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Policy matters

The gendered impact of welfare systems and gender job segregation on unemployment during the EU recession and austerity, 2004-2018

by

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Abstract: Previous literature on the gendered impact of the 2008 recession and subsequent austerity on unemployment in the EU found that male unemployment is particularly affected by the recession, whereas female unemployment increases disproportionately during periods of austerity. Welfare systems and gender job segregation have been discussed as underlying mechanisms of these effects. This thesis is the first study to quantitatively investigate the influence of welfare systems and gender job segregation during recession and austerity through interaction variables in a panel data linear regression model. Its findings confirm that, on an EU-wide scale, male unemployment was disproportionately affected by the recession. Moreover, male unemployment was particularly affected in socially stratified welfare systems, whereas female unemployment increased disproportionately in welfare systems marked by a very low degree of decommodification. As regards the influence of gender job segregation, high female labour shares are related to increases female unemployment. In contrast, high male labour shares act as buffers to male unemployment during the recession and austerity. Overall, the findings suggest that policy plays an essential role in mitigating gendered effects of the recession and austerity on unemployment.

Keywords: Recession, austerity, gender, unemployment, European Union

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1 Introduction

Previous research on the impact of the 2008 recession on male and female unemployment has established the term 'man-cession', hinting at greater male than female job losses (e.g. Bredemeier, Juessen & Winkler, 2017; Wall, 2009). Disproportionate male job losses are explained by the fact that the recession affected male-dominated private sectors the most. Then again, feminist scholars conclude that, while men were more affected in the short-term, women were more affected by subsequent austerity measures, due to cuts in the female-dominated public sector (e.g. Kushi & McManus, 2016; Périvier, 2018; Rubery, 2015).

While there is extensive literature on the gendered impacts of the 2008 recession and subsequent austerity measures on unemployment in the European Union (EU), most studies rely on descriptive data analysis and are often limited to one or a few country cases[1]. Only few scholars have statistically tested the effects of the recession and austerity on male and female unemployment in all EU member states, including Kushi and McManus (2016, 2017). This thesis contributes to the literature on the effects of the 2008 recession and subsequent austerity on female and male unemployment rates in the EU[2].

More precisely, this thesis adds to previous research by analysing how the impact of welfare systems and gender job segregation on female and male unemployment changed during the recession and austerity. Previous studies have accounted for these factors' influences on female and male unemployment (Kushi & McManus, 2016, 2017). However, they did not investigate how these influences changed during the recession or austerity. The investigation of these dynamics contributes to the study of mechanisms behind gendered unemployment outcomes of the recession and austerity. The analysis' results thus serve to inform well-directed policy measures to counteract gendered unemployment outcomes.

This thesis' analysis focusses on the impact of two factors that previous research identified as influential: First, as suggested by previous research, the influence of different welfare systems is tested (e.g. Esping-Andersen, 2009; Orloff, 1996). Given the diversity of welfare systems across EU member states, this thesis investigates how different welfare systems affected female and male unemployment during the recession and the subsequent period of austerity. It tests the hypothesis that, in welfare states with a low degree of decommodification, women are more affected, whereas men are more affected in welfare states with a high degree of social stratification.

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[1] See Rubery (2015) for an overview of various previous studies on this topic.
[2] Due to limited data availability, this thesis is limited to the analysis of male and female genders. The analysis of other genders is subject to more micro-level research.

Second, the effect of gender job segregation across private and public sectors during the recession and austerity is analysed. Based on previous research, this thesis tests the hypothesis that male unemployment was disproportionately affected by the recession, whereas female unemployment was disproportionately affected by subsequent austerity measures, due to their respective labour shares in the private and public sectors (Aguilar-Palacio et al., 2018; Kushi & McManus, 2017; Peinado & Serrano, 2018; Rubery & Rafferty, 2013).

Overall, this thesis research questions thus read as follows:

a) To what extent did the 2008 recession and subsequent austerity in the EU affect male and female unemployment rates?
b) To what extent did different European welfare systems affect female and male unemployment rates during the recession and subsequent austerity?
c) To what extent did male and female labour shares in the private and public sectors influence their unemployment rates during the recession and subsequent austerity?

To answer these research questions, this thesis applies fixed-effects linear panel regression analysis of quarterly macro-level data from 2004Q4 to 2018Q3, spanning 56 quarters in total, on all 28 current EU member states. The second and third research questions are analysed through the usage of interaction variables, which constitutes a methodological contribution to the literature.

First, on an EU-wide scale, this thesis' finds evidence for a 'man-cession', as well as a disproportionate effect of austerity on male unemployment. Second, in welfare states with a high degree of social stratification, male unemployment was disproportionately affected by both the recession and austerity. In contrast, in welfare states with a very low degree of decommodification, female unemployment disproportionately increased during both the recession and austerity. These results are in line with this thesis' hypothesis. Third and finally, the results reject the hypothesis that men were disproportionately affected by the recession due to their high labour shares in the private sector. However, they confirm the hypothesis that female unemployment was particularly affected by austerity due to high public-sector female labour shares. In contrast, high male labour shares in the public and private sectors are found to buffer the impact of austerity and the recession on male unemployment. Overall, the results suggest that gender mainstreaming of government policy has the potential to mitigate gendered effects of the recession and austerity on unemployment.

This thesis is structured as follows. First, a literature review presents previous research on the effect of recession and austerity on female and male unemployment. In doing so, it discusses the literature on welfare systems and their gender dimensions, as well as the influence of gender job segregation on female and male unemployment during recession and austerity. Thereafter, the thesis explains the context of the 2008 recession and subsequent austerity measures in the EU. Subsequently, the data used in the statistical analysis is descriptively presented, and the study's methodology is explained. Finally, this thesis presents and discusses the results of the statistical analysis.

2   Literature review

This literature review presents previous research on the impact of recession and austerity on female and male unemployment. It informs this thesis' research hypotheses and reveals gaps in the existing literature that this thesis intends to fill. In doing so, this section explores four mechanisms that influence how men and women are differently affected by recession and austerity, as suggested by previous research. These four mechanisms are welfare systems, gender job segregation, the added- and the discouraged-worker effects. While the first two mechanisms will be examined more thoroughly in this thesis' analysis, the investigation of the added- and discouraged-worker effects would require micro-level data and is therefore beyond the scope of this thesis. Still, for the sake of completeness, they are introduced in this literature review.

Previous research has found that various characteristics of welfare systems influence gendered unemployment outcomes of recession and austerity. For instance, labour market regulation complicates or eases dismissals, especially in the male-dominated private sector. Then again, women as primary caretakers rely more on public welfare services than men. As less privileged or discriminated population groups generally suffer most from welfare cuts, women's unemployment, poverty and discrimination increase disproportionately, particularly for racial and ethnic minorities and women with disabilities (Kantola & Lombardo, 2017)[3]. Similarly, Rubery (2015) fears a downward spiral for less privileged and discriminated population groups, resulting from relaxed regulations, their reduced bargaining power, and cuts in public services. She thus warns about entering a too neoliberal economic model, in which a double burden of paid and unpaid work is placed on women. Based on this literature, Section 2.1 discusses European welfare systems and their gender dimensions, as well as previous literature on how welfare systems affect male and female unemployment during the recession and austerity.

Moreover, there is consensus that private-public gender job segregation influences gendered unemployment outcomes of recession and austerity (Aguilar-Palacio et al., 2018; Kushi & McManus, 2017; Peinado & Serrano, 2018; Rubery & Rafferty, 2013). Accordingly, recession affects men more than women because men dominate the private-sector labour force, and the private sector is hit hardest by recessions. Then again, feminist scholars agree that women are disproportionately affected by austerity (Gálvez-Muñoz, Rodríguez-Modroño & Addabbo, 2013; Kantola & Lombardo, 2017; Karamessini & Rubery, 2017; Kushi & McManus, 2017; Perugini, Žarković Rakić & Vladisavljević, 2016). This is explained by large female labour

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[3] It is unfortunately beyond the scope of this thesis to account for intersectionality between gender, class, race and other bases of discrimination.

shares in the public sector. Based on this argumentation, Section 2.2 discusses the literature on the influence of gender job segregation in more detail.

Finally, Antonopoulos (2009) and Seguino (2009) draw attention to gendered effects of expansionary fiscal policy. Accordingly, public spending on social services and the expansion of public sector employment mainly benefit women and supports them in their paid and unpaid work. Then again, public investment in specific private sectors disproportionately benefits men, since these sectors are typically male-dominated. The effect of expansionary fiscal policy is thus closely linked to welfare systems and gender job segregation. While this thesis does not further investigate expansionary fiscal policy, it is noteworthy that such policy may influence male and female unemployment during the investigated time period.

Based on the above literature, a consensus emerges that men are more affected by recession and women are more affected by austerity, due to various underlying mechanisms. Hence, this is the effect that this thesis expects to find in its investigation of the impact of recession and austerity on female and male unemployment, without accounting for underlying mechanisms.

This thesis' findings contribute to the literature by investigating how female and male unemployment are differently affected by recession and austerity, as well as the influence of welfare systems and gender job segregation on this effect. The following section thus presents studies that more specifically address this thesis' research questions.

2.1 The influence of welfare systems

To analyse the influence of welfare systems on female and male unemployment rates during the recession and austerity, this section discusses different European welfare systems as well as their gender dimensions. Finally, it presents previous literature on welfare systems' influence on female and male unemployment during the recession and austerity. Welfare systems reflect different political and historical legacies of labour market regulation, and therefore shape priorities in fiscal measures adopted in response to recessions. Moreover, according to previous research, welfare systems differently affect men and women and thus influence how the recession and austerity affected female and male unemployment. Thus, welfare systems are expected to significantly influence female and male unemployment outcomes during recession and austerity.

2.1.1 European welfare systems

Welfare systems differ widely across EU member states. Since they determine to what extent individuals rely on the labour market to secure a livelihood, they shape the impact of recession and austerity on individuals. This section introduces different welfare state models across the EU in order to thereafter discuss their different gender dimensions.

Most literature on welfare systems in the EU refers to Esping-Andersen's (1990) *The Three Worlds of Welfare Capitalism*, which constitutes an influential work on welfare systems in Europe. Accordingly, welfare systems are rooted in deep traditions of political mobilisation and philosophy, formed by historical and political forces. These include how the working class mobilised, how class and political action structures interact, and the historical legacy of regime institutionalisation.

In Esping-Andersen's typology, welfare systems differ on two main dimensions: First, the degree of decommodification, which expresses to what extent a person is legally entitled to social services and can sustain a livelihood independently of the labour market. The second dimension describes the extent to which society is stratified, that is how class-divided a society is, and how narrowly or broadly solidarities in society are defined.

Based on the above considerations, Esping-Andersen (1990) classifies Western capitalist countries into three main categories: Conservative, liberal and social-democratic welfare states. While not all Western capitalist countries perfectly fit into these categories, Esping-Andersen (1990) expected countries that had only recently democratised by 1990 to soon converge with one of these categories. These include Southern European and Eastern European countries. As will be discussed here below, more recent literature defies this expectation.

According to Esping-Andersen's categorisation, the conservative welfare state type comprises Continental European countries, for instance, Germany and Austria. It is shaped by its Catholic legacy and therefore modestly decommodifying. However, traditional family values and the conservative principle of subsidiarity are reflected in reserved social policy. The state acts only if the family fails to provide for its members. In conservative welfare states, social solidarities are limited, as corporatist and statist elites govern the state.

Esping-Anderson's second category, the liberal welfare state, comprises Anglo-Saxon countries, including the United Kingdom and Ireland. It is marked by a primacy of the market and therefore a low degree of decommodification. Only little redistribution of income occurs, and social rights are limited. Every person is therefore encouraged to engage in paid work. As the state provides relatively little public services, the domestic and care work burden is high. Moreover, societies are highly stratified and social solidarities are narrow, as individualism prevails in these societies.

The third welfare state category of social-democratic countries is found in Scandinavia. The Nordic welfare system is marked by a high degree of decommodification, relatively low social stratification and broad social solidarities. Social policy in Scandinavia aims at providing every person with the means to maintain a livelihood independently from the market and his or her family status. This implies a rather extensive provision of public services and redistribution across classes.

Esping-Anderson (1990) considered Southern European welfare states as on their path to adopting the Continental European welfare system. However, many scholars have criticised Esping-Anderson (1990) for not considering Southern Europe a separate category (Arts &

Gelissen, 2002). These countries are marked by strong Catholicism and familialism. They are described as immature welfare states with a lack of social security systems and minimal rights to welfare. However, Southern European welfare states provide for public health care and high old-age pensions. They provide less welfare than Continental welfare systems, while being less individualistic than liberal welfare systems. Thus, their systems are characterised by a low degree of decommodification and a moderate degree of social stratification.

Finally, critics have suggested separate welfare system categories for Central and Eastern European countries due to their historical institutional legacy of communism. Fenger (2007) identifies three distinct welfare systems within Eastern Europe. First, the Baltic states as post-USSR states are characterised by high government expenditure but a very low performance on socio-economic indicators, including their social protection (Aidukaite, 2011). The Baltic states are moreover considered as more neoliberal and market-oriented than other Eastern European countries (Pascall & Manning, 2000). They thus have a high degree of social stratification, compared to a very low degree of decommodification.

Table 1: EU member states' welfare systems

Welfare system	EU member states	Degree of social stratification*	Degree of decommodification*
Conservative/ Continental	Austria, Belgium, France, Germany, Luxembourg, the Netherlands	Moderate	Moderate
Liberal/ Anglo-Saxon	Ireland, United Kingdom	High	Low
Social-democratic/ Nordic	Denmark, Finland, Sweden	Low	High
Immature/ Southern	Cyprus[4], Greece, Italy, Malta[3,] Portugal, Spain	Moderate	Low
Post-USSR/ Baltic	Estonia, Latvia, Lithuania	High	Very low
Post-Communist/ Central and Eastern	Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania[5], Slovakia, Slovenia	Moderate	Very low

The categorisation into high, moderate, low and very low is done by the author, based on the literature.

In comparison, non-Soviet post-communist Eastern European countries perform better on social indicators and are more egalitarian. Non-Soviet Eastern European countries thus form a second category of post-communist welfare states. Third and finally, Fenger (2007) identifies a group

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[4] Cyprus and Malta are barely discussed in the welfare state literature. In this thesis, they are considered Southern European welfare states based on their geographical and cultural proximity.
[5] Even though Fenger (2007) categorizes Romania as developing welfare state, this thesis considers Romania as post-communist welfare state, since it joined the EU in 2007 and therefore shares many political and economic conditions with other Central and Eastern European EU member states.

of post-communist developing welfare states, which score significantly lower on social indicators than other Eastern European countries. Out of the current EU member states, only Romania falls into the third category of developing welfare states. However, because Romania joined the EU in 2007, it is grouped with other Central and Eastern European EU member states. Regarding their social stratification, Central and Eastern European countries are generally more egalitarian than liberal welfare states, but less so than social-democratic welfare states. Finally, their government spending on social protection is generally lower than that of all Western capitalist welfare states (Aidukaite, 2011; Fenger, 2007). Their degree of decommodification is thus very low.

