Network for Studies on Pensions, Aging and Retirement

NETSPAR ACADEMIC SERIES

Investigating a Middle Class Squeeze and its Potential Causes in European Countries

Caspar Ibel

MSc 08/2021-017

Vrije Universiteit Amsterdam
School of Business and Economics
Master of Science in Economics

Investigating a Middle Class Squeeze and its Potential Causes in European Countries

Master's Thesis

Caspar Ibel (2716199)

Supervisor: Dr. Stefan Hochguertel

Second assessor: Roger Prudon

August 10, 2021

Abstract

An extensive middle class is a key interest of national economies. However, there has been a prevalent myth over several decades about decreasing middle classes in industrialized countries. Academic literature has failed to dismantle this myth, giving no clear evidence on the subject. Of course, the issue is complex and answers greatly depend on the scope and definitions of approaches. Nevertheless, this paper aims to provide evidence on a middle class squeeze in two steps. First, it investigates a potential middle class squeeze in European countries between 2004 and 2016. In order to deal with measurement issues, the approach includes different middle class and income measures. In the second step, a fixed-effects regression model is used to discover potential causes of the middle class squeeze. The causes, which all have been named in past literature to possibly explain a squeeze, can be divided into three points of view: The effects of financial crises, an increasing skill-premium and decreasing social expenditure.

The results imply a middle class squeeze predominantly at the market income level. Using this income concept, twelve out of seventeen countries lost middle class shares by on average 11,5%. Further, of the presented variables to explain the squeeze, the unemployment rate and the share of social expenditure show a highly significant negative correlation. The negative correlation to the unemployment rate, which is used to proxy financial crises effect on middle classes, reveals clear spillover effect of the financial crises on middle classes in European countries. On the other side, the proposed theoretical explanation falsely anticipated the link between social expenditure and middle class shares. This fact does not allow for an appropriate interpretation of this result.

Table of Contents

"The most perfect political community is one in which the middle class is in control, and outnumbers both of the other classes." (Aristotle)

1. Introduction

A strong middle class is of elementary importance for societal stability and economic growth. This understanding has been prevalent even since ancient times, when Aristotle emphasized the positive impact of an extensive middle class on democratic structures (Rackham, 1932). Since then scholars and economists have demonstrated further beneficial aspects, such as middle classes' positive effect on macroeconomic performance (George, 1931) as well as innovation and productivity (Acemoglu & Zilibotti, 1997). Today, the middle class is still considered to be the backbone of national economies and (western) democracies. However, the rising income inequality starting in the 1980s, sparked an ever-increasing fear of shrinking middle classes in industrialized economies. Findings by American economists suggested such trends in Anglo-Saxon capitalist countries first and prompted academic discussions. Advanced economies in continental Europe experienced similar income disparity developments and subsequent discussions in the following decades (Dallinger, 2013).

While there is widespread acknowledgement about the relevance of the middle class, the meaning of the "middle class" varies greatly. Depending on its definition, the term is used to refer to a middle class based on income, wealth, property ownership or education, among others. This paper however focuses on a middle class definition based on income (Section 3). Up until today, the evidence of an income based middle class squeeze in industrialized economies is mixed. In the United States there is ample agreement that both income inequality has increased and the middle class size has shrunk (Pew Research Center, 2015). Cross country comparisons including many OECD countries reveal no clear-cut trend (Pressman, 2007; Atkinson & Brandolini, 2011; OECD 2019). These ambiguous results also apply when considering European countries only. The results often depend on middle class definition, country selection and data source (Salido & Carabana, 2019).

Several attempts to scientifically explain the causes of a potential middle class squeeze have been put forward by economists over the years. The initial argument of demographic change lost popularity over time. Possibly because several of the observations such as a changing age structure (Lawrence, 1984) or rising divorce rates (Thurow, 1984) vanished over time, while the issue of shrinking middle classes remained visible (Pressman, 2007). Other early explanations such as the loss of middle-class manufacturing jobs due to changing industrial structures continue to be relevant. Nowadays, there seem to be two popular points of view. The more popular position considers globalization and skill-biased technological change (SBTC) to be the driving force. An increasing skill-premium and level of globalized trade flows especially puts pressure on middle class jobs (Goos & Manning, 2007; Goos et al., 2009; Autor

et al., 2006). The other point of view emphasizes the role of national policies in steering the income distribution development. Accordingly, middle class squeezes in certain countries can be explained by country-specific policies and economic characteristics (Pressman, 2007).
Recently the impact of financial crises on middle class size has received increased academic attention (Batinti & Costa-Font, 2019; Eurofound, 2019; Vaughan-Whitehead, 2016). Considering a crisis severe impact on unemployment or economic growth, there is much reason to suspect long-lasting effects on the overall income distribution. In the end, the literature has separately provided some attempts over the years to explain a potential middle class squeeze. However, the question whether one of these explanations is dominant remains open.

This paper addresses these lacks of clarity in the literature. It investigates the issue of a European middle class squeeze in the 21th century and possible causes of such a trend. In the first step, it looks at the development of middle class shares between 2004 and 2016 based on intuitive before-after comparisons. These result shall provide a transparent answer to the debate on a middle class squeeze in European countries, taking into account different measurement and definition approaches. In the second step, I study possible causes for a middle class squeeze by looking at the relationship between different explanatory variables and middle class shares. These variables are representative of three points of view that have been put forward by Economists to explain a middle class squeeze or the increasing income inequality. Namely, financial crisis, an increasing skill-premium and social policies.
I find a middle class squeeze in twelve out of seventeen European countries on market income level. When regressing the variables on this definition of the middle class, the unemployment rate and share of social expenditure result to be highly significant. Section 2 reviews the relevant literature, while section 3 discusses middle class definitions. Next, section 4 describes the use of data and the empirical approach, before in section 5 the results are presented. Section 6 discusses the relevant results considering past literature and the conclusive part in section 7 rounds up the paper.

2. Literature Review

2.1 Middle Class Squeeze

According to Atkinson and Brandolini, it was the initial scarcity on middle class research, which attracted researchers to focus on the topic. When the income disparity started to grow in the United States in the 1970s, researchers were especially interested in the effect on both ends of the distribution, ignoring the effects on middle class households (Atkinson & Brandolini, 2011). Indeed, the total amount of research output on the middle class might be

comparatively lower, but the topic has received constant attention since the 1970s. The majority of the literature though contemplates advanced economies. An international comparison by sociologist Steven Pressman from 2007 investigated a middle class squeeze between 1980 and 2000 for 26 countries using the LIS database. Averaging all considered countries, he only found a marginal decrease over these years for both weighted and unweighted population samples. Still he observed large between country differences in middle class shares. While in Norway the middle class made up 42% of the population, in the United States the middle class represented less than a third. In countries where the middle class shrunk, twice as many people experienced downward mobility than moving up the income distribution (Pressman, 2007). In stark contrast however stood the results of an influential paper by Atkinson and Brandolini in 2011. The authors observed a significant middle class squeeze for 15 countries between 1985 and 2005. Since there was a great overlap in selected countries and years, there seems to be an obvious contradiction. Different measurement methods explain this discrepancy. Both papers define household income as disposable household income, but use different middle class definitions. While Pressman looked at the number of people earning between 75 and 125% of the median income, Atkinson and Brandolini define the middle class squeeze as the lost income share of the middle 60% of the income distribution. The fact that both of these results are in itself correct, but draw different pictures, illustrate the issues of the ongoing debate about a middle class squeeze. Another relevant approach is presented by Dallinger. The paper investigates a middle class decline and especially the role played by redistribution. Overall, she finds little change of middle class shares between 1985 and 2005 looking at nineteen advanced economies. If any, the decline is happening at the market income level (Dallinger, 2013).

