant	0.029*** (0.002)	0.029*** (0.004)
Industry fixed effects	yes	yes
Number of observations	**159**	**159**

Note: Values in parentheses indicate standard errors. Asterisks show statistical significance of coefficients at 10%, 5% and 1% levels. Estimation is based on OLS and uses robust standard errors.

Table 2: Regression analysis, productivity on market concentration.

to 1,603 euro per employee. The lost wage increases can be considered in relation to total income for workers in 2008. This means, for example, that lost wage increases represented 4.5 percent of storage and logistics employees' income in 2008 and more than 5 percent for employees in public goods services. The total sum of lost wage increases for all employees in the services sector amounts to a near 11 billion euro.

But there are also winners here: Sectors in which concentration has fallen are experiencing stronger competition – which can bring about a sharper increase in sector wages than might be the case with the higher concentration rate at the beginning of the period. Employees in the financial services industry have seen their wages increase more strongly (by 2,846 euro) as a result of lower concentration. That is, wages in this sector increased by 2,846 euro on top of the increase that the initially higher levels of concentration would have implied. Even though this rough estimate is based on the strong assumption that other variables (such as value added) will remain constant in a context of hypothetically stable market concentration, it shows that industry-wide concentration has considerable consequences for wage development and can produce both "winning" and "losing" industries.

Lessons for policymaking

A key finding of our study is that higher levels of market concentration, likely a consequence of superstar firms, mean that labor benefits less strongly from economic growth than the capital side. The decline in the labor share could be counteracted by introducing, for example, policies that foster wealth accumulation. Asset-building incentives for employees are one conceivable possibility. State offerings such as sovereign wealth funds like those seen in Norway and elsewhere are an alternative.

In addition, a fresh approach to innovation policy is also crucial as the spread of top-notch innovations from superstar firms to "normal" ones must flow more smoothly. This requires an improved infrastructure for the spread of knowledge that reaches into the periphery as well. This infrastructure is particularly important for Germany's SME sector, the Mittelstand, and is a condition for its future competitiveness. EU innovation funds can play a key role here. In addition to emphasizing key technologies, it is important to consider regional policy and the promotion of SMEs when developing the means to promote innovation.

Even if the success of superstar firms is not due to unfair competition, one approach nonetheless involves regulation. Superstar firms with massive market power could make market entry more difficult for smaller firms that are potentially

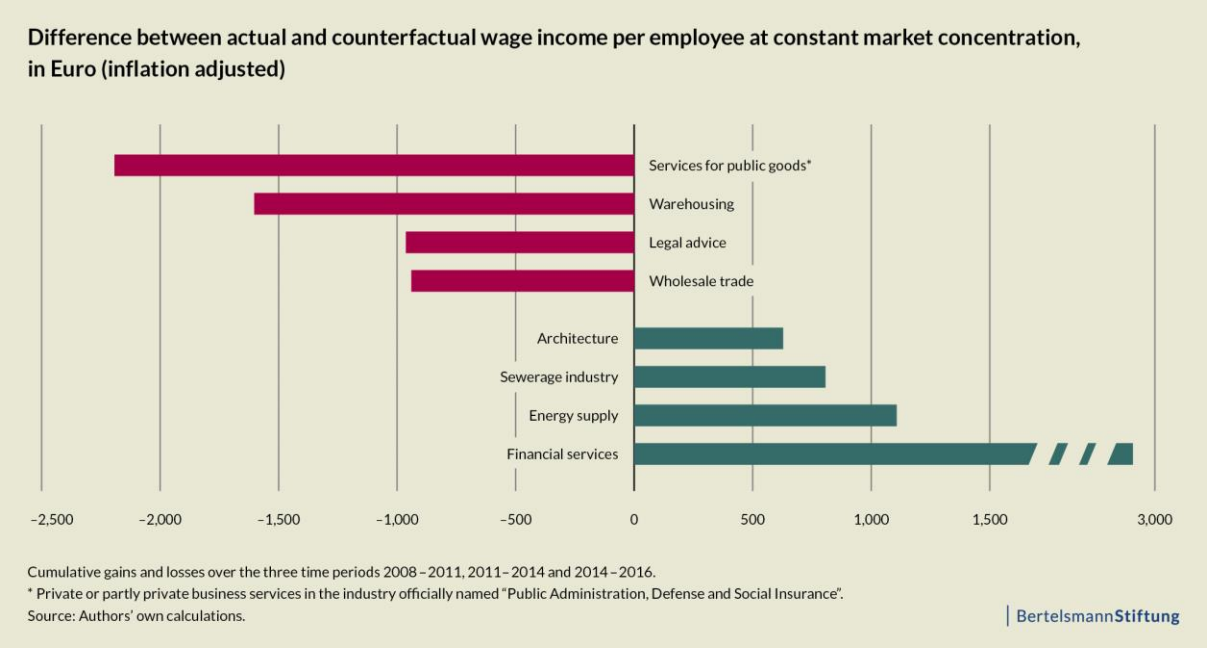

Figure 3: Wage effects that derive from changes in market concentration.

superior. They could also simply buy up smaller firms. Furthermore, it is possible that sizeable network effects associated with superstar firms could make market entry unattractive for smaller firms, which could eventually result in a decline in the innovative capacity of an entire industry. Actionable measures here include those addressing pricing and the simplification of data portability, particularly for platform companies.

In-depth study

Ponattu, D., A. Sachs, H. Weinelt and A. Sieling (2018). “Market Concentration and the Labor Share in Germany.” (In German only). Bertelsmann Stiftung. Gütersloh.

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