Various scholars have identified other welfare state typologies based on different criteria, including poverty and social insurance (Leibfried, 1992), access to welfare provision (Ferrera, 1996), as well as the financing and quantity of government spending (Bonoli, 1997). The resulting country groups largely coincide with those of Esping-Andersen's typology (see Arts & Gelissen (2002) for an overview). Overall, based on Esping-Anderson (1990) and his critics, this thesis thus applies a framework of six welfare systems to classify the current EU member states, as displayed in Table 1.

In this thesis' analysis, classifying the EU member states by their welfare systems serves to determine whether different welfare systems differently impacted gendered labour market outcomes of the recession and austerity measures to the recession. The following section presents the literature on welfare systems' gender dimensions in further detail.

2.1.2   Welfare systems' gender dimensions

The above-described welfare systems are determined by their different degrees of decommodification and social stratification. The classification thus captures to what extent an individual depends on the paid labour market, as well as how class-divided a society is. As discussed in the following, these two dimensions differently affect women and men.

As Lewis (1992) describes, an essential gender dimension of welfare systems concerns paid and unpaid labour, which play out in the public and the private sphere, respectively. In a male-breadwinner system, as it traditionally dominates Southern, Continental and Anglo-Saxon welfare states, men largely control the public sphere, whereas women take care of the private sphere, i.e. the family and the household. Female labour participation is thus relatively low and often takes place as part-time employment. Because women are considered as primary caretakers in this model, the welfare state provides for relatively little care services and limited maternity rights, thus restricting mothers' engagement in the public sphere. Since paid labour in the public sphere results in better social security conditions, the male-breadwinner model creates inequalities in social security between men and women.

In contrast, the dual-breadwinner model encourages women to engage in full-time employment, as it occurs in social-democratic Nordic welfare states. To unburden women from their caring responsibilities, the welfare state provides for extensive public care facilities. Moreover, it

encourages parents to equally share care work and engage in paid labour through parental leave regulations and individual taxation (Lewis, 1992). It thus creates less structural gender inequalities in access to the public sphere than the male-breadwinner model.

In post-socialist Europe, Haas et al. (2006) find a dual-breadwinner model coexisting with traditional gender roles regarding care work and the household. It is mainly due to economic necessity that women engage in full-time work in addition to their domestic workload. This type of dual-breadwinner model is thus very different from that in Nordic welfare states.

Orloff (1996) considers the relationship between welfare systems and gender relations as reciprocal and multifaceted. While different welfare systems generally fit into the male- or dual-breadwinner categories, there is variance within these categories. It is thus insufficient to only classify EU member states as either male- or dual-breadwinner systems. The above-presented more nuanced categorisation of 6 different welfare systems, with differing degrees of social stratification and decommodification, provides a more useful analytical lens to investigate different gender outcomes of the recession and subsequent austerity measures.

Moreover, Orloff (1993) proposes adding two more dimensions of welfare systems to Esping-Anderson's framework to account for gender dimensions. Accordingly, Esping-Anderson's dimensions of decommodification and social stratification should be complemented by dimensions indicating, first, women's access to paid work, and second, women's capacity to form and maintain an autonomous household. Orloff's proposed dimensions are closely related to Esping-Anderson's dimensions of decommodification and social stratification. Still, highlighting them emphasises welfare systems' gender dimensions.

Based on Esping-Anderson's welfare system typologies, Gornick and Jacobs (1998) investigate how public-sector employment affects gender relations in social-democratic, conservative and liberal welfare systems. The authors consider public-sector employment a vital tool to increase female employment, as the public sector is often female-dominated. As female employment increases, there is a higher need for public services in childcare, which then again creates more public employment. However, these dynamics play out differently across different welfare systems. Social-democratic welfare systems are characterised by both high female labour force participation and high public employment and thus follow the above-outlined scenario. Conservative welfare systems display the opposite dynamic: Female labour force participation and public employment are both low. In liberal welfare systems, the situation is not as clear-cut: Female labour force participation is high, while public employment is low. Gornick and Jacobs (1998) explain this situation by the poorer quality of female employment in the private sector, pointing to women's fewer working hours and lower pay. These conditions go hand in hand with the reserved provision of public services that hinders women from engaging in higher quality employment.

The hitherto presented literature thus reveals the gendered implications of Esping-Andersen's welfare system typologies. Bambra (2004) confirms this observation. She finds that Esping-Andersen's dimension of decommodification corresponds to the degree of defamilialisation, which describes to what extent the state undermines women's dependency on the family and

enables women's economic independence. In this regard, Esping-Andersen's typology thus captures the experience of women.

In a later work, Esping-Andersen (2009) himself elaborates on the gender dimensions of his welfare system typology. He describes an incomplete "female revolution" of economic behaviour, which requires a new social order to adapt to the changing role of women. Accordingly, an institutional failure to adapt to these changes would produce unfavourable social disequilibria, resulting in politically and demographically inefficient outcomes. Esping-Andersen (2009) thus considers such social disequilibria not only as immoral but also as economically inefficient.

According to Esping-Andersen (2009), the solution lies in welfare reform. New social policy should acknowledge a variety of family models, rather than just the traditional nuclear family (p.5), and women's full inclusion into the labour market (p.22). The degree to which such reform has been implemented differs across welfare systems. In social-democratic Scandinavia, the "female revolution" is most advanced, whereas it lacks behind in Continental and Southern European countries. The two latter welfare systems complicate the reconciliation of work and motherhood (p.23), whereas the Nordic welfare system is most successful at unburdening women and enabling them to pursue their careers despite motherhood (p.25).

Overall, previous research has revealed several ways, in which the above-introduced welfare system typologies capture gendered experiences. It has moreover shown that the welfare state plays a crucial role in producing or reducing gender equality in the labour market. It is thus likely that welfare systems influence gendered outcomes of recession and austerity on unemployment.

However, little research has explicitly studied the relationship between welfare systems, recessions, austerity and gendered unemployment outcomes (Kushi & McManus, 2016). Studying the period of the recession, Kushi and McManus (2016) find that, in Anglo-Saxon and Nordic welfare states, female and male unemployment are relatively equally affected by the recession. They explain their finding by labour flexibility in Anglo-Saxon states and generous social protection in Nordic states. In Continental, Southern and Eastern welfare states, female unemployment increased disproportionately during the recession. The authors find that due to lower levels of social protection and limited access to the labour market for women. However, the study reveals essential flaws. First, the authors examine yearly data from 2007 to 2013 only, resulting in relatively few observations, which may bias their results. Moreover, they only test for the general effect of welfare systems on male and female unemployment. Their analysis does not allow for conclusions on how this changes during recession and austerity. This thesis intends to fill these gaps.

Despite the lack of previous research, there is some consensus among scholars that recession and austerity magnify gendered effects of welfare systems (Karamessini & Rubery, 2014). Based on the above-described gender dimensions of the welfare state, this suggests the following hypotheses: First, in welfare systems characterised by a high degree of social stratification, which implies liberal labour market regulation, men are particularly affected by the recession. This is because men constitute the majority of the labour force, especially in

sectors hit by the recession, and liberal regulations ease the dismissal of employees. Second, in welfare systems marked by a low degree of decommodification, which implies little entitlement to social protection, women are expected to be disproportionately affected by austerity. This is because women do most of the domestic and care work and rely on public services to be able to exercise paid work. In welfare systems with a low degree of decommodification, public services are easily cut during periods of austerity. As the effect of welfare systems is closely linked to gender job segregation, the next section presents literature on the effect of gender job segregation on female and male unemployment during recession and austerity.

2.2 The influence of gender job segregation

As indicated above, the influences of welfare systems and gender job segregation on gendered unemployment outcomes during recession and austerity are intertwined. While there is little previous research explicitly testing the effect of welfare systems, there is more literature on the effect of gender job segregation on female and male unemployment during the recession and austerity.

Overall, many scholars argue that recession affects men more than women due to gender job segregation (Aguilar-Palacio et al., 2018; Kushi & McManus, 2017; Peinado & Serrano, 2018; Rubery & Rafferty, 2013). However, as described hereafter, the studies' findings on the recession's gendered effect on unemployment differ according to methodological choices, including the period of investigation, country cases and whether gender job segregation was accounted for.

Rubery and Rafferty (2013) investigate to what extent women acted as a flexible labour reserve over the business cycle from 2007Q4 to 2011Q3 in the United Kingdom. The authors observe several dynamics: First, men are particularly affected in the recession's early phase, because the male-dominated manufacturing and construction sectors are most concerned. However, these sectors recover and stabilise already around 2009. According to Rubery and Rafferty (2013), women are most affected by public sector cuts after 2009, as the privatisation of public sector jobs results in jobs being passed from female to male employees. The authors conclude that gender job segregation crucially affects how men and women are concerned by unemployment during a recession and austerity. Accordingly, if the public sector is female-dominated, women act as flexible labour reserve over the business cycle.

Similarly, Peinado and Serrano (2018) investigate the EU's gender unemployment gap from 2002 to 2016. They find that the gender unemployment gap significantly diminishes during the recession but widened again afterwards. This development reflects how male unemployment rises to levels similar to those of female unemployment during the recession, but declines again later, while female unemployment rises after the recession due to austerity. Peinado and Serrano's (2018) findings are thus in agreement with Rubery and Rafferty's (2013) finding that women act as flexible labour reserve over the business cycle if the public sector is female-dominated.

While many scholars agree that men are disproportionately affected by the recession, some long-term studies reveal different results. In a study on the United Kingdom, Razzu and Singleton (2018) equally agree with Rubery and Rafferty (2013) on the influence of gender segregation on male job losses between 2007 and 2010. However, they find that from 2010 to 2011, employment recovery is stronger for men than for women, especially in the private sector. Female employment in industries recovers only later, after 2011, while at the same time being more strongly impacted by public sector cuts. This is in line with Leschke and Jepsen's (2014) analysis of Denmark, Germany and the United Kingdom, revealing that male-dominated sectors are hit earlier by recession and therefore bailed out by countercyclical measures before the implementation of austerity measures. Therefore, Razzu and Singleton (2018) and Leschke and Jepsen (2014) find that, overall, female employment is more affected than male employment.

Similarly, Kushi and McManus (2016) find that women are particularly vulnerable to recession, because governments first react to the recession by protecting male-dominated sectors, but then compromise on the female-dominated public sector to reduce public spending. They thus confirm Razzu and Singleton's (2018) and Leschke and Jepsen's (2014) findings.

However, as already described in the previous section, Kushi and McManus' (2016) study reveals methodological gaps that this thesis intends to fill. The authors account for the influence of various variables on female and male unemployment, including welfare systems as well as labour shares in the industry, service and agricultural sectors. However, the authors examine the influence of these variables throughout the whole period of investigation. Despite the consensus in previous literature that these factors' influences on male and female unemployment change during the recession and austerity, the authors do not further investigate the statistical significance of such changes in influence. Moreover, they only account for overall sectoral labour shares but do not include sectoral labour shares by gender. It is thus difficult to conclude on the changing influence of different welfare systems or gender job segregation on male and female unemployment during the recession and austerity. Kushi and McManus' (2016) results, therefore, do not allow for conclusions on possible policy measures to counteract gendered unemployment outcomes of the recession or austerity. It is a main contribution of this thesis to fill this gap. Furthermore, as previously mentioned, this thesis applies a richer dataset, which may generate more robust results.

The different conclusions drawn by the above-presented studies reflect the importance of methodological decisions. In addition to the choice of country case(s) and whether gender job segregation is accounted for, the length of the investigated period matters, as short-term effects differ from long-term effects on male and female unemployment. Therefore, it is difficult to compare the different studies' findings. More research across various countries and longer time periods is needed to arrive at meaningful conclusions on influential factors on female and male unemployment during the recession and austerity. This thesis contributes to this research.

Moreover, it is a main contribution of this thesis to test the influence of welfare systems and gender job segregation during the periods of recession and austerity specifically. This is done by means of interaction variables. To the knowledge of this thesis' author, these effects have not yet been statistically investigated in previous research. However, research on these effects

is needed to explain potential mechanisms behind gendered outcomes in unemployment and thereby inform policy measures to counteract such outcomes. This thesis' methodology is further discussed in Section 6.

2.3   The added-worker effect

In addition to the influence of different welfare systems and gender job segregation, previous literature has shown that male unemployment is more directly dependent on the market than female unemployment, which is more influenced by a variety of other factors. In addition to market dynamics, welfare systems and gender job segregation, the added-worker effect and the discouraged-worker effect explain changes in female unemployment. A micro-data set would be needed to investigate these effects statistically. Their investigation thus lies beyond the scope of this research. However, as these effects potentially influence differences in male and female unemployment, they are briefly explained in the following.

Aguilar-Palacio et al. (2018) investigate the Spanish labour market from 2001 to 2014 and agree with the above-presented studies that gender job segregation matters. However, in the traditional male breadwinner context of Spain, the effect is slightly different from the above-presented findings for other countries. While men are most affected by employment cuts in manufacturing and construction, previously inactive women enter the unemployed labour force to seek employment and compensate for their partners' job losses. This phenomenon is commonly described as the added-worker effect. Female unemployment in Spain thus rises directly in response to increases in male unemployment, even before the implementation of austerity measures. In addition to gender job segregation, gender culture thus influences male and female unemployment during recession and austerity. The magnitude of this effect depends on the share of inactive women, which tends to be higher in more traditional societies, including Southern European countries.

In a cross-country study on all 28 EU member states, Bredtmann, Otten and Rulff (2018) find that the added-worker effect is weakest in Anglo-Saxon, Nordic and Continental welfare states and strongest in Southern and Eastern welfare states. They explain these differences by the fact that Anglo-Saxon, Nordic and Continental welfare states register relatively high female labour force participation already before the crisis. Moreover, the authors suggest that tax-splitting systems disincentivised female employment in Continental welfare states, and particularly high unemployment benefits in Anglo-Saxon countries decrease the necessity for an added worker in the household. The strong added-worker effect in Southern countries is explained by a low level of social protection and a strong reliance on the family. Similarly to Aguilar-Palacios (2018) findings for the case of Spain, Giannakopoulos (2015) confirms the existence of an added-worker effect in Greece. Like in Spain, the effect results in increased female unemployment rather than female employment, due to limited employment opportunities. Female unemployment rates thus capture both job loss and the added-worker effect, especially in Southern welfare states.