As this paper focuses on European countries only, a recent study by Salido & Carabana from 2019 offers better comparability. The approach compares middle class sizes of the EU-15 countries between 1994 and 2013 using Eurostat data. The authors conclude that overall there is no evidence for a middle class squeeze for most income definitions. However similar to Dallinger, they admit that the dynamics function differently for market income. Based on these results, an impact of Skill-biased technological change and globalization on middle class income is rejected (Salido & Carabana, 2019). When concluding the paper, the authors offensively express a lack of understanding towards EU institutions for believing in a European middle class squeeze. An official report by EU Foundation Eurofound partly provides an explanation for the institutions point of view. The authors stress that between 2008 and 2013 the size of households between 75 and 200% of median disposable household income declined in most member states (Eurofound, 2017). In the end, the bigger picture reveals a reversal in this trend in many member states until 2015 (Eurofound, 2019). Interestingly, a report published by the OECD applying the same middle class definitions concludes a slow

but clear squeeze of the middle class. However, even though the report is also published in 2019, the OECD report considers a much wider time frame covering the last three decades rather than only the 21st century (OECD, 2019).

2.2 Drivers of a Middle Class Squeeze

Previous research investigating potential causes of a middle class squeeze also presents ambiguous results. Clearly those researchers who find no evidence of a middle class squeeze in the first place, do not proceed to investigate potential causes. For this reason, the literature that specifically investigates causes of a middle class squeeze is somewhat sparse. On the other side, the literature on a intertwined issue, the increasing income inequality, provides additional relevant theories.

The effects of financial crisis on the middle class received some attention over the last years. Institutional reports by the EU (Eurofound, 2019) and ILO (Vaughan-Whitehead, 2016) suggest indisputable effects of crises on middle class income. However, in the case of the Eurofound report, the observation is based on a temporary observation up until 2013, which still represents a crisis year. Research approaches on the other side, find no evidence of a crisis effect on middle class size or structure. Both papers by Pressman and Batinti & Costa-Font expect financial crisis spillover effects through unemployment shocks. In a rather basic approach, Pressman compares unemployment and middle class size shares before and after periods of crises. The simple fact that the biggest changes of the variables took place in different periods is used to reason his result. Batinti & Costa-Font take a more advanced approach. They use 197 micro-data sets between 1980 and 2013 from the LIS household database in order to regress different middle class measures on unemployment rates and other recession indicators. In the end, no statistically significant effect of an unemployment shock is found, except for the first period of the Great financial crisis (Batinti & Costa-Font, 2019).

The research on globalization and skill-biased technological change (SBTC) usually refers to the changing income distribution in general, with implicit effects on the middle class as well. Goos and Manning first proved an increasing demand for very low- and high-skilled workers in the UK and the US, leading to a job polarization. One possible explanation identifies the potential of technology to take over routine labor. These jobs, which tend to be clerical or craft jobs, are usually located in the middle of the income distribution. Thus, the rapidly advancing technology puts direct pressure on middle class jobs. Another explanation recognizes the force of globalized markets as the main cause for the diverging income distribution (Blinder, 2007). When investigating these dynamics in European countries, Goos et al. similarly find similar evidence of job polarization. Testing different causes, the result is mainly linked to the erosion of middle class jobs by technological advancement (Goos et al., 2009). Other research has supported this idea (ILO, 2015; Mishel et al. 2013).

Further, the literature that suggests national (social) policies to be the driving force behind a potential middle class squeeze has predominantly been shaped by American sociologist Steven Pressman. According to him, governments fiscal policy plays a decisive role to influence income distribution within countries. High shares of the transfer budget and strong targeting towards low and middle income households lead to more redistribution and equality within a society (Pressman, 2007). However, since there is little direct interference of governments fiscal policy with market income, his explanations rather apply to a disposable income level middle class squeeze.

This paper adds to the existing literature in two ways. Firstly, it contributes to the ongoing debate about a European middle class squeeze. This is not to say that this paper once and for all gives a universally valid answer. Rather, the approach provides results using the latest LIS numbers available and applying for different measurements concepts presented in the past literature. Secondly, the approach investigates potential causes for such a middle class squeeze. In this regard, it gathers three explanations, which have been linked to either a middle class squeeze or increasing income inequality by Economists: The effects of financial crises, an increasing skill-premium and decreasing social expenditure. Two of these variables have never been tested on an explicit link to middle class shares before. The results shall imply if one of these points of views can dominantly explain a potential middle class squeeze. Again, these results will likely not picture a clear-cut evidence of one cause being responsible of a potential middle class squeeze, but rather an estimate of important components in this development.

3. Who is the Middle Class?

Some of the issues regarding the definition and measurement of the middle class were briefly touched upon. This section aims to explain prevalent definitions to measure the middle class. Steven Pressman, who intensively studied middle class definitions and income development, said that any definition we choose is somewhat arbitrary. However, this arbitrariness should not restrain researchers from defining measures when investigating middle class related questions (Pressman, 2007).

From a broader perspective, middle class definitions generally follow either an economic or sociological approach. The latter focuses on socio-economic household characteristics. In this sense, middle class belonging is defined upon a certain level of education, a selection of jobs or family compositions. Nevertheless, this paper focuses on pure economic definitions of the middle class, which already include much variation. More precise, the definitions are based on

income, while completely ignoring the wealth status of individuals and households. This is due to less availability of data on wealth in the Luxembourg Income Study.

When detecting middle class size based on income, Atkinson and Brandolini define two different methods. The inequality-based measure looks at the income share of evenly divided groups with respect to the total national income. Individuals or households are commonly divided into quintiles or deciles ranging from top to low income, in order to compare their relative income shares. The size-based measure on the other side, assesses the share of people in a certain income group with respect to the total population. In this case the income thresholds are defined first, before calculating the share of people (Batinti & Costa-Font, 2019). When stipulating these thresholds, economists have mainly agreed to determine the lower cut-off at 75% of the median income. The rationale behind this decision was to clearly separate the middle class threshold from the at-risk-of-poverty line at 50% of the median income. Because in theory, the middle class should be comfortably clear of being at-risk-of poverty (Atkinson & Brandolini, 2011). The upper cut-off is where definitions diverge. A widely accepted definition determines the cut-off at 125% of the median income. Even though, the overall size of middle classes is rather small in this case, the symmetry around median income makes the approach less arbitrary. On the other side, international institutions such as the ILO and OECD have adopted the 200% threshold in their definitions. Naturally, this shift enlarges the size of the middle class and offers space to further classify the middle class into a lower, middle and upper section.

Moreover, regardless of the approach, the income concept also has an impact on the results. In general, two different income concepts are used in the literature. First, the concept of total disposable (equivalized) household income (dhi), which reveals the money at someone's disposal from all possible income sources after taxes and social contributions. Second, the market income (mi) or factor income (fi) refers to the sum of income from mere labor and capital activities, without including any kind of transfers, taxes or contributions. The market income represents the unspoiled income distribution, without the effect of automatic stabilizers. A comparison between factor and market income thus provides interesting insights into the role of public policy to reduce (income) inequality (Dallinger, 2013).

