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GERMANY AND THE UNITED KINGDOM: UNDER THE SHADOW OF THE GREAT DECOUPLING

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Abstract

New challenges arise with the trends that the Industrial revolution brings, as well as the impacts of Globalisation which are inextricably intertwined. Experts in the field are working together on creating tools in order to predict the domino effect it may cause to the economy. It is known that technology plays a defining role in creating opportunities but also risks on a global scale.

The Great Decoupling, a study on the US and in the focus of Brynjolfsson and McAfee (2013), suggests that wages do not grow in union with productivity as it used to. To understand better this phenomenon, an adapted model of the Great Decoupling will be applied the case of Germany and United Kingdom as Europe's strongest economies. The two means tests between the growth rates of each variable will be conducted and results discussed.

Key words: Great Decoupling, economic growth, Germany, United Kingdom, productivity

JEL Classification: A10; O03; O04

INTRODUCTION

The technological progress which we have witnessed in the last decades, is remarkable. Such opportunities have enabled workers around the globe to create more value. This process of technological change spurs structural changes in the economy and across society, supporting the liberal economic policy especially through globalisation.

Drivers of globalization are one of the main forces that lead towards closer economic integration. Factors with significant impact for integration appear to be institutions, education, innovation and technological progress, which are in turn linked to education and institutions (Barro 1991, Aghion et al. 2018, Acemoglu, Gallego and Robinson 2014, Aghion, Howitt and Bursztyn 2009).

The digital age, which we have entered with developments in new technologies, increase the impact of the Great Decoupling, which Erik Brynjolfsson and Andrew McAfee outline in their study (2013). The study analysed four main economic variables: GDP per capita, labour productivity, the number of workers and household median income. Results presented that the main measures are not growing in union as they were before and should continue to. Findings by Brynjolfsson and McAfee emphasized the decoupling of productivity growth and job growth, which played a role in average US

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income deflation and many intermediate employment redundancies. Data showed that the US household receives less today in 2013 than it did in 1998 in the 50% income distribution, which is a worrisome fact.

There is evidence that a positive relation exists between higher minimum wages, unionisation, employment law (EPL) and reduced income inequality. Innovation in technologies help to generate various benefits and contribute to economy-level increases in productivity. Evidence show that companies have larger market power, increasing the profit share of income but at the expense of the labour share (Autor u. a. 2017, De Loecker and Scott 2017).

What effects the phenomenon which resulted in diverged rise of the economic drivers that used to grow in union? Is the lack of government regulation deteriorating the standard of living of workers? This research will focus to explore if the Great Decoupling is also present in the leading European countries, by adapting a new model with available data. As the strongest economies in Europe, the country of Germany and the United Kingdom will be analysed.

1. THE CASE OF GERMANY AND THE UNITED KINGDOM

Germany is the world's fourth-largest economy following the countries of the United States, China, and Japan. The country has a mixed economy and has a free market economy in consumer goods and business services. It is well known that country takes good advantage of the opportunities that globalisation brings. Exports of goods and services account for around half of the country's value added.

Germany's service sector is a leading employer (72% of the workforce) and contributes to 62.4% of the country's GDP. The main reason for such a growth was the demand for business-related services and the development of new technologies. Such investments significantly enforced new branches in the tertiary sector (Nordeatrade 2021).

Trade represents a total of 88.1% of Germany's GDP (World Bank 2019), making the country both the world's third-largest importer and exporter. Its primary trade partner is the European Union which is responsible for 68.2% of exports and 67.8% of imports.

Germany is an attractive country for foreign direct investment (FDI). The global recession and subsequent Eurozone crisis have unbalanced the influx of FDI in recent years, while Brexit and US tax reforms did not help improve the situation.

Based on the results by the 2020 World Investment Report by UNCTAD, FDI inflows in Germany decreased by almost 50% in 2019, reaching USD 36.6 billion, in comparison to the USD 74 billion of the previous year. This was mostly impacted by the Brexit and US tax reforms, a tight labour market, as well as the stagnation in the automotive industry.