These studies are in line with Karamessini and Rubery's (2014) book on women during the recession in various EU countries, as well as the EU as a whole. The authors agree with the above-presented studies that the effect of the recession depends on both gender segregation and the gender culture regarding women's involvement in the wage economy. This gender culture includes prevalent life course and family institutions, social and economic policies, labour market institutions and social norms, which are strongly influenced by welfare systems. The authors moreover confirm the incidence of the added-worker effect in various EU member states. Especially women older than 50 years join the labour force in response to their partners' job losses. As a result, families with sole female breadwinners become more prevalent.

The added-worker effect thus results in increased female unemployment as a direct response to increased male unemployment. The extent of the effect depends on prior female labour force participation, unemployment benefits and other policies that disincentivise or encourage female labour force participation. It therefore differs across welfare states. Existing employment opportunities moreover influence whether the effects results in increased female employment or unemployment.

2.4   The discouraged-worker effect

The discouraged-worker effect occurs when previously active people decide to quit the labour force and become inactive. The unemployment rate thus decreases. While both men and women may quit the active labour force due to lacking employment opportunities, women are particularly inclined to become inactive as their domestic work burden increases. This can happen, for instance, as a result of austerity measures involving cuts in public services.

Karamessini and Rubery (2014) criticise a reversal in EU gender equality policy. Accordingly, during the recession, gender equality went from being an integral part of EU employment policy to being largely ignored. As a result, gender equality efforts were abolished as part of austerity measures in various countries, for instance, by reducing state support in child and elderly care. The authors thus suggest that a prolonged economic crisis would increase the share of economically inactive women, who would be pushed back into the private sphere as their domestic workload increases. According to Karamessini and Rubery (2014), while the added-worker effect occurs in early phases of the recession, the discouraged-worker effect would thus ensue in a prolonged economic crisis.

Similarly, investigating all 28 EU member states from 2010 to 2013, Perugini, Žarković Rakić and Vladisavljević (2018) observe a particularly pronounced discouraged-worker effect among women in high-paying positions. The authors explain this phenomenon by austerity measures reducing women's flexibility and adaptability, as they increase women's burden of domestic work. For the same reason, women are more likely to interrupt their careers, which reduces their chances of being promoted into high-paying positions. Finally, Périvier (2018) finds evidence for both the added-worker and the discouraged-worker effect within the female labour force across eight different EU member states.

Overall, in light of the above literature review, this thesis' contribution to the existing literature on the impact of recession and austerity on male and female unemployment is mostly of a methodological nature. More precisely, it adds to existing descriptive and statistical analysis of absolute male and female unemployment rates by conducting a long-term statistical analysis of male and female unemployment rates across all EU member states. As suggested by the literature review, it accounts for welfare systems and gender job segregation, to determine their effects on female and male unemployment during recession and austerity. This is done using interaction variables, which constitutes this thesis' main contribution to the existing literature. Section 6 further explains this thesis' methodology.

3 Context

Having introduced previous literature, this section proceeds to situate it within the context of the 2008 recession and subsequent fiscal responses in the EU. It gives an overview over the recession, fiscal responses and bailouts across welfare systems.

3.1 The recession

The term 'recession' commonly describes a period of two consecutive quarters of negative GDP growth (Leamer, 2008). Because this definition is widely accepted and straightforward, it will not be discussed in further detail.

Figure 1: Mean Quarterly GDP Growth, EU-28, 2004Q4-2018Q3
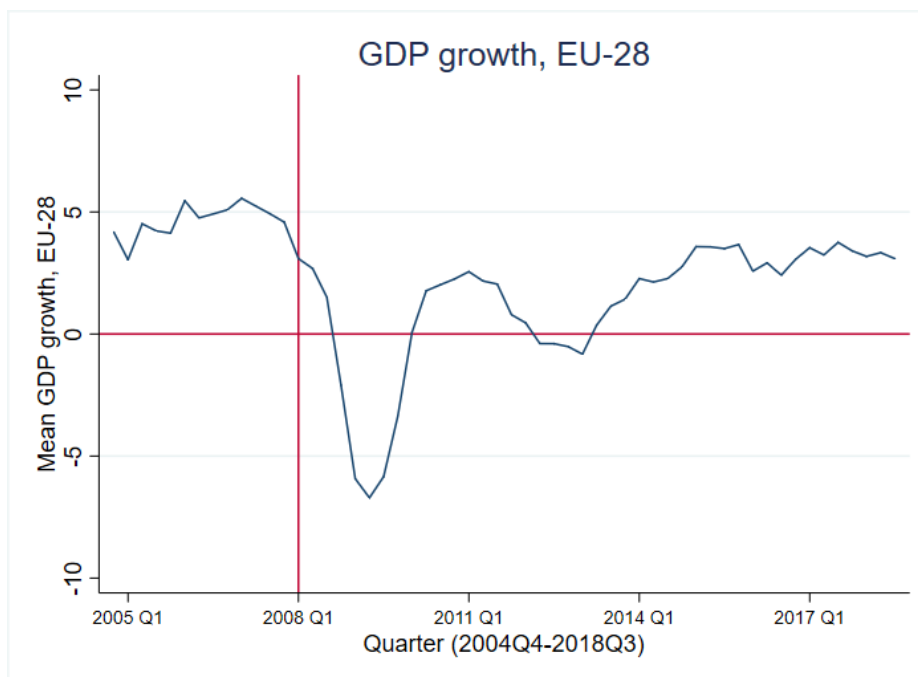
Prepared by the author, based on Eurostat (2019a)

In the EU, Ireland was the first country to experience a recession in 2008Q1. Starting at different points in time after 2008Q1, all 28 EU member states experienced periods of recession. With a recession lasting for only six months, Poland experienced the shortest recession of all EU member states. In contrast, Greece registered the longest period of recession, amounting to a total period of seven years, although these were not directly consecutive. On average, every EU

member state experienced approximately ten quarters of recession, equalling a period of 2.5 years. Greece also was the last EU member state to register positive GDP growth again in 2017Q2. Figure 1 shows the mean quarterly GDP growth of all EU member states from 2004Q4 to 2018Q3. The vertical red line marks quarter 2008Q1, which is when the first EU country registered a recession. The graph clearly shows a steep decline in GDP growth after 2008Q1, followed by a quick recovery. However, around the year 2012, a second period of a smaller recession follows, which may reflect the austerity measures taken in response to the first recession.

3.2 Fiscal responses

The above-described recession was addressed by a wide range of fiscal policy responses, which are briefly summarised in the following. Armingeon (2012) finds that 18 out of 27 EU member states[6] reacted to the recession by applying slightly countercyclical fiscal measures in late 2008 and 2009. The United Kingdom and Spain even applied strongly countercyclical measures, following a Keynesian approach of fiscal policy. Pro-cyclical measures were implemented only by the Baltic states, Bulgaria, Greece, Hungary, Ireland and Romania. Overall, government expenditure and public debt thus increased in direct response to the recession in a majority of the EU member states. While the respective policy measures differed widely across countries, they included public recapitalization of banks, increased wages and salaries of public servants, one-time premiums for specific economic behaviour, increases in benefits and tax allowances, cuts in insurance contributions, direct tax cuts and increased tax deductibility, amongst others (Armingeon, 2012; Quaglia, Eastwood & Holmes, 2009; Serrano, 2010). Overall, these countercyclical fiscal responses aimed to create a demand stimulus and boost the economy. However, they also risked increases in public debt and inflation rates (Armingeon, 2012).

It is therefore, Busch et al. (2013) reckon, that **"**the EU has interpreted the main cause of the crisis as debt", which the authors consider as a "reversal of cause and effect" (p.4). After the recession, the EU institutions thus prioritised public debt stability over economic recovery and advocated for austerity measures (Périvier, 2018). Because EU member states were indebted to different degrees, the implementation of austerity measures differed across countries. While there is no official definition of austerity policy, this thesis applies the definition by Gálvez-Muñoz, Rodríguez-Modroño and Addabbo (2013). Accordingly, austerity policy describes a "set of measures and regulatory strategies in economic policies aimed to produce a structural adjustment by reducing wages, prices and public spending" (p.5). Austerity's goal is to reduce public debt and thereby achieve fiscal consolidation (Périvier, 2018).

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[6] Since Croatia joined the EU in 2013, it is not considered by Armingeon (2012). Therefore, he analyses only 27 EU member states.

Karamessini and Rubery (2014) distinguish between three kinds of austerity policies applied in the EU as a reaction to the 2008 recession: first, changes in employment conditions in the public sector, second, modifications to collective bargaining regulations in the private sector, and third, reforms of legal employment rights and protection (p.330). The first category includes, for instance, introducing early retirement schemes and changes in working hours. Measures that more generally affected the legal framework for employment rights and protection comprise the easing of dismissals, reducing or freezing the minimum wage, or cutting several public services and social benefits. Table 2 lists various measures that were applied to different extents across EU member states.

Table 2: Austerity policy and measures applied in the EU

Austerity policy type	Austerity Measures
Changes in public-sector employment conditions	• Early retirement schemes • Hiring freezes • Changes in working hours • Lower-than-minimum entry-level wages • Restructuring of public administration, including the elimination and merging of jobs and agencies • Privatisation of state-owned enterprises (for example television, electricity, water, airlines)
Modifications to collective bargaining regulations in the private sector	• Removing collective bargaining rules • Tax rises on public infrastructure (for example transport, gas, electricity)
Reforms of legal employment rights and protection	• Easing of dismissals • Lowering/ freezing the minimum wage • Use of atypical contracts (e.g. temporary employment) • Benefit cuts or freezing (unemployment benefits, lone parent benefits, pensions, family allowances, child benefits) • Dismantling existing public services in child and elderly care • Putting on hold plans to expand existing public services in child and elderly care

Compiled by the author, based on Karamessini and Rubery (2014)

Overall, most austerity measures were implemented rather in the form of public spending cuts than tax rises and thus affected the structure of the welfare state, including social security, public administration, public-sector employment, public services, the taxation system, and labour market institutions (Périvier, 2018).

The most far-reaching austerity measures were introduced in countries that received a bailout from the so-called *troika* of the European Commission, European Central Bank and International Monetary Fund (IMF) (Périvier, 2018). The EU implemented different mechanisms to facilitate these bailouts. From 2011 to 2015, bailouts to eurozone members were

channelled through the European Financial Stability Facility (EFSF) and the European Financial Stabilisation Mechanism (EFSM). Since 2015, the European Stability Mechanism (ESM) is responsible for issuing bailouts to eurozone members. EU member states that are not part of the eurozone can apply for Balance of Payments (BoP) assistance, which the European Commission issues in cooperation with the IMF and other international governments. (European Commission, 2019a, 2019b; European Stability Mechanism, 2019)

Table 3: Recipients of EU bailouts through the EFSF, EFSM, ESM or BoP assistance

EU member state	Time period under which countries received bailouts	Welfare system
Cyprus	2011 Q4 – 2012 Q4, 2013 Q2 – 2016 Q2	Immature/ Southern
Greece	2010 Q2 – 2018 Q3	Immature/ Southern
Hungary	2008 Q4 – 2010 Q3	Post-Communist/ Central and Eastern
Ireland	2010 Q4 – 2013 Q4	Liberal/ Anglo-Saxon
Latvia	2008 Q4 – 2011 Q4	Post-USSR/ Baltic
Portugal	2011 Q2 – 2014 Q3	Immature/ Southern
Romania	2009 Q2 – 2015 Q3	Post-Communist/ Central and Eastern
Spain	2012 Q3 – 2013 Q4	Immature/ Southern

Compiled by the author, based on European Commission (2019a, 2019b) and ESM (2019)

As presented in Table 3, bailouts were paid out to eight EU member states during different time periods between 2008Q4 and 2018Q3. Their sums and conditions differed by recipient country, but they were generally given at very high interest rates (Karamessini & Rubery, 2014, p.186). They were moreover subject to strict conditionality and structural economic reforms determined and controlled by the *troika* (Kantola & Lombardo, 2017). As Table 3 shows, EU member states across four different welfare systems received bailouts.

Overall, having explained the context of the 2008 recession in the EU and subsequent austerity measures, the following section descriptively presents the data applied in this thesis' analysis.

4   Descriptive data

Based on this thesis' research questions and influential factors identified in the contextual framework and literature review, this section graphically presents descriptive data on the subsequent analysis' main variables for each European welfare system. All data is derived from the Eurostat database (Eurostat, 2019a). In the following, GDP growth and government expenditure as main explanatory variables, as well as male and female unemployment rates as outcome variables are presented. In addition, public debt, as well as the male labour share in private industries and services, and the female labour share in the public sector are discussed. A graphical descriptive overview of the analysis' main variables serves as a basis to determine the analysis' methodology. In addition, Appendix A provides an overview of the variables' summary statistics.

4.1   GDP growth

GDP growth serves as one out of two main explanatory variables to the analysis. Across all 28 EU member states and within the examined time period from 2004Q4 to 2018Q3, there is a large variety within GDP growth ranging from a minimum value of -19.3 percent to a maximum value of 29.3 percent. This high amplitude of GDP growth reflects the economic instability during the examined time period. The highest fluctuations of GDP growth are found in Anglo-Saxon welfare states, ranging from a minimum of -10.3 per cent to a maximum of 29.3 per cent, and in Baltic welfare states, ranging from -19.3 to 13.9 per cent. Nordic welfare states display most economic stability with GDP growth ranging from -9.4 to 8.3 per cent.

Figure 2 shows that most EU member states experienced a sharp decline in GDP growth after 2008Q1, which is highlighted as a vertical red line in all graphs, albeit to different degrees. 2008Q1 marks the quarter in which the first EU member state, namely Ireland, entered a recession. The recession is followed by a period of recovery, in which GDP growth reaches relatively high values in most countries. However, as the graphs show, most countries experience a second recession at different points in time after 2011, which may reflect the effects of austerity. The Baltic welfare states are the only countries not to enter a second period of recession. In Nordic, Continental and Anglo-Saxon welfare states, the second recession consists of relatively modest GDP declines of less than 5 per cent. In contrast, Eastern welfare states register a decline in GDP of -5 per cent, and Southern welfare states experience negative GDP growth of around -7 per cent. Southern welfare states are also the latest to enter a period of relatively stable positive GDP growth.