4. Strategy

4.1 Data

All income related data for this study is retrieved from the Luxembourg Income Study. The database provides harmonized microdata from about 50 countries. As this approach focuses on European economies over the cycle of 21st century crises, the country selection was based on the availability of datasets between 2004 and 2016. To allow for better comparability, only

countries with datasets over five points in time, which were defined as a span of two or three years, were selected. Thus, the chosen datasets may vary slightly within each of the five points in time. While 2004 serves as the baseline year for Austria, 2005 is used for Belgium. All other variables, which are used in the regression analysis are adjusted to the exact chosen year of the individual country. A detailed overview of the chosen datasets can be found in the appendix (Table 3, Appendix). The points in time each represent different economic situations: Years 2004/2005 serve as the pre-crises base years. The second point in time 2007/2008 represents the Great Financial Crisis (GFC), while 2009/2010 combines the GFC with the outbreak of the European Debt Crisis. Years 2012/2013/2014 are solely linked to the European Debt Crisis. Lastly, years 2015/2016 serve as the post-crises benchmark. For many countries 2015/2016 also represent the most recent datasets available in LIS. Hence, the results also provide an update on the latest numbers available.

With respect to these years, datasets for the following 17 countries are available in the LIS database: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Slovakia, Slovenia, Spain and Switzerland. Clearly, this selection is not precisely representative of the European Union, since Switzerland was never part of it. Due to the countries geographical location and strong economies ties to the EU, it is considered a “European country” in this paper. In general, the sample appropriately covers the main geographical European sub-regions: Northern Europe (Denmark, Estonia, Finland, Ireland), Western Europe (Austria, Belgium, Germany, Netherlands, Switzerland) Eastern Europe (Czech Republic, Hungary, Poland, Slovakia, Slovenia) Southern Europe (Greece, Italy, Spain). Even though these regional categories have oftentimes been used to explain economic performance of countries, the country-specific and dynamics to explain middle class shares are more complex. Due to the uncomplete selection of European countries, this paper will not refer to trends in Europe, but rather in “European countries”.

The LIS database offers a wide range of possibilities to modify the desired data. I strictly follow the proposed LIS guidelines to obtain the outputs. In practice this meant, merging household and personal files to include more observations, applying top (10*(p50) and bottom (x<0) codes to adjust for statistical outliers and equalizing household weight to account for different household sizes (Section 1, Appendix). Following past research outputs in their selection of income concepts, the disposable household income and market income are also applied in this paper. These measures are predefined in the LIS database and need no further modification.

4.2 Empirical Approach

The objective of this paper is to measure a possible middle class squeeze in European countries and if applicable identify contributing variables to this development. This question is answered in two steps, each using a different method.

The first approach solely focuses on the issue of a middle class squeeze over the financial crises. Precisely, this means: Did the middle class in-or decrease between 2004 and 2016, which corresponds to crises periods in the European countries. In order to answer this question, statistics and graphs which compare middle class shares before (2004/2005) and after (2015/2016) the crises prove to be very revealing. Almost all research looking into a middle class squeeze follows this approach. Aiming to present robust results, different measurement methods are applied. First, regarding the middle class measurement concept, the approach focuses on the size-based measure and includes the small size of 75% - 125% and the big size measure of 75% – 200% of median income. The size-based measure has been used predominantly in past literature, which enables comparability to more studies. Second, the results for each definition is given for disposable household income and market income. This strategy accounts for some of the differences in measurement and subsequently results of past literature. Based on the results, is it possible to compare the results and further provide a possible starting point to the second question.

The second approach identifies the developments and variables, which might have led to the middle class squeeze. In general, the method follows a recent approach by Batinti & Costa-Font focusing on middle class squeeze and the financial crisis. Using a fixed-effects model, the middle class share will be regressed on different variables. This regression analysis precisely shows the interdependence of these variables, while accounting for country specific differences. In comparison to Batinti & Costa-Font, this paper offers a greater variety of variables, which belong to different points of view about the middle class squeeze. These points of view can be broadly categorized into financial crises, skill-premium and social expenditure. Section 5.2 explains the measurement of the variables in detail.

While the before and after comparison observes a continuous process, the regression analysis reveals the emergence of simultaneous effects happening in the same year. In other words, the regression analysis shows if movements of e.g. unemployment and middle class share happen within the same time period. In this case the same year. With respect to the chosen variables, one can hardly estimate the exact duration between influence and noticeable impact. In case of unemployment an immediate effect on household's income can be expected. As an unemployed person or household quickly moves down the income distribution, the number of people in the middle class decreases. An advantage of the applied size-based measure is the fact there is no direct substitution for this person, which increases the likelihood of a correlation. This would be different in an inequality-based measure. On the other side, the effect duration

of GDP growth or an increasing skill premium on the income distribution and middle class size is unknown. In summary, the before and after comparison is able to capture the results of a process including the time-lagging effects. Unfortunately, it fails to provide explanations for the trend. The regression model on the other side points out simultaneous movements between two variables, which helps to explain the phenomenon of the middle class squeeze. It ignores time-lagging effects though.

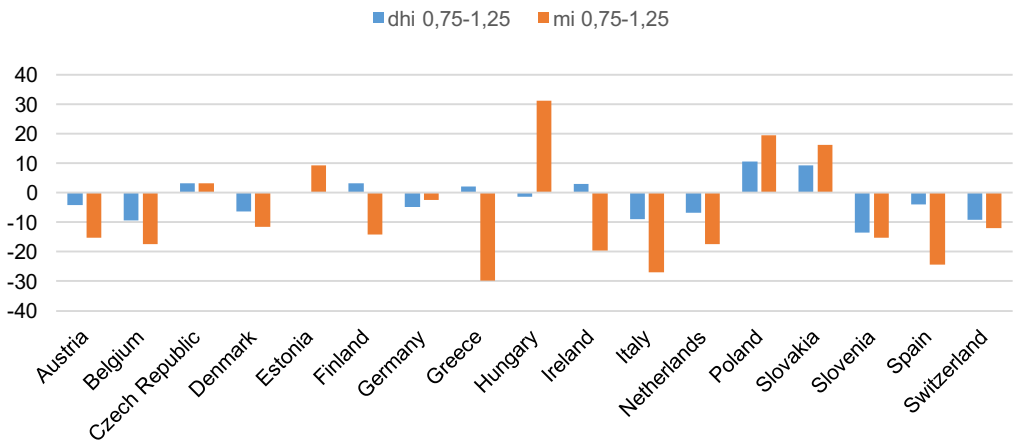
5. Results

5.1 Middle Class Squeeze

This section presents the developments of middle class shares considering different measurement approaches, based on comparisons of share developments.

Graph 1 and 2 picture the change in percentage of middle class shares between 2004 and 2016, which represent the pre- and post-crises years. The smaller definition of the middle class can be seen in Graph 1 (75 – 125) and the larger definition in Graph 2 (75 – 200).

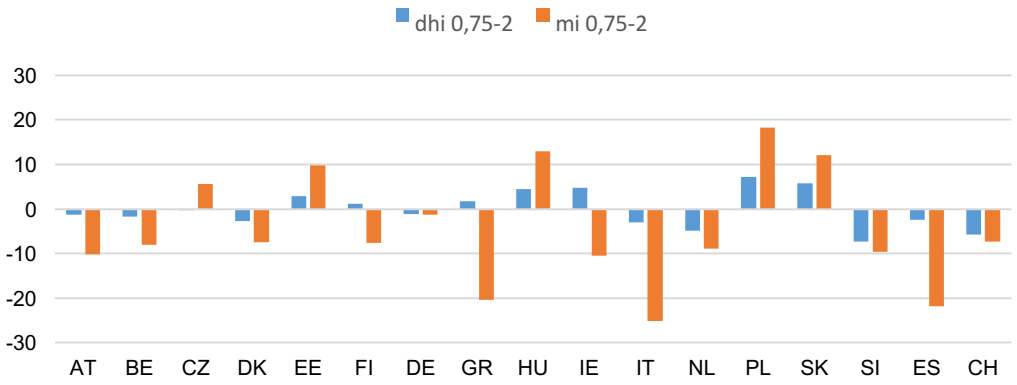
Graph 1: Change in middle class shares (75% - 125%) between 2004 – 2016



When looking at disposable household income, the middle class share decreased in ten out of the seventeen countries. Overall change rates barely exceed the 10% mark, implying that in general there was only a moderate change of middle class sizes. With respect to market income, the scenario changes in two ways. Not only experienced twelve out of seventeen countries a decrease in middle class share, but the level of changes was also much higher. Shares in eleven countries fell by more than 10%, up until almost 30% in Italy. Interestingly, countries which were hit heavily by the crises like Greece, Spain and Italy also show distinguishable losses. This observation points towards an association between crisis indicators and middle class shares, which is discussed in more detail at a later point. On the other side, some outliers like Hungary, Poland and Slovakia recorded relatively large middle

class increases. Though, the overall results point towards a middle class squeeze in many European countries, when looking at market income and applying the smaller middle class definition.