Germany implements a number of EU-directed nontariff trade barriers including technical and product-specific regulations, subsidies, and quotas (Miller, Kim and Roberts 2019). Openness to global commerce are increasing sustainable competitiveness and investments.

Based on the German Federal Ministry of Economics and Energy (BMWi) report, there are 102,000 companies are based in the sub-areas of hardware and services, including software, in Germany. In 2019, a record of 94 % of these companies are active in the service and software area compared to 6 percent active in the hardware business. The technology industry provides more than 1 million jobs, which is responsible for

almost 7% of the total German economic output. The exports goods and services in this sector are worth around 105 billion euros annually (Deller 2021).

The United Kingdom is a leading trading power and financial centre, is the third largest economy in Europe (after Germany and France) and the sixth largest economy on the global scale. Results indicate that that the United Kingdom is the fifth largest importer and tenth exporter of goods in the world. This might change since, leaving the EU, it will have to renegotiate its various trade agreements.

The main drivers of the GDP growth, and in which the UK is leader, are banking, insurance, and business services.

The economy of relies mostly on the service sector, which represents more than 81% of the workforce and contributes more than 71.3% of GDP. Although there were economic uncertainties after Brexit, London remains the largest financial centre in Europe, home to the European headquarters of almost 60% of companies on the Fortune 500 ranking.

Most FDI flows are directed to the financial services sector, professional, scientific and technical services, IT, trade and repair, and transportation. According to UNCTAD, in 2020 FDI inflows to the UK fell to 0, due to the global COVID-19 crisis and Brexit. Although a deal between the EU and the UK at the end of 2020 for non-discriminatory treatment between national and foreign investors was reached, possible concerns regarding the investors' reactions remain present (Nordeatrade 2021).

Foreign trade represents 64% of the UK's GDP (World Bank, 2019). The United Kingdom is the fifth-largest importer and eleventh exporter of goods in the world, and based on research of WTO (2019) the second-largest exporter and fifth-largest importer of commercial services in the world (Nordeatrade 2021).

The EU as the main trading partner accounts for 43% of its exports and 52% of its imports. (Nordeatrade, 2021).

The UK is developing and investing for the fourth industrial revolution, especially in sectors as information and communication technologies, bio-technologies, renewable energies and defence.

VC investment into the country reached \$15bn in 2020, which is \$200m more than it was recorded in 2019. Such investment placed the UK third highest globally, while the first two investors remain the US and China, infusing \$144bn and \$45bn respectively. There was also an increase in overseas tech investment of \$9.4bn which makes 63% of investment, compared with 50% (\$3bn) in 2016. It is interesting to say that the expenditure in R&D was were low compared to US and China: just over £38bn. Amazon's recorded an expenditure of was £40bn alone, while the US' was \$551bn and China's was \$463bn, incomparably higher (Sifted 2021).

2. METHOD

This research outlines the possibility of the presence of the Great Decoupling phenomenon in other countries besides the United States of America, focusing on the strongest economies in Europe. As already mentioned, in the Great Decoupling model, four variables are being taken into consideration: GDP per capita, labour productivity, the number of jobs in private employment and median household income.

Data for the United States of America were available, while for Germany and the United Kingdom, data had to be replaced with the ones that fit the most. Two of the four variables that Brynjolfsson and McAfee (2013) used for their framework are Labour productivity and GDP per capita, which are also used in this model. Due to the fact of data unavailability of the two remaining variables, the number of jobs in Private employment and Median household income, other variables had to be elected as replacement.

The first variable, the mid-household income, is replaced with the index of the top 10 percent share of the income disparity - the income held by the highest 10 percent in the world. This will help to support results, since the decline in median household incomes indicates, that a smaller benefit is shared by large groups.