Figure 2: GDP growth by welfare system, 2004Q4-2018Q3
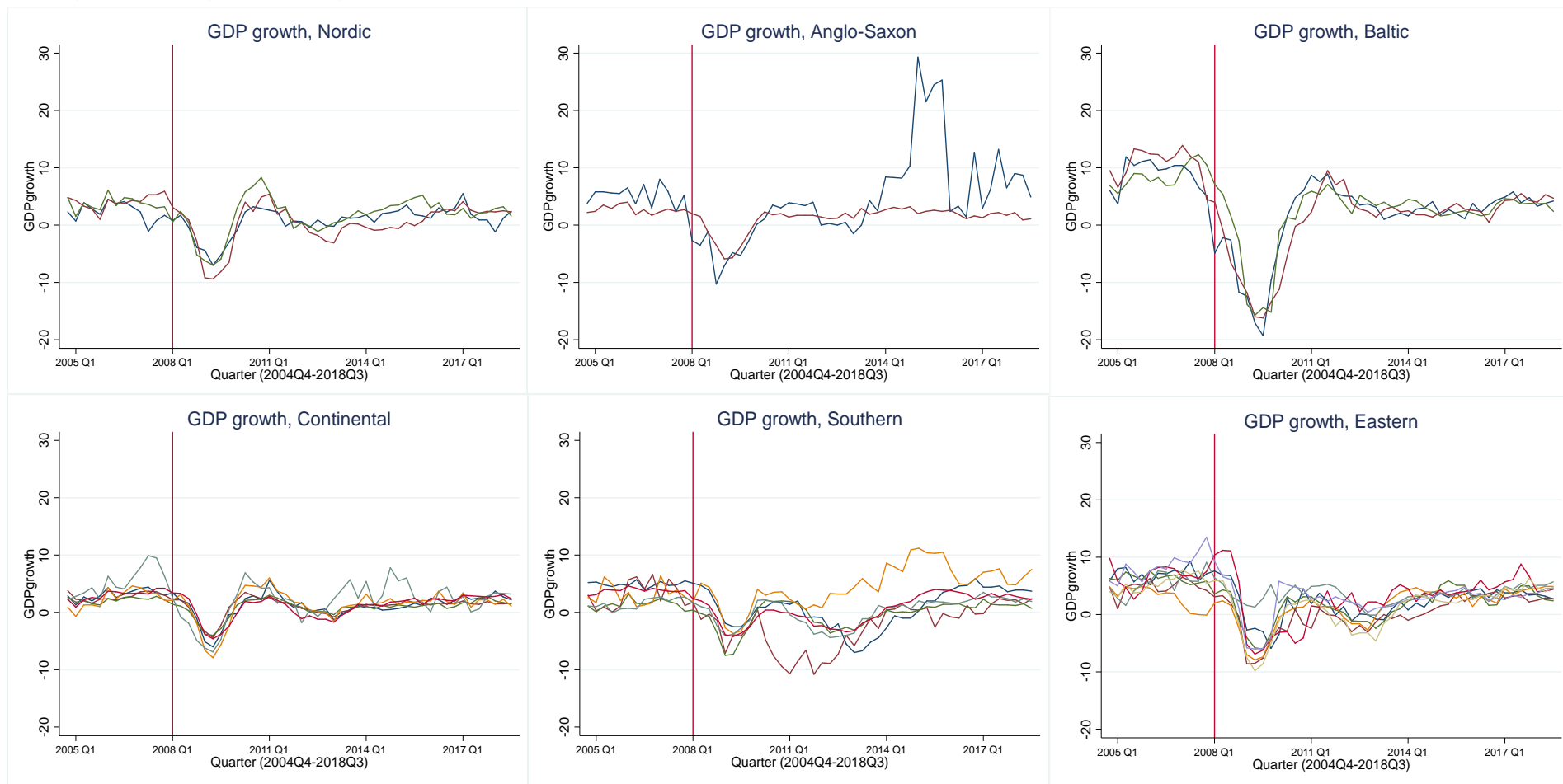
Compiled by the author, based on Eurostat (2019a)

Thus, Figure 2 reveals that the recession played out differently in different welfare systems. It moreover shows the two different periods of recession, the first one being more severe than the second. Given the time span of the second recession, the decline in GDP growth may be related to austerity measures.

4.2   Government expenditure

Based on the hypothesis that women were particularly affected by austerity, government expenditure serves as a second main explanatory variable to this thesis' analysis. Several EU member states implemented slightly expansionary fiscal policy measures after the recession. However, recipient countries of bailouts (see Table 4, Section 5.2), which were conditional on stringent austerity measures, are expected to have implemented severe cuts on government expenditure.

Government expenditure is measured in million euros. Due to the large variation in size of EU economies, absolute numbers of government expenditure are difficult to compare across countries. To ensure its comparability, the variable is thus log-transformed and differentiated in this thesis' analysis. As for all other variables, the statistical analysis applies quarterly data. However, in this section, to facilitate a meaningful graphical presentation and avoid displaying the normal fluctuation of government expenditure throughout the year, the quarterly data is combined to yearly data. The resulting values are displayed in Figure 3.

Figure 3 shows relatively stable patterns of government expenditure during and after the recession in Nordic and Continental welfare states. In contrast, some Southern and Baltic welfare states experience the most pronounced declines in government expenditure. Anglo-Saxon and Eastern welfare states experience more moderate declines in government expenditure. Regarding the duration of austerity, the graphs show that some Southern and Anglo-Saxon countries experienced the longest periods of declining government expenditure. Finally, compared to other welfare systems, Eastern welfare states appear to experience most fluctuation in government expenditure.

Overall, the highest increase in government expenditure of 0.12 per cent was observed before the recession in 2008 in Malta, a Southern welfare state. In comparison, the Baltic welfare state Latvia registered the most pronounced decline in government expenditure of -0.11 per cent in 2009 in Latvia. Latvia was moreover one of the first countries to decrease their government expenditure after the recession hit. Many other EU member states experienced austerity at a later point in time, starting around 2010 or 2011 and often lasting for several years. Thus, according to this thesis' hypothesis that female unemployment was disproportionately affected by austerity, it is expected that female unemployment increased after male unemployment. The following section on male and female unemployment rates allows for first conclusions on whether or not this was the case, based on graphical inspection.

Figure 3: Government expenditure by welfare system, 2006-2017
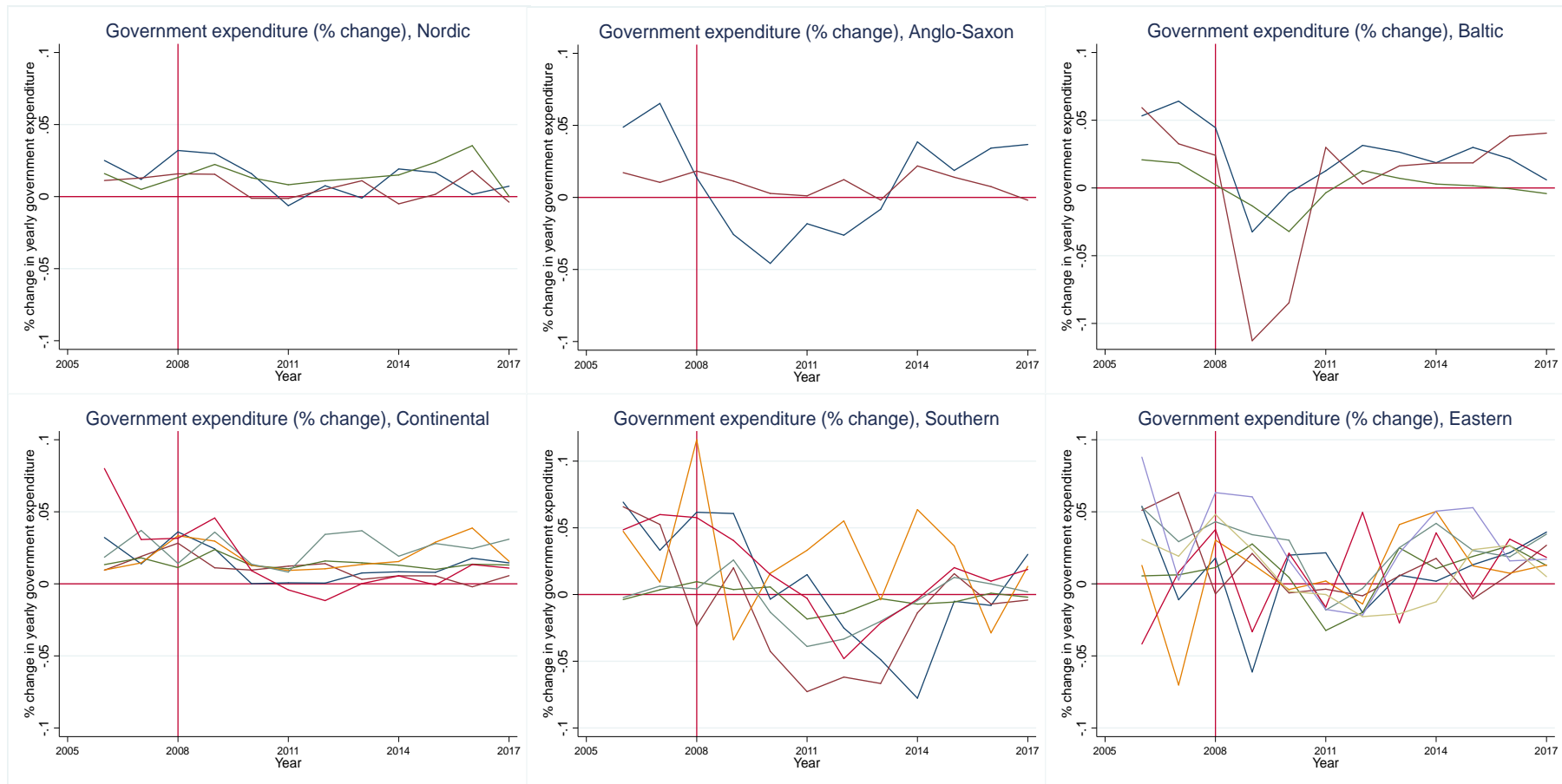
4.3 Female and male unemployment

While a recession and austerity can differently affect men and women in the labour market in various ways, this thesis is limited to the analysis of male and female unemployment rates. The investigation of other indicators, including male and female part-time or temporary employment as well as the gender pay gap, are subject to further research.

Figure 4 shows that, in all welfare state groups, both male and female unemployment rates surge after 2008Q1. Moreover, this surge in unemployment rates follows a period of sharp declines in unemployment rates in Nordic, Continental, Baltic and Eastern welfare states, while unemployment rates in Anglo-Saxon and Southern welfare states had stabilised at a comparatively low level before the recession. While these patterns are similar across welfare state groups, their amplitudes differ. Across all 28 EU member states within the examined time period, female unemployment rates range from 2.7 to 31.8 per cent, while male unemployment rates range from 1.8 to 26.8 per cent.

The magnitudes of unemployment differ by welfare state group. The Baltic welfare states register the highest rate of male unemployment of 26.8 per cent in Latvia in 2010Q1, directly followed by the Southern welfare states observing 26.7 per cent of male unemployment in Spain in 2013Q1. In contrast, the highest rate of male unemployment in Nordic countries lies at only 11.2 per cent, reached by Finland in 2015Q2. The highest rate of female unemployment of 31.8 per cent is observed by a Southern welfare state, namely Greece, in 2013Q4. No country other than Southern welfare states exceeds a female unemployment rate of 20.4 per cent, which the Eastern welfare state Croatia observed in 2014Q1. In comparison, the highest rate of female unemployment in Nordic countries lies at only 10.2 per cent, again registered by Finland in 2015Q2.

Female and male unemployment rates follow similar patterns in all welfare groups. There is some evidence for the hypothesis that male unemployment surged during the recession, while female unemployment rose during the period of austerity. However, no welfare group fully confirms this pattern at first sight. In Anglo-Saxon and Baltic welfare states, male unemployment exceeds female unemployment during the entire post-crisis time period. In Nordic welfare states, male unemployment surpasses female unemployment as well, albeit to a smaller extent. In Continental and Eastern welfare states, male and female unemployment seem to follow very similar patterns. Finally, the Southern welfare states are the only group to register female unemployment rates that clearly exceed male unemployment rates as of late 2011. However, graphical inspection does not suffice to confirm or reject this thesis' hypothesis.

Figure 4: F/m unemployment rates by welfare system, 2004Q4-2018Q3

Figure 5: F/m unemployment rate ratio by welfare system, 2004Q4-2018Q3

Compiled by the author, based on Eurostat (2019a)

Finally, Figure 5 displays the ratios between male and female unemployment rates in each welfare system. The horizontal red line marks the value one, at which male and female unemployment rates are equal. Ratios above one indicate that male unemployment rates exceed female unemployment rates, whereas ratios lower than one indicate that male unemployment rates are lower than female unemployment rates.

Interestingly, only the Nordic, Anglo-Saxon and Baltic welfare states observe an evident surge in male unemployment as compared to female unemployment during the recession. This pattern confirms the 'man-cession' hypothesis. In Continental and Eastern welfare states, there is no clear pattern of the unemployment ratio. Finally, in Southern welfare states, where female unemployment generally exceeds male unemployment, the two unemployment rates tend to equalise after the recession and during austerity. This indicates a relative rise in male unemployment and thus also provides evidence for a 'man-cession'. Then again, graphical inspection does not seem to provide evidence for the hypothesis that female unemployment was disproportionately affected by austerity. Section 7 proceeds to test these hypotheses statistically.

4.4 Control variables

Having presented the main explanatory variables, GDP growth and government expenditure, and the outcome variables, female and male unemployment, this section introduces two macroeconomic control variables, that may affect unemployment during and after the recession. Because all other control variables are dummy variables, including the welfare system, bailout and eurozone dummies, they are not graphically presented.

4.4.1 Public debt

Because the EU and the IMF considered public debt of crucial importance in both explaining the cause of the recession and solving it, public debt is included in this thesis' analysis as macroeconomic control variable. Figure 5 shows public debt levels as share of GDP by welfare groups. Out of all EU member states during the investigated time period, Estonia registered the lowest public debt share of only 3.3 per cent of national GDP in 2005Q4. The largest public debt share of 180.9 per cent of national GDP was observed in Greece in 2011Q3. The graphs show that public debt patterns differ both within and between welfare states. There is no visible common trend as to how public debt evolved during and after the recession. However, it remains subject to statistical analysis to test the relationship between public debt and unemployment.

4.4.2 Male private and female public sector labour shares

Finally, male private and female public labour shares are accounted for. Based on the argumentation that more men than women lost their jobs during the recession, because the private sector is male-dominated, the male labour share in the private sector is included in the model. Accordingly, the higher the male labour share in the private sector, the more male unemployment increases during a recession. Similarly, female public sector labour shares are controlled for, based on the reasoning that more women than men lost their jobs during austerity because of cuts in the female-dominated public sector. Accordingly, the higher the female labour share in the public sector, the more female unemployment should increase during austerity.