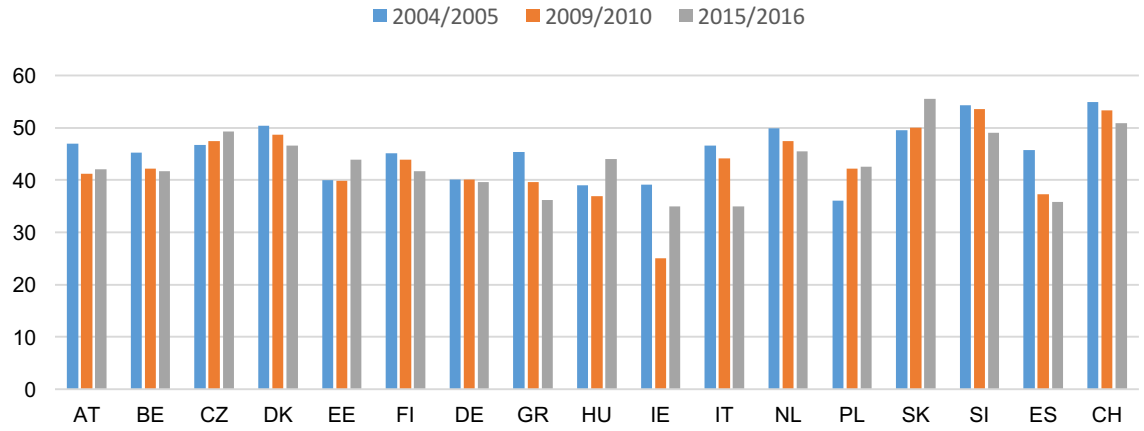
Graph 2: Change in middle class shares (75% - 200%) between 2004 – 2016



As Graph 2 shows, the abovementioned results are also robust to the broader definition (75 – 200) of the middle class. Once again, when looking at disposable household income, there is no clear-cut evidence of an overall trend. While shares decreased in nine countries, the rest experienced middle class growth. For market income on the other side, again twelve out of seventeen countries recorded a shrink in middle class size. Nevertheless, the average drop in percentage points in this scenario is lower, as it stands at 11,5%. In comparison, this number amounts to 17,2% in Graph 1. Clearly, due to the smaller boundaries of the 75 % - 125% definition, stronger changes result somewhat faster. These numbers consider decreasing shares only. Considering these numbers first conclusions can be drawn, which apply to both definitions of middle class size. In terms of disposable household income there is no sign of a middle class squeeze between 2004 and 2016 in European countries. However, this pictures clearly changes when we look at market income. The overall trend shows a deterioration of middle class shares on the market income level. This discrepancy points towards the vital role of welfare states to support middle class households in their disposable income by redistribution through transfers.

In order to validate the assumption of a negative trend line on market income level over the crisis cycle, another point in time within the period is added. The years 2009/2010 represent heavy crisis years in the European countries. Graph 3 depicts middle class sizes for all countries for the three points in time.

Graph 3: Middle class shares (75 – 200%; Mi) in 2004/2005, 2009/2010, 2015/2016



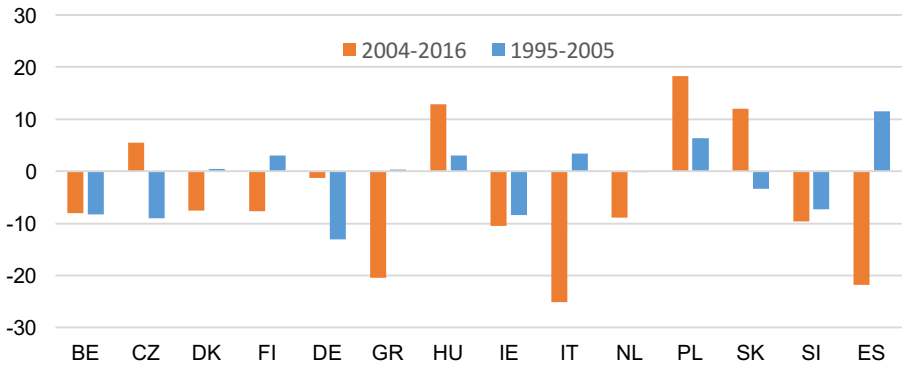
First, the table illustrates how the size of middle classes vary across European countries. In Germany, the market income middle class amounts to roughly 40%. Slovakia and Slovenia on the other side were able to reach almost 55% at a certain point in time. Further, the shares reveal more details on the trend. In twelve out of the seventeen countries, middle class share was highest in the baseline year of 2004/2005. On the other side, ten out of the countries saw their lowest middle class share after the crisis. The observation that most countries high and lowest middle class share coincided with pre- and post-crisis years respectively, confirms that the overall trend line between 2004 and 2016 is declining. The alternative assumption that during the heaviest crises years the middle class shares are also lowest, does not seem to hold.

Another perspective, which is worth mentioning looks at the within dynamics of the middle class. The larger definition of the middle class allows this division into lower (75-125), middle (125-150) and upper (150-200) segments. Not surprisingly, a clear deterioration for the lower and middle segment across most countries can be observed (Graph 6, Appendix). The results for the upper middle class are mixed, with eight countries losing shares in comparison to twelve and thirteen countries for lower and middle middle class respectively. Clearly, the fact that the upper middle class share comparatively loses less ground points towards a polarization of income, which is in line with earlier findings of a middle class squeeze.

As mentioned above, the results of Graph 1 and 2 show the tendency of a middle class squeeze with respect to market income of households. A drop in 70% (12/17) of the observed countries represents a strong overall decrease. In order to validate the extent of the decrease, a comparison to earlier time periods can be drawn. Graph 4 shows the share developments for the periods of 2004-2016 (orange) and 1995-2005 (blue). Due to a lack of available data in 1995, the number of observation is limited to fourteen countries only. In eight out of the fourteen countries, the middle class share change remained lower between 04-16 in comparison to 95-05. Or in other words, in 8/14 cases there was a less beneficial middle class development

between 04-16. These results provide no clear-cut evidence, whether overall middle class shares lost more ground between 2004 to 2016 in comparison to the decade before. Nevertheless, there is some striking evidence. In 78% of the countries, the change of middle class shares in absolute values, so either positive or negative was larger. The average change between 1995 and 2005 amounted to 5,5%. In the period afterwards, this number more than doubled, reaching 12,1%. This fact reveals stronger dynamics or rather changes in the income redistribution between 2004 and 2016. Moreover, the Graph illustrates the change in trends for especially Spain, Greece and Italy well. All three countries which saw their middle class shrink the most over the crisis period, demonstrated a positive or non-negative record between 1995 and 2005.