The second one, Private employment, is replaced with the variable of employment. This variable is considered a good replacement since the number of government workers remain mostly unchanged, while alternation mostly occurring in the private sector.

In the adapted model used for this research, the variables are presented as percentages of rates of growth and the two means test between is used between all variables. The test statistic results that are presented with two-tailed p-value in brackets, have the null hypothesis that the difference of means is 0. In case there is no difference in the means of growth of the two compared variables, we can assume that the variables were growing in union. In the case where the null hypothesis that the difference of means is 0 can be rejected, it will confirm that the two variables were not growing in union - they diverged in growth.

In the second part of this research, a test on each variable is presented with the null hypothesis that the population mean equals 0. In case the null hypothesis is rejected, we assume that there was a significant change in growth (or decrease) during the selected period of time. In case the null hypothesis is not rejected, there was no significant growth (or decrease) and we assume that the variable stagnated.

RESULTS

In this section, results will be displayed graphically to have a better presentation of the growth of the variables of the adapted model, and tables which include the tests results.

For the case of Germany, below is presented a graph Figure 1. where the four variables are included for the period between 1991 and 2014.

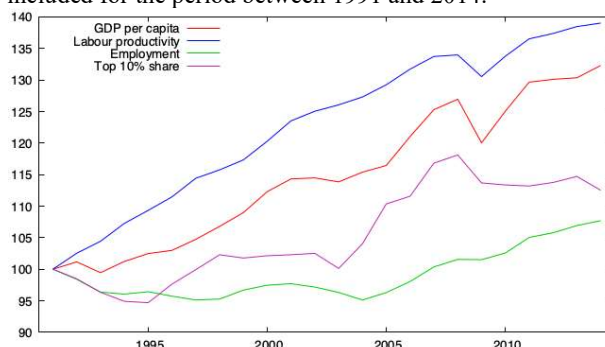


Figure 1. The Great Decoupling in Germany (1991-2014)
Source: Author's calculation

It is visible that labour productivity is growing faster than the other variables which is also confirmed in the Table 1. below.

Table 1. Results of the 2 means test for Germany

	GDP capita	per	Labour productivity	Employment	Top 10% share
GDP per capita	-		0.0768355 (0.9392)	1.46083 (0.1523)	1.39544 (0.1696)
Labour productivity	-	-		2.06353 (0.04594)	2.10815 (0.0405)
Employment	-	-	-		-0.240178 (0.8113)
Top 10% share	-	-	-	-	

Source: Author's calculation

Results of the 2 means test, shown in Table 1., suggests that labour productivity was not growing in union with employment and the top 10% share of income during the analysed period.

Table 2. Results of the mean test (growth rates) for Germany

	Sample mean	Test statistic
GDP per capita	0.0134624	3.12534 (0.004753)
Labour productivity	0.017469	4.47521 (0.0001722)
Employment	0.0032225	1.28713 (0.2114)
Top 10% share	0.00452602	0.955094 (0.3495)

Source: Author's calculation

A significant growth of GDP per capita and labour productivity was recorded in Table 2. The variables were not followed by a significant increase in employment as it should. The top 10% share has an average growth of 0.45% annually. GDP per capita reached a 1,34% growth, labour productivity 0,17% while employment a low annual growth of 0,32%.