Figure 6 shows male labour share in private industries and services, as well as female labour shares in the public sector, by welfare state groups. In all 28 EU member states during the examined time period, men accounted for a majority of the labour in private industries and services, with an average labour share of 62.3 percent, ranging from 51.7 percent to 76.5 percent. Similarly, women comprise the majority of public-sector labour in most EU member states, with an average labour share of 65.1 per cent, spanning from 42.6 per cent to 77.7 per cent.

Overall, graphical inspection of the data gives reason to group the EU member states by welfare groups. Various graphs reveal similar within-welfare group patterns. As regards the effect of gender job segregation on female and male unemployment, based on female and male labour shares in private and public sectors, previous research has concluded that men were more affected by the recession, whereas women were more affected by austerity. However, graphical inspection only confirms a relative increase in male unemployment during the recession. There is no visible relative increase in female unemployment during austerity (Figure 5). It thus remains subject to statistical analysis to test this hypothesis. Therefore, the following section proceeds to explain this thesis' econometric model.

Figure 6: Government debt as share of GDP by welfare system, 2004Q4-2018Q3

Compiled by the author, based on Eurostat (2019a)

28
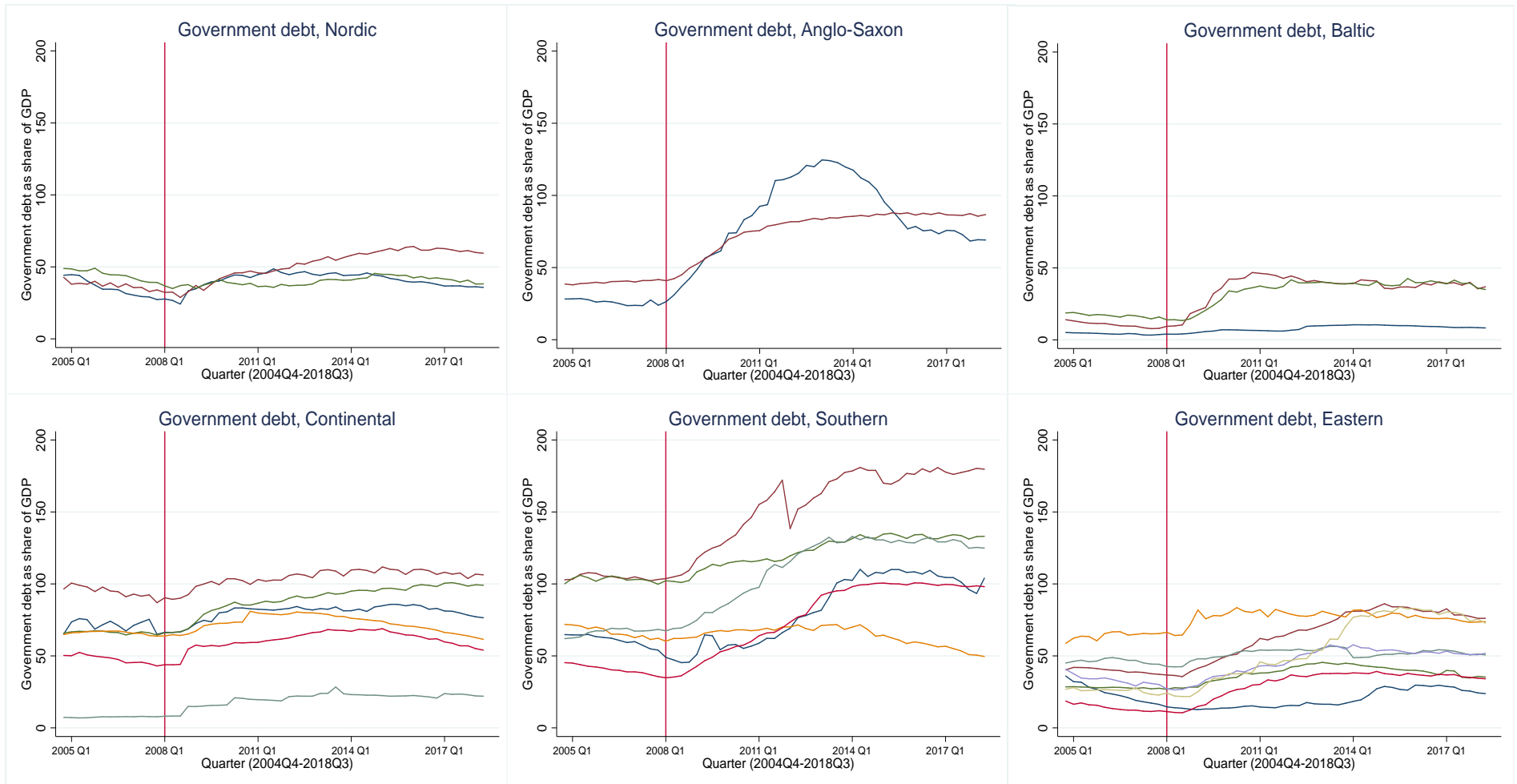
Figure 7: Public and private labour shares by welfare system, 2004Q4-2018Q3

Compiled by the author, based on Eurostat (2019a)

29
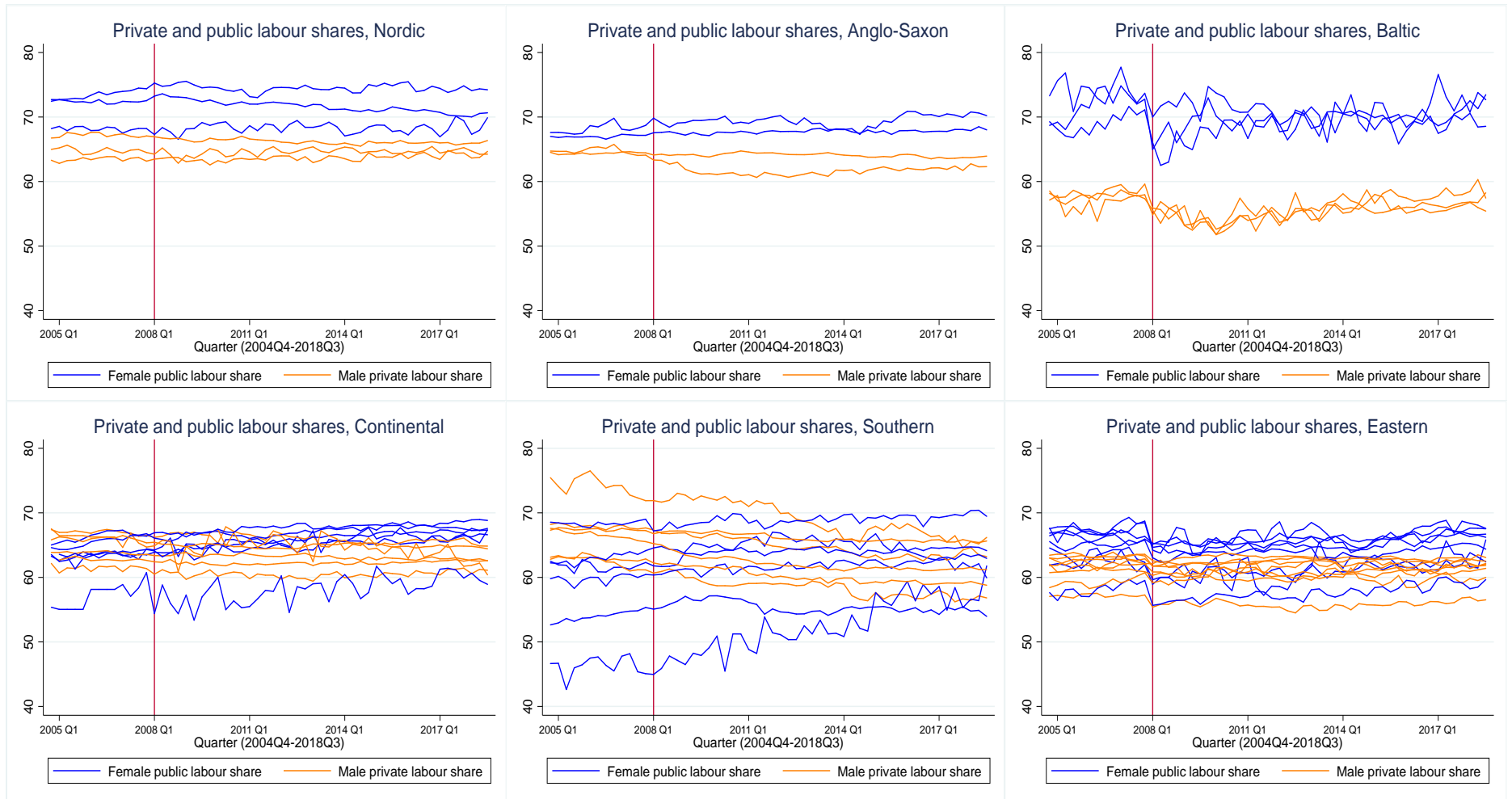
5   Methodology

To test the effect of the recession and austerity measures on male and female unemployment, this thesis applies a macro-level fixed-effects panel data linear regression analysis of all 28 EU member states spanning a time period of 56 quarters from 2004Q4 to 2018Q3. To capture the events of the recession and subsequent austerity measures as timely as possible, quarterly data is examined. 2004Q4 is chosen as starting date, as it marks the first quarter of simultaneous positive GDP growth in all current EU member states after the early 2000s recession. This is to ensure that solely the effects of the 2008 recession and subsequent austerity are measured. To measure potential long-term effects of the recession and austerity, the latest available data from 2018Q3 is included.[7] All data stems from Eurostat, which currently is the only provider of statistics at European level and harmonises national data to make it directly comparable across countries (Eurostat, 2019b). However, since it is difficult to ensure perfect comparability between all national data collection methods, the data is very likely not perfectly comparable. Still, it is the best comparable available data.

5.1   The basic model

This thesis' econometric model is based on Stuckler et al. (2009)'s basic linear fixed-effects model. The model is regressed on female and male unemployment rates, with the main explanatory variables being GDP growth and government expenditure in million euro. Government expenditure is specified as the first-difference estimator of the log-transformed variable, which is equal to the percentage change in government expenditure. Both main explanatory variables are thus specified as percentage changes, which enables direct comparisons of the explanatory variables across countries, regardless of the size of their economies or populations.

It is important to note that changes in unemployment rates do not only stem from job losses but are also conditioned by the added- and discouraged-worker effects. As shown in previous literature, these effects are more likely to affect the female unemployment rate. However, it is beyond the scope of this thesis to decompose changes in female unemployment rates as to whether they are related to the added- or discouraged-worker effects.

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[7] At the time that this thesis' analysis was conducted, the latest available data was for 2018Q3. It is likely that, by the time of this thesis' completion, more recent data is available.

This thesis' basic model thus reads as follows:

(1) $U_{f_{it}} = \alpha + \mu_i + \beta_1 GDPgrowth_{it} + \beta_2 \Delta \ln GovExp_{it} + \gamma_{it} + \delta_{it} + \varepsilon_{it}$

(2) $U_{m_{it}} = \alpha + \mu_i + \beta_1 GDPgrowth_{it} + \beta_2 \Delta \ln GovExp_{it} + \gamma_{it} + \delta_{it} + \varepsilon_{it}$

Where $U_{f_{it}}$ and $U_{m_{it}}$ refer to female and male unemployment rates, respectively; and $GDPgrowth_{it}$ and $\Delta \ln GovExp_{it}$ represent the main explanatory variables.

γ_{it} is a vector for a set of macroeconomic control variables. Since policymakers assigned great importance to reducing public debt for the sake of economic recovery, public debt as share of national GDP is controlled for. For the sake of consistency, this variable is specified as percentage change. Moreover, a bailout dummy variable is included, equal to unity for bailout recipient countries during the time period that they received a bailout. The effect of a bailout may be multifaceted, as it increases public debt and is given on condition of strict austerity measures but also enables governments to increase countercyclical spending. Finally, a dummy variable equal to unity for eurozone member states is controlled for to test whether eurozone members and non-eurozone members were differently affected. This ties into the debate on costs and benefits of a monetary union that emerged during and after the recession. While it is beyond the scope of this thesis to contribute to this debate, the model controls for the effect of being part of the eurozone.

Based on theoretical reasoning and as suggested by Stuckler et al. (2009), μ_i represents country-specific, time-invariant fixed effects. Due to many evident differences between the 28 EU member states that may influence unemployment rates, it is theoretically meaningful to control for country-specific, time-invariant fixed effects. Since the examined time period of 14 years is relatively short, it is assumed that many factors, including cultural and religious traditions, did not significantly change throughout the period of investigation and are thus controlled for as country-specific, time-invariant fixed effects. In addition, δ_{it} controls for linear country-specific time-trends in unemployment. Such time-trends may capture a variety of processes, including the female integration into the labour market and demographic changes. Moreover, long-term political and economic trends such as globalization and European integration, as well as increasing digitalisation and technological progress are captured by these time-trends.

Finally, ε_{it} is the error term, which is assumed to be normally distributed. Homoskedasticity in the error term is ensured by clustering the observations by country, which allows for correlation between observations within a country. Despite controlling for the above-described effects, trends and correlations, it is important to note there may be others influential variables that are not accounted for in this model, potentially resulting into an omitted variable bias. The investigation of such variables is subject to further research.

Two extensions of the basic model serve to investigate further influences on male and female unemployment, as suggested by the literature. First, the effect of welfare systems is analysed.

Second, the influence of male and female labour shares in private and public sectors is tested.[8] In the following, the extended models are explained in further detail.

5.2 The effect of welfare systems

In a first extension to the basic model, the effect of welfare systems on female and male unemployment rates is examined. As discussed in this thesis' theoretical framework, previous literature has shown that welfare systems differently affect men and women. However, previous studies have only accounted for general influences of welfare systems and disregarded the fact that the influence of welfare systems may differ during the recession and austerity.

To test the effect of the six different European welfare systems presented in Section 2.1 on female and male unemployment rates during the recession and austerity, a welfare system variable is created. The welfare system variable is categorical, assigning values ranging from 1 to 6 to the welfare systems. Because the social-democratic Nordic welfare system is considered as most solidary and decommodifying (Esping-Andersen, 1990), as well as most advanced in adjusting its welfare system to the "female revolution" (Esping-Andersen, 2009), it is omitted from the model and serves as reference category. The coefficients for the other welfare systems are thus interpreted relatively to the social-democratic Nordic welfare system.

The welfare system variable is interacted with dummy variables for periods of recession and austerity, thus creating a total of 12 interaction terms between each of the six welfare systems and the recession and austerity dummies. Based on the definition of a recession (Section 4.1), the dummy variable for recession equals unity for the time periods that a country experiences at least two consecutive quarters of negative growth (Leamer, 2008). Since austerity translates into reduced government expenditure, the dummy variable for austerity equals unity if the change in government expenditure is negative. Pearson's correlation coefficients reveal no multicollinearity between the two dummy variables.[9] Two separate models are run for the interactions of the welfare system variable with the recession and the austerity dummies.