Graph 4: Comparison middle class share (75% – 200%; Mi) between 95-05 and 04-16



In summary, these graphs and statistics imply several findings. There is evidence of a middle class squeeze between 2004 and 2016 when looking at market income. The results are robust to different measurement methods, which have been applied in earlier literature. The choice of income concepts shows the greatest impact on our results, as findings for disposable household income and market income differ. In light of this finding, it seems unlikely that decreasing social expenditure shares cause the middle class squeeze (Pressman, 2007). A middle class squeeze at the market level rather points towards an effect of exogenous market forces. Further, an overall downward trend between 2004 and 2016 is confirmed, when adding another point in time within the pre and post years. In addition, dividing up the middle class in three parts clearly illustrates, that the upper middle class lost less ground in comparison to the middle and lower middle class. Finally, when comparing the market income middle class decrease to past developments, the results provide less room for interpretation. While there is no period of time which can be considered better or worse, the crisis period of 04-16 appears to have had a stronger effect on the absolute change of middle class shares.

5.2 Drivers of the middle Class squeeze

The evidence of a decrease in middle class shares for market income between 2004 and 2016 represents the starting point of this section. In the second step, I aim to investigate the impact of several variables, which might explain this development. As mentioned before, the middle class shares for all available points in time between 2004 and 2016 is regressed on different variables. These variables roughly represent three points of view. In the following the different point of views and measurement methods are described in detail.

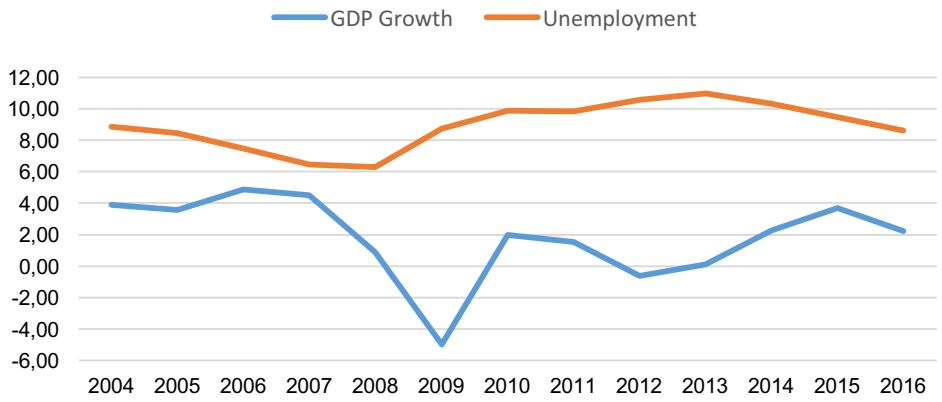
5.2.1 Financial Crises

In theory, there is much reason to assume that financial crises have an impact on middle class size. At least over a short-term, crises cause increased unemployment, unsustainable debt-to-GDP ratios and in general lower economic growth. As mentioned before though, the few attempts by scholars to prove an association remained fruitless (Pressman, 2007; Batinti & Costa-Font, 2019). It should be considered that only the approach by Batinti & Costa-Font applied advanced statistics. In order to choose an appropriate measure of a financial crisis, a glance into past research is helpful. The effect of financial crises on the overall economy through macroeconomic shocks has been subject to many studies by economists. Since the focus of these studies varies greatly, many different macroeconomic shocks resulting from crisis have been identified. Among others, researchers have empirically proved associations between crises and stock market variables (Tronzano, 2021), governments balance sheets (Ruzzante, 2018) or metrics measuring direct investment (Koh et al., 2020). However, unemployment rate and GDP growth remain the most commonly used shock variables in the literature (Hoynes et al., 2012; Koh, 2020). Other approaches which studied the effect of financial crises on middle class shares before, also focused on the role of unemployment, because the largest spillover effects are expected (Batinti & Costa-Font, 2019; Pressman, 2007). This makes intuitive sense. Severe crises, such as the Great financial crisis and the European debt crisis, trigger mass layoffs throughout many industries. Many people across the income distribution instantly find themselves without a job, which instantly raises the overall unemployment rate and decreases the middle class share. In the end, the unemployment shock in combination with other economic shocks is also reflected in lower GDP growth. For this reason, unemployment rate and GDP growth serve as a proxy to measure the effect of a financial crisis on the middle class. Following this conventional logic, a negative association for unemployment and a positive for GDP growth are expected.

Both variables are obtained from the OECD database for all of the observed countries. Graph 5 illustrates the average unemployment rate and GDP growth rate of the observed countries.

Both variables show a visible deterioration between 2007 and 2013, which corresponds to the defined Crisis period.

Graph 5: Average GDP Growth and Unemployment rate from 2004 – 2016. Measured in %.



The movements follow the usual crisis cycle. Starting at pre-crises levels, the economy experiences a downward trend until a certain point. From there on, the trend turns positive as the economy recovers. In the end, pre-crisis levels are reached again. Comparing this typical crisis process to the so far limited insight on the middle class squeeze, which points towards a downward trend, slightly different movements can be expected. On the other side, the numbers and trends used cannot picture the whole story. The regression model validates this assumption.

5.2.2 Skill-Premium

Much evidence exists on the theory about the pressure of skill-biased technological change and Globalization on middle class jobs and wages (Goos et al., 2007; Autor and Katz, 1999). Goos et al. explicitly investigated the phenomenon in European countries and found an increasing job polarization between 1993 and 2006. There is evidence of a disproportionate increase in high-paid and low-paid jobs due to technological advancements (Goos et al., 2009). Such a development obviously decreases the share of middle class jobs in society. Thus, previous literature suggests a negative impact between the skill-premium and middle class shares. The skill-premium is also used in this paper to proxy this point of view. Even though the measure is not related to technological progress, it captures the end result of skill-biased technological change: An increasing skill-premium. The skill-premium is based on an individual measure using LIS variables. There is no focus on wages of middle class individuals only, as all observations across the income distribution are relevant. A predefined and harmonized education variable, which sorts the education of individuals into three categories is used as

the starting point. Category 1 means that individuals never obtained a secondary degree or dropped out earlier. Category 2 includes all individuals who completed secondary or post-secondary non-tertiary degrees, while Category 3 gathers all higher tertiary degrees. Category 1 and 2 together make up the "low education" definition, accordingly "high-education" refers to individuals of Category 3 only. This classification is based on the assumption that wages increase largest when obtaining a tertiary degree. In the next step, the approach looks at the average yearly market income for these two groups in 2004 and 2016. The countries Estonia, Poland and Switzerland mark an exception in this point. Due to missing data, 2007 represents the baseline year. Market income is chosen, because earlier results suggest a larger middle class squeeze for this income concept, which likewise implies more interesting effects when looking at other variables. Since the yearly market income of households and individuals depend on the hours worked, this approach uses a "full-year full-time" dummy. Thus, only individuals are taken into account, who have worked full-time and all year. In case this dummy was not available, a combination of the dummy variables "full-time" and "permanent employment"[1] had to be applied for a few countries (Czech Republic, Hungary, Poland, Slovenia). Further, some countries especially in 2004/2005 still use non-Euro currencies (Czech Republic, Denmark, Estonia, Hungary, Poland, Slovakia, Slovenia, Switzerland). These currencies are not converted into Euro, as the summarizing result looks at percentages anyway. Table 1 presents an overview of development of the skill premium between 2004 and 2016.