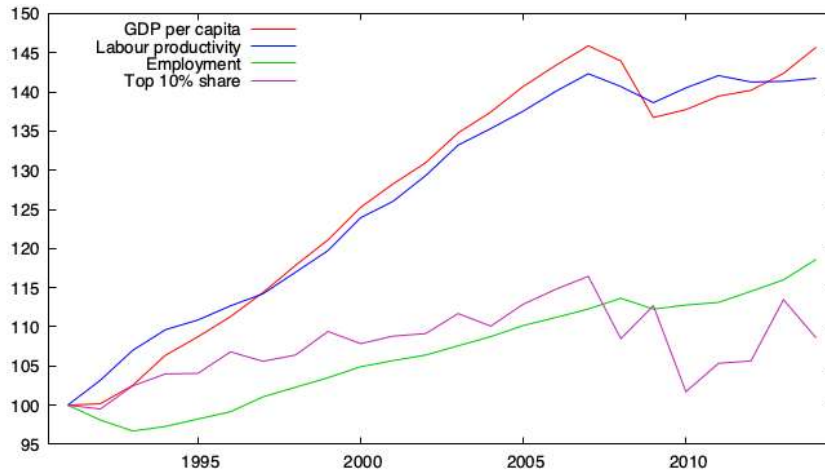


Figure 2. The Great Decoupling in the United Kingdom (1991-2014)
Source: Author's calculation

Figure 2 displays the results of the Great Decoupling adapted model for the United Kingdom from the year 1991 until 2014. An unusual trend, in comparison with other analysed countries, is present for the variable top 10% share.

Table 1. Results of the 2 means test for the United Kingdom

	GDP per capita	Labour productivity	Employment	Top 10% share
GDP per capita	-	0.561961 (0.5774)	1.29249 (0.204)	1.36894 (0.1777)
Labour productivity	-	-	0.897507 (0.3751)	1.54552 (0.1291)
Employment	-	-	-	0.48565 (0.6296)
Top 10% share	-	-	-	-

Source: Author's calculation

Data for the United Kingdom were show no differences in means between growth rates of the variables for the country, suggesting that there is no sign of divergence, meaning no presence of the Great decoupling model.

Table 2. Results of the mean test (growth rates) for the United Kingdom

	Sample mean	Test statistic
GDP per capita	0.0150435	3.83808 (0.0008403)
Labour productivity	0.0157921	5.65453 (9.34e-06)
Employment	0.00742066	3.57766 (0.001679)
Top 10% share	0.00364273	0.495731 (0.6248)

Source: Author's calculation

The means test provided evidence of differences in trends of growth rates, significant growth for GDP per capita, labour productivity and employment were recorded, 1,5%, 1,57% and 0,74% respectively. Top 10% share of income had a growth of 0,36% annually, recorded in Table 4.

To sum up, a two means test between every and each variable and their rate of growth was conducted. Evidence of divergence between labour productivity, the top 10% share of income and employment were found in Germany but none in the United Kingdom. In Germany, it was found a time trend between labour productivity and the top 10% share, for the United Kingdom results suggested that there were no time trends.

A significant increase of GDP per capita and labour productivity was recorded in Germany, while in the United Kingdom in GDP per capita, labour productivity and employment.

CONCLUSION

There is no doubt that the German and technology sector of the United Kingdom is booming. Whether one is interested in investing or establishing a new company in the analysed countries, the advantages include a stable and growing economy, qualified workforce, great location and infrastructure and settled networks that exists between different industries, linked on a global scale.

A significant challenge for this analysis was to find variables which data can accurately reflect the variables from the original model and capture their intendment. The variables used as replacement for this model, are the most factual data that the author found fit, although they cannot be entirely compared to the message that private employment and median house income incorporate. Evidence of the Great Decoupling was found in the case of Germany, but not in the United Kingdom. It would be noteworthy if institution could collaborate and gather data of the same category on a global scale. Such harmonizing of data would serve as a momentous support for researchers in their studies. That would strengthen results and new tools for forecasting new trends that the new Industrial revolution and Globalisation era bring, as well as enabling policy makers to create strategies of a greater importance. What is crucial to highlight, is the necessity of the governments and institutions to cooperate and regulate the educational system according to new trends, but also safeguard the standard of living

of future (and present) worker generations which might be a risk, based on evidence found.

This comparative study helps to better understand the risks of the Great Decoupling phenomenon which consequences might be damaging not only for the economy of the European countries, but across all continents. Because of the exponential increase of technology innovation, technology transfer which is supported by well-developed industry and rapid globalisation, results recorded in this study might serve as a starting point to support future research.

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