The resulting models read as follows:

$$(3)\ U_{f_{it}} = \alpha + \beta_1 rec_{it} + \beta_2 aust_{it} + \beta_3 welfsyst_i + \beta_4 welfsyst_i * rec/aust_{it} + \gamma_{it} + \delta_{it} + \varepsilon_{it}$$

$$(4)\ U_{m_{it}} = \alpha + \beta_1 rec_{it} + \beta_2 aust_{it} + \beta_3 welfsyst_i + \beta_4 welfsyst_i * rec/aust_{it} + \gamma_{it} + \delta_{it} + \varepsilon_{it}$$

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[8] In this thesis, the term 'private sector' comprises industries and private services. The agricultural sector is not included, because it was barely affected by the recession or fiscal response measures, and to avoid perfect collinearity with the public sector share (Eurostat, 2019a).

[9] See Appendix B for pairwise correlations.

Where $welfsyst$ represents a categorical variable for welfare systems, and the effect of each welfare system category is individually tested. As explained above, these categories are interacted with the recession and austerity dummy variables. Because the models control for welfare systems, there is no need to control for country-specific time-invariant fixed effects. Still, the models account for a linear country-specific time trends and correlation between a country's observations, thereby ensuring homoscedastic error terms. Overall, Models 3 and 4 thus investigate the effect of different welfare systems on male and female unemployment in general, as well as during the recession and austerity in particular.

5.3   The effect of private-public gender job segregation

In a second extension of the basic model, the effect of gender job segregation across private and public sectors during the recession and austerity on female and male unemployment is tested. As discussed in the above literature review, previous studies found that men were more affected by the recession, because male-dominated sectors were most affected by the recession. These sectors include industries and private services. Likewise, women have been found to be more affected by austerity, as the public sector is often female-dominated. However, these findings are mostly based on descriptive analysis and have not been statistically tested in a panel regression analysis using interaction variables.

To statistically test this hypothesis, four interaction variables are created between female and male labour shares in private and public sectors and dummy variables for recession and austerity. To avoid collinearity between the labour share variables and capture the full effects of recession and austerity, four separate models are run. Finally, to prevent collinearity and facilitate a meaningful interpretation of the coefficients, GDP growth and government expenditure are omitted from these models and replaced by the proximate dummy variables for recession and austerity.

The resulting models thus read as follows:

$$(5) \ U_{f/m_{it}} = \alpha + \mu_i + \beta_1 rec_{it} + \beta_2 aust_{it} + \beta_3 F/M_{Ind_{it}} + \beta_4 F/M_{Ind_{it}} * rec_{it} + \gamma_{it} + \delta_{it} + \varepsilon_{it}$$

$$(6) \ U_{f/m_{it}} = \alpha + \mu_i + \beta_1 rec_{it} + \beta_2 aust_{it} + \beta_3 F/M_{Pub_{it}} + \beta_4 F/M_{Pub_{it}} * aust_{it} + \gamma_{it} + \delta_{it} + \varepsilon_{it}$$

Where F_{Ind} and M_{Ind} represent the female and male labour shares in industries and private services, respectively. F_{Pub} and M_{Pub} constitute female and male labour shares in the public sector. The respective labour shares are interacted with rec and $aust$, which represent dummy variables for recession and austerity. As for the previous models, the Models 5 and 6 control for country-specific time-invariant fixed effects, linear country-specific time trends and correlation between a country's observations, ensuring homoscedastic error terms.

Comparing the coefficients for $F_{Ind}rec$ and $M_{Ind}rec$ reveals whether men are relatively more affected by the recession if their labour share in the private sector is higher, as suggested by previous research. Similarly, comparing the coefficients for $F_{Pub}aust$ and $M_{Pub}aust$ shows whether women are relatively more concerned by austerity if their labour share in the public sector is higher. The other interactions serve to distinguish between the effects of the recession and austerity and avoid one being absorbed by the other.

Overall, the two extensions of the basic model thus serve to identify the impact of gender job segregation and welfare systems on female and male unemployment rates during the periods of recession and austerity specifically. This contributes to previous research (Kushi & McManus, 2016, 2017), which has only tested the general effect of welfare systems and sectoral labour shares throughout the whole time period of investigation, spanning across periods of recession and austerity.

It is important to note that the models applied in this thesis do not directly replicate a previous study on this topic, which is conditioned by the existence of only few comparable studies and the availability of quarterly Eurostat data. Control variables used by Kushi and McManus (2016, 2017) that are deemed irrelevant to this thesis' research questions are therefore not included in the analysis. These variables include the electoral system and labour market productivity, amongst others. However, controlling for time-invariant country-specific fixed effects as well as country-specific linear time trends likely controls for a majority of these variables. Still, there is a risk of an omitted variable bias, which presents a limitation to this study.

6   Results

This section proceeds to present the results of the above-presented models. First, the basic model's results are presented, followed by the results for the extended models accounting for the effects of welfare systems and gender job segregation. To enable a direct comparison between the effects on female and male unemployment, their coefficients are interpreted in terms of standard deviations. As the summary statistics in Appendix A show, female unemployment rates have a standard deviation of 4.688 percentage points, whereas the standard deviation in male unemployment rates equals 4.412 percentage points. All coefficients are interpreted as ceteris paribus.

6.1   The basic model

In the basic model, GDP growth and government expenditure, as well as the above-explained macroeconomic control variables are regressed on female and male unemployment rates. The model thus explores the relationship between GDP growth and government expenditure and female and male unemployment throughout the entire time period of investigation and for all EU member states. To demonstrate the models' robustness to specification changes and the insertion of additional variables, Appendix C presents the stepwise process of modelling, comparing the results for pooled ordinary-least-squares (OLS) and fixed-effects (FE) models. The final fixed-effect Models 1 and 2 are presented in Table 4.

Models 1.1 and 2.1 investigate the relationship between GDP growth and government expenditure and female and male unemployment. In addition, Models 1.2 and 2.2 replace the main explanatory variables by dummy variables for recession and austerity.

In Models 1.1 and 2.1, GDP growth is negatively related to both female and male unemployment rates, with both coefficients being significant at a one per cent level. As GDP grows (shrinks), male and female unemployment in the subsequent quarter decline (increase). The coefficients suggest that a one per cent increase (decline) in GDP is related to a 0.1146 percentage point decrease (increase) in female unemployment, and a 1.899 per cent decrease (increase) in male unemployment. The effects equal 0.024 standards deviations in female unemployment, and 0.043 standard deviations in male unemployment, respectively. Thus, relatively speaking, the effect of GDP growth on unemployment is by 79 per cent stronger for men than for women. Even though the coefficients seem small in magnitude, there is thus some evidence for a so-called 'man-cession'. In contrast, in Models 1.1 and 2.1, government expenditure is not related to female or male unemployment. This contradicts the hypothesis that women were more affected by austerity than men.

Table 4: Results of Models 1 and 2

Model	1.1	1.2	2.1	2.2
	Female unemployment rate (FE)	Female unemployment rate (FE)	Male unemployment rate (FE)	Male unemployment rate (FE)
GDP growth	-0.1146*** (0.0300)		-0.1899*** (0.0477)	
Recession dummy		0.4992 (0.3284)		0.807* (0.4372)
Gov. exp. in million € (log, first diff.)	-0.2829 (0.3371)		-0.3605 (0.2507)	
Austerity dummy		0.3454** (0.1538)		0.625*** (0.2231)
Gov. debt, % of GDP (log, 1st dif.)	0.1577 (1.0039)	1.4179 (0.9770)	2.6827* (1.456)	4.772*** (1.561)
Eurozone dummy	-1.9159** (0.7067)	-1.986** (0.749)	-2.735** (1.037)	-2.848** (1.129)
Bailout dummy	2.2678*** (0.7818)	2.4694*** (0.808)	2.9189** (1.292)	3.246** (1.321)
Country-specific linear time trends	Yes	Yes	Yes	Yes
Constant	10.495*** (0.5322)	10.126*** (0.5334)	9.8663*** (0.5892)	9.2303*** (0.5684)
Observations	1,508	1,508	1,508	1,508
R-squ. within	0.7130	0.7092	0.6814	0.675
R-squ. between	0.4001	0.3985	0.3491	0.371
R-squ. overall	0.5014	0.4995	0.4995	0.509
No. of countries	28	28	28	28

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

However, it is important to notice that these coefficients do not express a direction of effect. While they may provide some evidence for a so-called 'man-cession', they may as well express that men benefit more from positive GDP growth than women. Similarly, the coefficient for government expenditure reflects both increases and declines in expenditure. It is thus difficult to draw conclusions from these coefficients on the impact of the recession and austerity.

Therefore, the main explanatory variables are replaced by two dummy variables for the recession and austerity in Models 1.2 and 2.2. These dummy variables measure the relationship between the recession and austerity and female and male unemployment during time periods of recession and austerity only. Positive GDP growth or increases in government expenditure are thus not captured. While the replacement of continuous with binary variables implies a loss of information, especially regarding the magnitudes of GDP growth and government expenditure, it facilitates a more meaningful interpretation of the results. Thus, the usage of dummy variables

is appropriate to ensure that only time periods of recession or austerity are captured in Models 1.2 and 2.2.

Interestingly, in Models 1.2 and 2.2, austerity is more strongly related to both male and female unemployment than the recession. The recession is not significantly related to female unemployment, and male unemployment is related to the recession at a 10 per cent significance level. The coefficient of 0.807 percentage points increases in male unemployment equals 0.18 standard deviations in male unemployment. Even though the relationship is statistically weak, it is in line with the hypothesis that male unemployment was more affected by the recession than female unemployment.

As regards austerity, both female and male unemployment are related to the austerity dummy at a one per cent significance level. Austerity is related to increases female unemployment by 0.3454 percentage points and in male unemployment by 0.625 percentage points. These coefficients equal 0.074 standard deviations in female unemployment and 0.142 standard deviations in male unemployment, respectively. The effect of austerity on male unemployment is thus, relatively speaking, almost twice as strong as on female unemployment. This finding contradicts the hypothesis that female unemployment was more affected by austerity than male unemployment.

With regard to the macroeconomic control variables, government debt as share of GDP is significantly related only to male unemployment. Then again, the bailout dummy variable is positively related to both female and male unemployment, but more strongly so to male unemployment. Depending on the direction of causality, this finding may suggest that bailouts' conditionality disproportionately affects men, which could be explained by employment structures within the public sector. However, since the models do not indicate a causal direction of effect, the coefficients may as well indicate that bailouts were given to countries with particularly high male unemployment rates. Further research is needed to clarify the direction of causality. Finally, being part of the eurozone is related to stronger decreases in male than in female unemployment rates. Thus, while men seem to be disproportionately affected by the recession and austerity, they disproportionately benefit from the eurozone as well.

Finally, it is noteworthy that the error terms of Models 1.1, 1.2, 2.1 and 2.2 are not normally distributed, as they are skewed left. Thereby, an assumption of multiple linear regression models is violated. However, given the large sample size of 1,508 observations, non-normality is unlikely to affect the estimates of the coefficients (Lumley et al., 2002).

Having presented the basic model, the following sections proceed to discuss the influence of welfare systems and gender job segregation on female and male unemployment rates, during the recession and subsequent periods of austerity.

6.2   The effect of welfare systems

Models 3 and 4 test the influence of different welfare systems on female and male unemployment during recession and austerity. The models' contribution to previous research lies in testing not only the general influence of welfare systems but also how this influence changes during recession and austerity.

As explained in Section 6.2, social-democratic/ Nordic welfare states are omitted from the models and serve as reference category, relatively to which the other coefficients are interpreted. Based on previous literature on gender dimensions of European welfare systems (e.g. Esping-Andersen, 2009), Nordic welfare states are considered most gender equal compared to other welfare systems. They therefore constitute a suitable reference category.

Table 5 presents the models' results. Models 3.1 and 4.1 show the general effect of different welfare systems on female and male unemployment rates throughout the entire time period of investigation. Models 3.2 and 4.2 reveal how this impact changes during a recession. Finally, Models 3.3 and 4.3 demonstrate how the impact of welfare systems on female and male unemployment rates changes during periods of austerity.

Models 3.1 and 4.1 demonstrate that, in general, male and female unemployment rates in most welfare systems do not statistically significantly differ from those in Nordic welfare states, if controlling for macroeconomic control variables. Only in Baltic welfare states is the male unemployment rate statistically significantly higher than in Nordic welfare states, namely by 3.315 percentage points. This effect equals 0.75 standard deviations in male unemployment. Regarding female unemployment, only Eastern welfare states reveal statistically significant differences in female unemployment rates when compared to Nordic welfare states. Female unemployment rates in Eastern welfare states are by 3.531 percentage points higher than those in Nordic welfare states, equalling 0.75 standard deviations in female unemployment. These effects describe general differences in unemployment between the different welfare systems throughout the whole time period of investigation.