Table 1: Average market income of High- and low-educated households 2004 and 2016

	2004			2016			
	High	Low	Diff in %	High	Low	Diff in %	Spread
Austria	66.162 €	51.242 €	29,1	102.906 €	69.164 €	48,8	**19,7**
Belgium	71.743 €	49.287 €	45,6	86.551 €	60.802 €	42,4	**-3,2**
Czech Republic	527.986 Kč	368.831 Kč	43,2	831.651 Kč	594.881 Kč	39,8	**-3,3**
Denmark	kr. 683.731	kr. 535.087	27,8	kr. 917.073	kr. 715.476	28,2	**0,4**
Estonia (07)	19.591 EEK	15.207 EEK	28,8	29.297 EEK	21.282 EEK	37,7	**8,8**
Finland	75.616 €	53.972 €	40,1	101.630 €	69.434 €	46,4	**6,3**
Germany	81.853 €	52.659 €	55,4	91.058 €	57.797 €	57,5	**2,1**
Greece	35.405 €	22.027 €	60,7	36.455 €	23.250 €	56,8	**-3,9**
Hungary	3.395.059 HUF	2.017.053 HUF	68,3	5.151.002 HUF	3.434.156 HUF	50,0	**-18,3**
Ireland	93.859 €	59.444 €	57,9	94.801 €	58.076 €	63,2	**5,3**
Italy	44.989 €	29.275 €	53,7	64.348 €	40.587 €	58,5	**4,9**
Poland (07)	53.081 PLN	33.752 PLN	57,3	71.007 PLN	50.170 PLN	41,5	**-15,7**
Netherlands	71.816 €	52.088 €	37,9	101.864 €	69.543 €	46,5	**8,6**

[1] The original LIS dummies are called: „part-time employment" (ptime1) and „temporary employment" (temp1)

Slovakia	15.164 SKK	12.109 SKK	25,2	24.924 SKK	21.132 SKK	17,9	**-7,3**
Slovenia	25.525 SIT	17.813 SIT	43,3	38.523 SIT	27.933 SIT	37,9	**-5,4**
Spain	34.946 €	23.503 €	48,7	56.125 €	34.394 €	63,2	**14,5**
Switzerland (07)	CHF 187.414	CHF 125.610	49,2	194.548 CHF	136.127 CHF	42,9	**-6,3**

The table illustrates several points. To begin with, except for Ireland, all average wages for both high- and low-educated groups increased. Considering constantly growing GDP's and especially the ever-increasing wealth of the developed world, this fact represents no surprise. A look at the changes ("Spread") of the differences between High and low educated individuals' wages in 2004 and 2016 is more revealing. In nine out of the seventeen observed countries, the skill-premium increased. Austria and Spain experienced the strongest increases by 19,7% and 14,5% respectively. On the other side, Hungary and Poland were the countries which saw the biggest decline of their skill-premium. Interestingly, for all of these countries, the development of the skill-premium is significantly in line with those of the middle class shares. In these cases, we see a negative relationship. Even though this observation points towards an obvious, negative correlation between the variables, the overall skill-premium developments provide no clear evidence. As only half of the countries experienced an increase of the premium, the overall trend appears less clear in comparison to the middle class shares. Considering this, first estimates cannot confirm economists' knowledge on increasing pressure on middle class jobs in advanced economies (Goos et al, 2009; OECD, 2015). In the end, preliminary numbers cannot confirm the proposed association from the literature. Nevertheless, a rather negative link between the skill-premium and middle class shares is expected.

5.2.3 Social Expenditure

The point of view that regards national (social) policies and country-specific characteristics as the main cause for a potential middle class view has received meagre support. According to Pressman a decrease in a countries social expenditure share leads to a divergence in the distribution of disposable household income (Pressman, 2007). This view is in line with one causal link of the multistage theory of the "Paradox of redistribution" by Korpi & Palme. The authors suggest that a higher social expenditure share leads to more redistribution achieved in the end. Even though, the debate on the validity of the paradox remains far from settled, this relationship has been confirmed by several recent papers (Brady & Bostic, 2015; Jacques and Noel, 2018). However, these arguments mainly apply to disposable household income. Since the evidence of a middle class squeeze for disposable household income is scarce, Pressman's theory appears less relevant to this approach. On the other side, a lower social transfer budget might also have implicit effects on market income. Higher disposable household income through redistribution might enable a household to better

position themselves on the job market. In the short-term higher unemployment transfers increase the reservation wage, which increases the probability of accepting a higher paid job. And in the long-term households might be able to invest more into education, which also qualifies individuals for higher paid jobs. These effects show the probability of social transfer budgets on the market income distribution and middle class shares. The social expenditure share itself serves as a measure for this point of view. More precisely, the social expenditure is measured as the social benefit expenditure as a percentage of GDP and is obtained from the OECD database. It aggregates nine different categories of social policy programs, e.g. Old-age, Survivors, Unemployment, etc. In the past several social researchers in the field of comparative social policy have applied this measure (Korpi & Palme, 1998; Brady & Bostic, 2015). Interestingly, the average social expenditure shares of the observed countries increased from 20,7% in 2004 to 22,8% in 2016. This trend contradicts the aforementioned logic of Pressman and the possible implicit effects. According to this logic, a downward trend in middle class shares must be paralleled by decreasing shares of social expenditure.

5.3 Model

The data consist of a strongly balanced panel data set of 17 countries, 5 points in time and 4 variables. Considering the different levels of country's middle class shares (Graph 3) or unemployment rates, a country-fixed effects model appears to be the obvious choice. Still, a Hausman-Test is conducted in order to confirm this intuition. The results show a p-value of 0.004, which means that the null hypothesis is rejected and that fixed-effects indeed represents the appropriate model for this panel data set. Further, there is also no evidence of multicollinearity when carrying out the variance inflation factor (VIF) test. The VIF for all variables lies between 1.02 and 1.25. The average amounts to 1.14. An overview of these test can be found in the appendix (Table 4, Appendix).

Middle class shares *(mc)* represent the dependent variable of the model. The large market income definition represents the main data of interest, as correlation seem most revealing. Nonetheless, I apply several definitions of the middle class shares, which are also included in table 2. Due to the diverging outcomes of the different definitions regarding a middle class squeeze, there is no reason to assume robust outcomes for all definitions. The independent variables skill-premium (*skill*), unemployment rate (*unemploy),* GDP growth rate (*gdpg*) and social transfer share (*sc*) are regressed on the dependent variable, the middle class shares. Robust standard errors are applied in all regressions to avoid issues of heteroscedasticity.

5.4 Empirical Analysis

With respect to the large market income share, the proposed model predicts the dependent variable extremely well, as the p-value is significant to the 0.01 level. There is no

evidence of a correlation between the skill-premium and middle class shares. Likewise, the first crisis variable GDP growth also fails to predict the movement of the size of the middle class share. On the other side, the other crisis variable unemployment shows a highly significant negative correlation of -0.44 towards the dependent variable. Thus, a 0.44%-point increase in the unemployment rate goes in hand with a 1%-point loss of the middle class share. Further, the social expenditure variable also significantly correlates with middle class shares. The negative coefficient of -0.81 points towards strong movements in opposite directions to the dependent variable. When regressing the independent variable on the large definition of the disposable household income, we find a weaker, but still significant explanatory power of the model. The p-value amounts to 0.037. Interestingly, the variable unemployment happens to be the only significant variables in this approach. Not only is the p-value less significant at 0.046, but also the correlation coefficient is less strong at -0.15. As expected earlier, the middle class definition which revealed more evidence of a middle class share in the graphs and statistics, is also explained better by the regression model.

Table 2: Results: Effect of different variables on middle class shares

Variables	(1) MC mi (0,75-2)	(2) MC dhi (0,75-2)	(3) MCmi(0,75-1,25)	(4) MCdhi(0,75-1,25)
skill	-0,077	-0,045	-0,048	0,016
	(0,062)	(0,038)	(0,034)	(0,051)
unemploy	-0,449***	-0,153**	-0,246***	-0,156**
	(0,126)	(0,071)	(0,083)	(0,073)
gdpg	-0,008	0,107*	-0,035	0,015
	(0,096)	(0,054)	(0,074)	(0,074)
sc	-0,815***	0,153	-0,058***	-0,019
	(0,281)	(0,105)	(0,180)	(0,116)

The results of the large market income definition, also appears robust for the smaller market income definition. Overall, the model is highly significant. In addition, the same variables, namely unemployment and social expenditure, significantly explain the movements of the middle class shares. However, the magnitude of the correlation coefficients is weaker. In the same manner, the results for both definitions regarding disposable household income show relative robustness. Though for the larger definition, the overall model has some explanatory power, while the independent variables fail to explain the middle class shares for the smaller definition.