Table 5: Results of Models 3 and 4

Model	3.1	3.2	3.3	4.1	4.2	4.3
	Female unempl. rate (RE)	Female unempl. rate (RE)	Female unempl. rate (RE)	Male unempl. rate (RE)	Male unempl. rate (RE)	Male unempl. rate (RE)
Recession dummy	0.361	-0.500	0.408	0.589	-0.165	0.666*
	(0.328)	(0.519)	(0.315)	(0.438)	(0.567)	(0.389)
Austerity dummy	0.204	0.114	0.0841	0.496**	0.339	0.0860
	(0.181)	(0.179)	(0.602)	(0.234)	(0.213)	(0.506)
Welfare groups (Ref.: Nordic)						
Continental	0.751	0.586	0.744	0.362	0.215	0.339
	(1.430)	(1.410)	(1.452)	(1.658)	(1.625)	(1.639)
Anglo-Saxon	-0.802	-1.423*	-1.350	1.220	0.415	0.309
	(0.839)	(0.843)	(0.934)	(1.230)	(1.081)	(1.038)
Southern	2.338	1.957	2.306	-0.521	-0.970	-0.630
	(1.544)	(1.471)	(1.574)	(1.466)	(1.356)	(1.445)
Baltic	1.710	0.938	1.196	3.315***	2.046*	2.452*
	(1.071)	(1.017)	(1.060)	(1.181)	(1.120)	(1.261)
Eastern	3.531**	3.584**	3.792**	2.251	2.565*	2.574
	(1.636)	(1.667)	(1.727)	(1.511)	(1.528)	(1.583)
Continental * recession		0.357			-0.172	
		(0.614)			(0.656)	
Anglo-Saxon * recession		2.507***			3.283***	
		(0.589)			(0.822)	
Southern * recession		1.337			1.370	
		(0.892)			(1.112)	
Baltic * recession		3.070***			5.112***	
		(0.677)			(0.819)	
Eastern * recession		0.103			-0.634	
		(0.608)			(0.606)	
Continental * austerity			-0.505			-0.706
			(0.643)			(0.555)
Anglo-Saxon * austerity			1.593*			2.753**
			(0.853)			(1.334)
Southern * austerity			-0.0474			0.194
			(0.776)			(0.705)
Baltic * austerity			3.030***			5.025***
			(0.755)			(0.699)
Eastern * austerity			-0.449			-0.363
			(0.687)			(0.589)
Gov. debt, % of GDP (log, 1st dif.)	1.583	0.317	1.093	4.289**	1.812	3.493**
	(1.295)	(1.206)	(1.264)	(1.746)	(1.470)	(1.612)
Eurozone dummy	-0.376	-0.224	-0.195	-1.237	-0.889	-0.962
	(0.891)	(0.841)	(0.875)	(0.931)	(0.800)	(0.872)
Bailout dummy	2.334**	2.176**	2.051**	3.447**	3.196**	2.990**
	(0.988)	(0.947)	(0.947)	(1.402)	(1.309)	(1.300)
Country-specific linear time trends	Yes	Yes	Yes	Yes	Yes	Yes
Constant	7.631***	7.834***	7.664***	7.484***	7.631***	7.607***
	(0.953)	(0.956)	(1.005)	(1.104)	(1.089)	(1.141)
Observations	1,508	1,508	1,508	1,508	1,508	1,508
R-squ. within	0.5594	0.5730	0.5799	0.5856	0.6167	0.6239
R-squ. between	0.9786	0.9793	0.9792	0.9685	0.9707	0.9696
R-squ. overall	0.8267	0.8322	0.8348	0.7489	0.7677	0.7716
No. of countries	28	28	28	28	28	28

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Models 3.2/4.2 and 3.3/4.3 reveal how welfare systems influence female and male unemployment during periods of recession and austerity by applying interaction variables. Because Nordic welfare states serve as reference category, the base coefficients of the recession and the austerity dummy variables express the effect of the recession and austerity on unemployment in Nordic welfare states. To interpret the results of the interaction variables, the base coefficients are added to the interaction coefficients, following the below calculation:

$$U_{f_{it}} = \beta_{1/2}rec_{it}/aust_{it} + \beta_3welfsyst_i + \beta_4welfsyst_i * rec_{it}/aust_{it} \quad \text{(Model 3.2, 3.3)}$$

$$U_{m_{it}} = \beta_{1/2}rec_{it}/aust_{it} + \beta_3welfsyst_i + \beta_4welfsyst_i * rec_{it}/aust_{it} \quad \text{(Model 4.2, 4.3)}$$

The calculations' results are presented in Table 6. The joint statistical significance of the two base coefficients and the interaction's coefficient is determined by testing the hypothesis that the sum of the three coefficients equals zero. The resulting p-values thus determine the statistical significance of the joint coefficients.

Table 6 shows that, first and second, in Nordic and Continental welfare states, the effect of the recession and austerity on female and male unemployment is not statistically significant. Third, in Anglo-Saxon welfare states, the effect of recession and austerity on female unemployment is not statistically significant either. However, the recession and austerity dummies are related to increases in male unemployment in Anglo-Saxon welfare states of 3.533 and 3.148 percentage points, respectively. These effects are statistically significant at the one per cent and the five per cent levels. Regarding the coefficients' magnitude, the effect of the recession on male unemployment in Anglo-Saxon welfare states equals 0.8 standard deviations in male unemployment, whereas the effect of austerity on male unemployment equals 0.71 standard deviations. Both coefficients are thus very meaningful. This finding suggests that men in Anglo-Saxon welfare states are disproportionately affected by both the recession and austerity.

Fourth, in Southern welfare states, none of the joint coefficients' is of statistical significance. Given the increases in male and female unemployment in Southern welfare states demonstrated descriptively in Section 4, Figure 4, it is likely that the effect is absorbed by the models' control variables, including government debt and the bailout dummy. Because many Southern welfare states received bailouts and had to adhere to their conditionality, the bailout dummy variable may be capturing the effect of the austerity dummy for Southern welfare states. However, this is subject to further statistical investigation.

Fifth, in Baltic welfare states, all interactions' coefficients are statistically significant at the 1 percent level. Female unemployment increases by 3.508 percentages points during the recession, equalling 0.75 standard deviations in female unemployment. Austerity even increases female unemployment by 4.310 percentage points, which is equivalent to 0.92 standard deviations in female unemployment. While these coefficients are very meaningful in magnitude and statistical significance, the relations between the recession and austerity and male unemployment in Baltic welfare states are even more substantial. The recession is related to increases in male unemployment in Baltic welfare states by 6.993 percentage points, which is equivalent to 1.58 standard deviations in male unemployment. Moreover, male

unemployment increases by 7.563 percentage points during time periods of austerity, equalling 1.71 standard deviations in male unemployment. Overall, men are disproportionately affected by both the recession and austerity in Baltic welfare states.

Table 6: Effects of welfare systems during recession and austerity

Model	The effect on…	Welfare system	Sum of coefficients	Joint p-value
3.2	…female unemployment rates during the recession	Nordic (base)	-0.500	0.3360
		Continental	0.443	0.7675
		Anglo-Saxon	0.584	0.5108
		Southern	2.794	0.1074
		Baltic	3.508***	0.0074
		Eastern	3.187**	0.0486
3.3	…female unemployment during austerity	Nordic (base)	0.0841	0.0889
		Continental	0.3231	0.8232
		Anglo-Saxon	0.3271	0.7306
		Southern	2.3409	0.1292
		Baltic	4.310***	0.0008
		Eastern	3.427**	0.0252
4.2	…male unemployment during the recession	Nordic (base)	-0.165	0.7710
		Continental	0.122	0.9416
		Anglo-Saxon	3.533***	0.0082
		Southern	0.235	0.8990
		Baltic	6.993***	0.0000
		Eastern	1.766	0.2483
4.3	…male unemployment during austerity	Nordic (base)	0.086	0.8650
		Continental	-0.281	0.8641
		Anglo-Saxon	3.148**	0.0432
		Southern	-0.35	0.8233
		Baltic	7.563***	0.0000
		Eastern	2.297	0.1136

*Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1*

Sixth and finally, the opposite seems to hold true in Eastern welfare states. Here, female unemployment is more affected by both the recession and austerity than male unemployment. During the recession, female unemployment increases by 3.187 percentage points, equalling 0.68 standard deviations in female unemployment. Moreover, during austerity, female unemployment increases by 3.427 percentage points, which is equivalent to 0.73 standard deviations in female unemployment. Both effects are statistically significant at the five per cent level. In contrast, male unemployment is not statistically significantly related to the recession and austerity in Eastern welfare states. Female unemployment was thus more affected by the recession and austerity than male unemployment in Eastern welfare states.

Overall, Models 3 and 4 thus demonstrate that female and male unemployment are differently related to the recession and austerity in different welfare systems. First, in Nordic and Continental welfare states, the recession and austerity are not significantly related to female and male unemployment. Second, in Anglo-Saxon and Baltic welfare states, the models indicate

that male unemployment is more affected than female unemployment by both the recession and austerity. Third, female and male unemployment in Southern states are not related to recession and austerity and likely more directly affected by government debt and the bailout's conditionality. More research is required to determine whether women or men are more affected by these variables. Finally, Eastern welfare states are the only countries in which female unemployment is more strongly related to the recession and austerity than male unemployment. These results will be further discussed in this thesis' Section 8.

6.3   The effect of private-public gender job segregation

As presented in Table 7, Models 5 and 6 reveal whether male and female labour shares (MLS and FLS, respectively) in public and private sectors impact male and female unemployment during the recession and austerity. The results test the hypothesis that male unemployment is more affected by the recession because men dominate the private sector, whereas female unemployment is more affected by austerity due to women's high labour shares in the public sector.

Because the labour share variables are continuous and specified as ratios, their interaction terms' interpretation is less straightforward than that of interaction terms with categorical variables. To reach a meaningful interpretation, the following calculation is required, where X represents exemplary values for female and male labour shares:

$$U_{f/m_{it}} = \beta_1 rec_{it} + \beta_3 F/M_{Ind_{it}} * X + \beta_4 F/M_{Ind_{it}} rec_{it} * X \qquad \text{(Model 5)}$$

$$U_{f/m_{it}} = \beta_2 aust_{it} + \beta_3 F/M_{Pub_{it}} * X + \beta_4 F/M_{Pub_{it}} aust_{it} * X \qquad \text{(Model 6)}$$

To avoid arbitrarily choosing exemplary values for labour shares, a graphical presentation of the models' results enables a meaningful interpretation of the relationship between private and public labour shares and female and male unemployment, including the marginal effects of the recession and austerity.

Table 7: Results of Models 5 and 6

Models	5.1	5.2	6.1	6.2
	Female unemployment rate (FE)	Male unemployment rate (FE)	Female unemployment rate (FE)	Male unemployment rate (FE)
Recession dummy	-1.791	6.286	0.573*	0.804*
	(2.449)	(3.714)	(0.316)	(0.432)
Austerity dummy	0.311**	0.474**	-3.544	4.610**
	(0.143)	(0.175)	(2.366)	(1.780)
FLS (private)	30.20			
	(18.07)			
FLS (private) * recession	5.984			
	(6.091)			
MLS (private)		-120.5***		
		(25.86)		
MLS (private) * recession		-8.981		
		(6.074)		
FLS (public)			-14.97*	
			(8.476)	
FLS (public) * austerity			6.026	
			(3.751)	
MLS (public)				-9.029
				(13.43)
MLS (public) * austerity				-11.49**
				(4.764)
Gov. debt, % of GDP (log, 1st dif.)	0.719	2.643**	1.105	24.15***
	(0.955)	(1.225)	(1.030)	(8.688)
Eurozone dummy	-1.741**	-1.847**	-1.957***	0.966
	(0.697)	(0.864)	(0.704)	(1.957)
Bailout dummy	2.287***	2.762***	2.455***	-1.611
	(0.725)	(0.920)	(0.824)	(1.056)
Constant	-1.008	85.28***	19.76***	25.70**
	(6.452)	(16.58)	(5.574)	(11.88)
Country-specific linear time trend	Yes	Yes	Yes	Yes
Observations	1,508	1,500	1,508	1,503
R-squ. within	0.718	0.744	0.715	0.685
R-squ. between	0.289	0.233	0.407	0.414
R-squ. overall	0.415	0.329	0.504	0.538
No. of countries	28	28	28	28

FLS = female labour share, MLS = male labour share;
robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Figure 8 presents the predicted values of Model 5 and their 95 per cent confidence intervals, as well as the marginal effect of the recession dummy. The y-axis represents the unemployment rate, and the x-axis indicates the labour share in the private sector. The figure reveals a positive relationship between the private-sector FLS and female unemployment. The higher the female labour share in the private sector, the higher is the female unemployment rate, all else being equal.

Figure 8: F/m private sector labour shares and unemployment rates during the recession (Model 5)
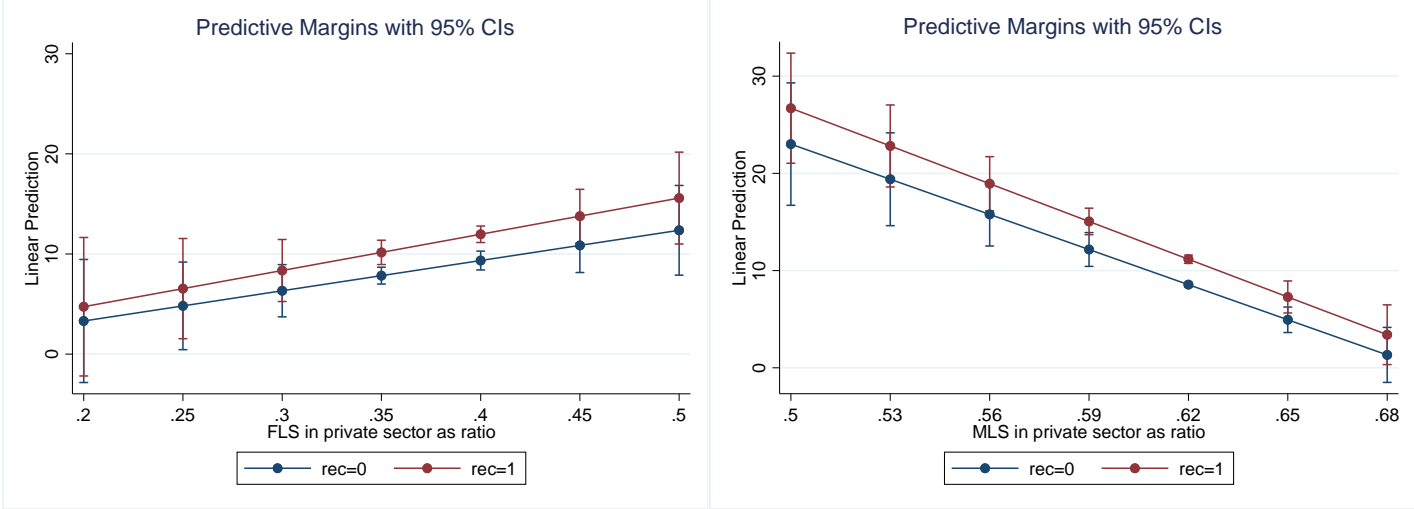
Table 8 presents the corresponding marginal effects of the recession, as well as their statistical significance. During a recession, female unemployment increases by between 1.43 and 3.22 percentage points relative to its slope in non-recession times, equal to 0.31 to 0.69 standard deviations in female unemployment[10]. In fact, the higher the FLS in the private sector, the higher is the marginal effect of the recession on female unemployment. Table 8 moreover shows that, for all FLS in the private sector of at least 30 per cent, the marginal effect is statistically significant at the one per cent level. Thus, even though the overall coefficient of the interaction term is not statistically significant, as indicated in Model 5.1, Table 8 reveals that the recession significantly increases female unemployment when the private-sector FLS equals 30 per cent or more.

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[10] Appendix D shows the predictive margins for all displayed coefficients.