Coming back to regression (1) there are several relevant findings, especially when looking back at the proposed associations in 5.2. Of the crisis indicators, only unemployment appropriately estimates the middle class share. In addition, unemployment represents the only

variables, which is significant across all definitions. Thus, one can assume that the direct effect of middle class people losing their jobs and subsequently raising the unemployment rate is stronger than expected. As mentioned in part 4b) this causal chain also happens within little time. Moreover, the skill-premium variable has no explanatory power at all. In the graphs and statistics, the skill-premium showed rather mixed results, in comparison to clear signs of a middle class squeeze. Interestingly, the social expenditure share indicates a highly significant association towards the middle class share, including a strong correlation coefficient of -0.81. This result was by no means anticipated in the assumptions.

6. Discussion

6.1. The Middle Class Squeeze in Context

The literature on a middle class squeeze in industrialized nations differs in observed countries, time periods and middle class measurement. Thus, there is no dominant point of view whether a middle class squeeze has been going on. Independent of the different measurement methods and results, one finding remained robust. If a middle class squeeze is occurring in advanced economies, it is happening at the market income level. Most of the relevant literature approaches the middle class squeeze issue looking at disposable household income only. All economists who include market level observations in their paper, conclude stronger squeezing dynamics for market income (Salido & Carabana, 2019; Dallinger, 2013). This observation is also robust to the findings of this paper. There is a middle class squeeze in twelve out of the seventeen countries at the market level, no matter which size is applied. Clearly, it could have been expected that market income is distributed less equally in comparison to disposable household income. Being aware of these differences, the focus in past literature on a middle class squeeze at the disposable household level can be questioned. On one side, the most common measures in income inequality research, for instance the Gini coefficient are generally measured at disposable household income level. On the other side, the resulting conclusions of these studies picture a less worrying development. The market income distribution, which represents the natural income distribution reveals the fairness of the current job and income system. A deterioration towards smaller middle classes in European economies, demands political solutions. Of course, increasing market income inequality can be offset by government reinforcements to even out the income distribution. However, if the trend of declining middle classes at market level continuous, then the solution of increasing welfare state redistribution comes up against limiting factors. For this reason, the efforts of public policy should focus on reversing the trend of decreasing middle class shares at the market level. Thus, I urge to lay a primary emphasize of future middle class research on the market income level.

Comparing the findings of the statistics to recent approaches which cover comparable countries and time periods, the following points can be made. With respect to disposable household incomes, no clear evidence of a middle class squeeze has been found. This is in line with papers by Salido & Carabana and the EU. Going more into detail at the market level, a division of the middle class in three categories reveals diverging dynamics for the upper versus the lower and middle middle class. This in line with the findings by the OECD report. Further, Dallinger who carried out a comparable analysis of such sub-groups found concurrent dynamics between 1985 and 2005. These consistent results point towards an ever-increasing income wedge in the middle class itself- Lastly, in an attempt to interpret the extent of the middle class squeeze to the decade before (1995 -2005), the statistics do not provide a one-sided answer. However, the fact that average in absolute values increased stronger reveal strong dynamics of the income distribution between 2004 and 2016.

6.2 What drives the Middle Class Squeeze?

Empirical approaches which have aimed to empirically explain a squeeze of the middle class are rare. Of the considered literature only the approach by Batinti & Costa-Font attempts to prove an association between the middle class share and financial crises. The other considered points of view about potential reasons for a middle class squeeze are by-products of studies on changing income distribution. Since the overall issue of increasing income inequality and middle class squeeze are relatively intertwined, we know that the added variables are potentially relevant. However, a regression of the skill-premium and social transfer share on middle class shares, has not been carried out in any paper to my knowledge. The results of the regression on market income level middle class shares represent the focus of attention. Some of the results stand in contrast to findings by Batinti & Costa-Font. The authors run the regression for many middle class definitions, including 75% - 200% market income. Admittedly, the approach gathers more data observations. The limited number of observations represents a limitation of this paper. This is due to the focus on European countries and the use of panel data, which requires all data across variables for the same points in time. Further research could be conducted using more observations, in order to validate the robustness of the found correlations to a larger sample size.

On the other side different results occur due to the use of latest data up till 2016 and a clear focus on seventeen European countries, which are homogenous in terms of economic development. Since the approaches are build up quite similarly, it should be noted that the results of this paper for the time being apply to the scope of the observed countries. Nevertheless, contrary to Batinti & Costa-Font in these countries we find a clear association between the unemployment rate and middle class shares. Thus, it can be said that financial crises show significant spillover effects through unemployment on middle class shares. In this

relationship the case of reversed causality, meaning that decreasing middle class shares trigger a financial crisis, can be ruled out. Only the general trends of middle class shares and unemployment in European countries remains unsolved. The unemployment rates recover over the crises cycle, while for the middle class shares, the post-crisis years show the lowest overall middle class shares (Graph 3). This picture does not fully add up. It raises the question whether the significant correlation is a result of similar movements between the pre-crisis and the last crisis year only, because in the end the overall trends appear to be different. Without a definite answer and for the time being, we conclude negative spillover effect of financial crises on middle class shares in European countries. Further I use a self-conducted measure for the skill-premium to proxy the prominent point of view that skill-biased technological change and Globalization put pressure on middle class jobs. However, the measure fails to predict middle class shares. In light of the strong evidence in favor of this theory (Goos & Manning, 2007; Goos et 2009; Autor et al, 2006,) the preciseness of the variable to model the point of view might be questioned. However, as long as no empirical evidence between increasing skill-premium and middle class shares exists, a relationship should be neglected. The last variable of interest namely the social expenditure, measured as the social expenditure as a percentage of GDP also showed a highly significant correlation to both market income middle class definitions. Intuitively, a positive relationship between the variables was expected. The assumption was based on an implicit improvement of market the income distribution, since households are able to better position themselves on the job market through higher social expenditure. Instead the correlation coefficient of -0.81 reveals that the two variables have a strong opposing effect on each other. This unanticipated result does not allow for further interpretation. Especially, since reversed causality might be an issue in this specific relationship. One possible explanation which comes to mind is that policy makers adjust the social expenditure budget whenever the income distribution and middle class size changes. These interesting points leave room for further research regarding the link of market based middle class shares and social expenditure.

7. Conclusion

A strong middle class is of elementary importance for societal stability and economic growth. In contrast, this paper shows a decline of middle class shares at the market income level in European countries between 2004 and 2016. This development requires structural changes to avoid a further decline of middle class shares. The fact that the evidence disappears when looking at disposable household income reveals the potential to dampen the effect through increased public redistribution. However, the potential share of public

redistribution as one part of governments budget is limited. For this reason, structural change is needed, enabling good jobs and fair wages, in order to stop the diverging income distribution. On the other side, this paper contributes by naming possible explanations for a middle class squeeze. Of proposed points of view to explain a potential middle class squeeze, the variables unemployment rate and social expenditure show a highly significant negative relationship to the development of middle class shares. The link to the unemployment rate, which serves as a proxy for the effect of financial crisis on middle classes, reveals spillover effects of financial crises on the middle class shares in European countries. On the other side, the result for the social expenditure measure differs from all proposed explanations in this paper and needs some further research. In order to strengthen middle classes across Europe, more research on potential causes will be needed. This paper represents a starting point.

8. Sources

Acemoglu, D. and F. Zilibotti (1997). Was Prometheus Unbound by Chance? Risk, Diversification and Growth', Journal of Political Economy, 105(4), 709-51

Atkinson, A. B., & Brandolini, A. (2011). On the identification of the middle-class. In Edited by Janet C. Gornick and Markus Jäntti (ed). Income inequality: Economic disparities and the middle-class in affluent countries, Stanford University Press. 77-100.

Autor, D. H., Katz, F.L., and Kearney, M.S., (2006). "The Polarization of the U.S. Labor Market." American Economic Review, 96 (2): 189-194.

Alberto Batinti & Joan Costa-Font, (2019). "Do Economic Recessions 'Squeeze the Middle-Class'?," LIS Working papers 757, LIS Cross-National Data Center in Luxembourg.

Blinder, A. (2009). "How Many US Jobs Might be Offshorable?," World Economics, World Economics, 1 Ivory Square, Plantation Wharf, London, United Kingdom, SW11 3UE, vol. 10(2), pages 41-78, April.

Brady, D., & Bostic, A. (2015). Paradoxes of Social Policy: Welfare Transfers, Relative Poverty, and Redistribution Preferences. American Sociological Review, 80(2), 268–298.

Dallinger, U. (2013). The endangered middle-class? A comparative analysis of the role played by income redistribution. Journal of European Social Policy,23(1), 83-101

Eurofound (2019). Recent developments in the state of the middle classes, Publications Office of the European Union, Luxembourg.

Eurofound (2017). Blog Post „Europe's shrinking Middle Class", Retrvieved from: https://www.eurofound.europa.eu/de/publications/blog/europes-shrinking-middle-class

Fukuyama F (2012). The future of history: can liberal democracy survive the decline of the middle class? Foreign Affairs 91(1), 53–61.

George, H. (1931). Progress and Poverty. New York: Schalenback Foundation, 1931. Harrington, M., and M. Levinson. "The Perils of a Dual Economy." Dissent (1985):41

Goldin, C. and L. F. Katz (2007). "Long-Run Changes in the Wage Structure: Narrowing, Widening, 24 Polarizing," Brookings Papers on Economic Activity, 38(2): 135–168

Goos, M., Manning, A., & Salomons, A. (2009). Job Polarization in Europe. The American Economic Review, 99(2), 58-63.

Hoynes, H., Miller, L.D., and Schaller, J. (2012). "Who Suffers during Recessions?" Journal of Economic Perspectives, 26 (3): 27-48.

Koh, W. C., Kose, M. A., Nagle, P. S. O., Ohnsorge, F., Sugawara, N. (2020). Debt and Financial Crises. CAMA Working Paper No. 9/2020,

Korpi, W., & Palme, J. (1998). The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries. American Sociological Review, 63(5), 661-687.

Lawrence, R (1984). "Sectoral Shifts and the Size of the Middle Class." Brookings Review (1984):3-1

Luxembourg Income Study (LIS) Database, http://www.lisdatacenter.org (multiple countries 1995-2016). Luxembourg: LIS.

OECD (2015), In It Together: Why Less Inequality Benefits All, OECD Publishing, Paris,

OECD (2019), Under Pressure: The Squeezed Middle Class, OECD Publishing, Paris,

Rackham, H. (1932) Aristotle. Politics, translated by H. Rackham. Cambridge: Harvard University Press, 1932

Pew Research Center, (2015). "The American Middle Class Is Losing Ground: No longer the majority and falling behind financially." Washington, D.C.: December.

Pressman, S. (2007). The Decline of the Middle Class: An International Perspective. Journal of Economic Issues, 41(1), 181-200.

Pressman S (2015) Defining and measuring the middle class. Working Paper 007, American Institute for Economic Research.

Ruzzante, M. (2018). "Financial Crises, Macroeconomic Shocks, and the Government Balance Sheet: A Panel Analysis," IMF Working Papers 2018/093, International Monetary Fund.

Salido, O., & Carabaña, J. (2020). On the Squeezing of the Middle Class: Overview and Prospects for the EU-15. European Review, 28(2), 325-342.

Thurow, L.C. (1984) "The Disappearance of the Middle Class." New York Times February 5, 1984, p. F3

Tronzano, M. (2021). "Financial Crises, Macroeconomic Variables, and Long-Run Risk: An Econometric Analysis of Stock Returns Correlations (2000 to 2019)" *Journal of Risk and Financial Management* 14, no. 3: 127.

Vaughan-Whitehead, D. (2016), "Europe's disappearing middle class? Evidence from the world of work"

Acknowledgement

Thanks to my supervisor Stefan Hochguertel, who tried to teach me how Economists think. Even though I didn't follow through on all the ideas, our discussions enlightened and inspired me. I also want to thank all the professors of the VU Economics track for providing an interesting academic year during challenging times. Time moves in the blink of an eye.

A. Appendix:

Table 3: Overview of chosen datasets for all countries.

Country	Year 1	Year 2	Year 3	Year 4	Year 5
Austria (AT)	2004	2007	2010	2013	2016
Belgium(BE)	2005	2007	2010	2013	2015
Czech Republic (CZ)	2004	2007	2010	2013	2016
Denmark (DK)	2004	2007	2010	2013	2016
Estonia (EE)	2004	2007	2010	2013	2016
Finland (FI)	2004	2007	2010	2013	2016
Germany (DE)	2005	2007	2010	2013	2015
Greece (GR)	2004	2007	2010	2013	2016
Hungary (HU)	2005	2007	2009	2012	2015
Ireland (IE)	2005	2007	2010	2013	2015
Italy (IT)	2004	2008	2010	2014	2016
Netherlands (NL)	2004	2007	2010	2013	2015
Poland (PL)	2004	2007	2010	2013	2016
Slovakia (SK)	2004	2007	2010	2013	2016
Slovenia (SL)	2004	2007	2010	2012	2015
Spain (ES)	2004	2007	2010	2013	2016
Switzerland (CH)	2004	2007	2010	2013	2015

Graph 6: Change in Middle class share (75 – 200%; Mi) sub-groups between 2004 – 2016

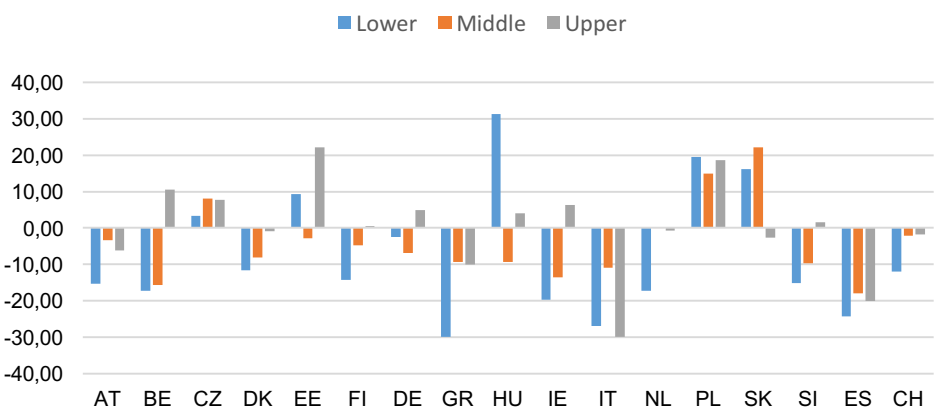


Table 4: VIF Test for all variables

Variable	VIF	1/VIF
sc	1.25	0.7969
gdpg	1.25	0.7997
educ	1.03	0.9684
unemploy	1.02	0.9785
Mean VIF	1.14	