Table 8: Difference between the predictive margins of the recession (Model 5.1)

FLS (private sector)	Contrast (rec=1 vs. rec=0)	Std. Error	z	P>|z|	[95% Conf. Interval]	
0.2	1.425422	1.230909	1.16	0.247	-0.987115	3.83796
0.25	1.724612	.9320561	1.85	0.064	-0.102185	3.55141
0.3	2.023801	.6386142	3.17	0.002	0.772140	3.27546
0.35	2.32299	.3639177	6.38	0.000	1.609725	3.03626
0.4	2.62218	.2062822	12.71	0.000	2.217874	3.02648
0.45	2.921369	.3717217	7.86	0.000	2.192808	3.64993
0.5	3.220558	.6475416	4.97	0.000	1.9514	4.48972

As regards male unemployment, Model 5.2 shows that the relationship between the MLS in the private sector and male unemployment is statistically significant at a one per cent level. The MLS in the private sector is negatively related to male unemployment. Thus, the higher the MLS in the private sector, the lower is the male unemployment rate. Figure 7 and Table 9 show that, during the recession, male unemployment increases by between 3.69 and 2.08 percentage points relative to its slope in non-recession times, equalling between 0.84 and 0.47 standard deviations in male unemployment. In contrast to the recession's marginal effect on female unemployment, the recession's marginal effect on male unemployment decreases as the private-sector MLS increases. Moreover, even though the overall effect of the recession is not statistically significant (Model 5.2), the marginal effects are statistically significant for all private-sector MLS values ranging from 50 to 68 percent[11]. Thus, the recession significantly changes the relationship between the private-sector MLS and male unemployment. However, the hypothesis that male unemployment is disproportionately affected by the recession because of high private-sector MLSs is rejected. Rather, the opposite is the case.

Table 9: Difference between the predictive margins of the recession (Model 5.2)

MLS (private sector)	Contrast (rec=1 vs. rec=0)	Std. Err.	z	P>|z|	[95% Conf. Interval]	
0.5	3.693465	0.7354748	5.02	0.000	2.251961	5.134969
0.53	3.424047	0.5742076	5.96	0.000	2.29862	4.549473
0.56	3.154627	0.4300245	7.34	0.000	2.311795	3.99746
0.59	2.885209	0.3264108	8.84	0.000	2.245455	3.524962
0.62	2.615789	0.3075432	8.51	0.000	2.013016	3.218563
0.65	2.346371	0.3860538	6.08	0.000	1.589719	3.103022
0.68	2.076952	0.5195271	4.00	0.000	1.058697	3.095206

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[11] Observations for higher private-sector MLSs are omitted from this postestimation analysis, because the linear regression estimates negative values of unemployment for these observations. Since unemployment rates cannot be negative, it is likely that a different functional form would be more suitable to describe this relationship. However, this is subject to further research.

Overall, Model 5 and the postestimation of the recession's marginal effects on unemployment at different private-sector labour shares suggests that the relationships between the FLS and MLS in the private sector and female and male unemployment rates significantly change during a recession. However, a higher private-sector MLS is related to a relatively smaller increase in male unemployment, whereas a higher private-sector FLS is related to a relatively greater increase in female unemployment. This rejects the hypothesis that men were disproportionately affected by the recession due to their high labour shares in the private sector.

Figure 9 describes the relationships of the FLS and MLS in the public sector and female and male unemployment, as well as the marginal effects of the austerity dummy on these relationships. Both the FLS and the MLS in the public sector are negatively related to female and male unemployment. The relationship between the public-sector FLS and female unemployment is stronger than that of their male counterparts, as suggested by their coefficients' magnitude (Table 7, Models 6.1 and 6.2). It is moreover statistically significant at a 10 per cent level (Model 6.1). In contrast, the overall relationship between the MLS in the public sector and male unemployment is statistically insignificant (Model 6.2).

Figure 9: F/m public sector labour shares and unemployment rates during austerity (Model 6)

Table 10 shows that the marginal effect of austerity on the relationship between the public-sector FLS and female unemployment ranges from 0.77 to 3.18 percentage points, equivalent to 0.16 and 0.68 standard deviations in female unemployment. The higher the FLS in the public sector, the larger is the marginal effect of austerity on female unemployment. This effect is statistically significant for public-sector FLSs of 50 per cent and higher. Thus, austerity significantly shifts the relationship between the FLS in the public sector and female unemployment, if the public-sector FLS is relatively high. This finding confirms the hypothesis that female unemployment disproportionately increases during periods of austerity due to high FLSs in the public sector.

Table 10: Difference between the predictive margins of austerity (Model 6.1)

FLS (public sector)	Contrast (austerity=1 vs. austerity=0)	Std. Err.	z	P>|z|	[95% Conf. Interval]	
0.4	0.771534	0.8620097	0.90	0.371	-0.917974	2.461042
0.45	1.07284	0.6782342	1.58	0.114	-0.2564751	2.402154
0.5	1.374145	0.4972831	2.76	0.006	0.3994884	2.348802
0.55	1.675451	0.3239249	5.17	0.000	1.04057	2.310332
0.6	1.976757	0.1814174	10.90	0.000	1.621186	2.332329
0.65	2.278062	0.176763	12.89	0.000	1.931613	2.624512
0.7	2.579368	0.3161108	8.16	0.000	1.959802	3.198934
0.75	2.880674	0.4888302	5.89	0.000	1.922584	3.838764
0.8	3.18198	0.6695759	4.75	0.000	1.869635	4.494325

Finally, the interaction of the MLS in the public sector and the austerity dummy is statistically significant at the five per cent level (Table 7, Model 6.2). Table 11 shows that austerity increases male unemployment by up to 4.97 percentage points relative to its slope in non-recession times, which is equal to 1.13 standard deviations in male unemployment. However, this is true only for small values of MLS in the public sector. As Table 10 shows, the higher the MLS in the public sector, the smaller is the marginal effect of austerity on male unemployment. The public sector thus seems to act as a buffer during austerity for male employees. The findings of Models 6.1 and 6.2 suggest that austerity affects female employees in the public sector more than their male counterparts if their respective public-sector labour shares are high.

Table 11: Difference between the predictive margins of austerity (Model 6.2)

MLS (public sector)	Contrast (austerity=1 vs. austerity=0)	Std. Err.	z	P>|z|	[95% Conf. Interval]	
0.15	4.967208	1.070945	4.64	0.000	2.868194	7.066221
0.2	4.392634	0.8386117	5.24	0.000	2.748985	6.036283
0.25	3.81806	0.6108185	6.25	0.000	2.620877	5.015242
0.3	3.243486	0.3954899	8.20	0.000	2.46834	4.018631
0.35	2.668912	0.2306697	11.57	0.000	2.216807	3.121016
0.4	2.094337	0.2519683	8.31	0.000	1.600489	2.588186
0.45	1.519763	0.4327247	3.51	0.000	0.6716386	2.367888
0.5	0.945189	0.6515341	1.45	0.147	-0.3317942	2.222173
0.55	0.370615	0.8804692	0.42	0.674	-1.355073	2.096303
0.6	-0.20396	1.113301	-0.18	0.855	-2.385989	1.97807

Overall, Model 5 thus shows that the marginal effect of the recession on the relationship between the MLS in the private sector and male unemployment decreases with increasing private-sector MLSs. This finding rejects the hypothesis that male unemployment incr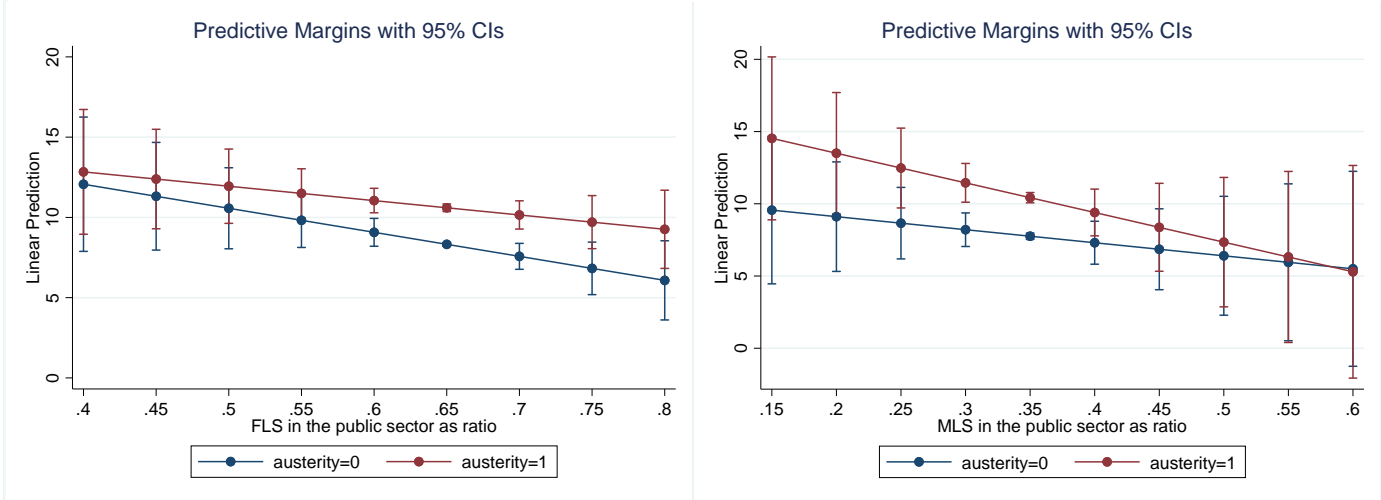eases during the recession due to high the MLS in the private sector. Moreover, Model 6 shows that the marginal effect of austerity on the relationship between the public-sector FLS and female unemployment increases with increasing public-sector FLSs. This result confirms the

hypothesis that female unemployment increases during periods of austerity due to the high FLS in the public sector.

Moreover, the findings of Models 5 and 6 raise questions on why both the private and public sectors act as buffers to male unemployment, but not to female unemployment. Either a discriminatory gender culture or an omitted variable bias may explain these findings. For further clarification, future research may consider other explanatory variables, for instance, on employment structures.

Finally, one essential limitation of the linear regression model is that it does not allow for other than linear functional forms of the relationship between the explanatory and outcome variables. The investigation of possible other functional forms is subject to further research.

7 Discussion

Based on previous research, this thesis has explored the impact of the 2008 recession and subsequent austerity on male and female unemployment in the EU. In doing so, it has tested the impact of two mechanisms of influence, as identified in previous literature. First, the impact of different welfare systems on the impact of recession and austerity on male and female unemployment was tested. Second, this thesis has investigated the hypothesis that male unemployment was more affected by the recession, whereas female unemployment was more affected by subsequent austerity measures, due to their respective labour shares in the private and public sectors. Having presented the models' results in the previous section, this section proceeds to set these results into the context of previous literature.

7.1 Relating the findings to the literature

Firstly, the results of Models 1 and 2 confirm the hypothesis that the recession resulted in higher surges in male unemployment than in female unemployment, a phenomenon described as 'mancession' in previous literature (Bredemeier, Juessen & Winkler, 2017; Peinado & Serrano, 2018). Second, if examining the entire time period of investigation, Models 1 and 2 reject the hypothesis that female unemployment was disproportionately related to austerity, as discussed in feminist literature (Gálvez-Muñoz, Rodríguez-Modroño & Addabbo, 2013; Kantola & Lombardo, 2017; Karamessini & Rubery, 2014; Kushi & McManus, 2017). Rather, government expenditure is found to affect male unemployment more than female unemployment. Based on the suggestions of previous literature, it would therefore be interesting to investigate the gendered effects of austerity on changes in employment conditions, part-time work and contract types. The effects of austerity may differ for other outcome variables than unemployment. However, this is subject to further research.

As regards the influence of different European welfare systems, Models 3 and 4 find that neither the recession nor austerity statistically significantly increase female or male unemployment in Nordic, Continental or Southern welfare states. For the cases of Nordic and Continental welfare states, this finding coincides with the conclusions drawn from a graphical inspection of the data (Section 5, Figure 4). However, for Southern welfare states, graphical inspection reveals significant increases in unemployment rates after 2008. This thesis' findings suggest that these increases are less directly related to the recession and austerity and more directly explained by macroeconomic control variables, including government debt and the bailout dummy. Further research is needed to investigate whether and why this is the case.

Furthermore, in Anglo-Saxon and Baltic welfare states, male unemployment increased disproportionately during both the recession and austerity. Finally, in Eastern welfare states, female unemployment increased disproportionately as a result of the recession and austerity. Table 12 summarises the effects of the recession and austerity on the different welfare systems.

Table 12: The effect of recession and austerity on f/m unemployment by welfare system

Welfare system	Degree of social stratification*	Degree of decommodification*	Effect of recession and austerity on f/m unemployment
Nordic	Low	High	None
Continental	Moderate	Moderate	None
Anglo-Saxon	High	Low	Male unemployment increased disproportionately
Southern	Moderate	Low	None (requires further investigation of the control variables' influence)
Baltic	High	Very low	Male unemployment increased disproportionately
Eastern	Moderate	Very low	Female unemployment increased disproportionately

The categorisation is done by the author, based on previous literature.

Table 12 reveals two interesting patterns. The first regards welfare systems marked by a moderate degree of social stratification and a very low degree of decommodification. These are moderately class-divided societies with very little social protection by the state. Here, female unemployment increased disproportionately during the recession and austerity. The literature suggests that women are particularly affected by a low degree of decommodification, as it implies little provision of public services, including care facilities (Kantola & Lombardo, 2017; Karamessini & Rubery, 2014; Rubery, 2015). Accordingly, as the domestic workload increases, women fail to live up to their employers' expectations and are dismissed.

Previous research has observed a discouraged-worker effect, with women quitting the active labour force due to their increasing domestic workload (Périvier, 2018; Perugini, Žarković Rakić & Vladisavljević, 2018). However, this thesis finds that female unemployment rates increased, indicating that women stayed in the active labour force after losing their jobs, despite their domestic workload. A discouraged-worker effect can thus not be observed.

However, an added-worker effect could be at play. Welfare systems with a low degree of decommodification tend to have a larger share of economically inactive women. The disproportionate increase in female unemployment may thus reflect women joining the active labour force to compensate for their partners' job losses. This effect has previously been found in several micro-data single and cross-country studies, particularly for Southern and Eastern welfare states (Aguilar-Palacio et al., 2018; Bredtmann, Otten & Rulff, 2018; Giannakopoulos, 2015). This thesis' findings may thus capture an added-worker effect.

Second, in welfare states characterized by a high degree of social stratification, male unemployment increased disproportionately during the recession and austerity. These systems are marked by liberal labour market regulations, granting relatively high flexibility to employers and few rights to employees, resulting in relatively high surges in unemployment rates. Since men still constitute the majority of the labour force in all EU member states, it is logical that male unemployment was disproportionately affected by both the recession and austerity. In Anglo-Saxon and Baltic welfare states, which are both characterized by a high degree of social stratification as well as a (very) low degree of decommodification, male unemployment disproportionately increases. The effect of social stratification on male unemployment thus seems to outweigh the effect of (very) low decommodification on female unemployment.

Overall, this thesis thus finds that welfare systems significantly influence how the recession and austerity affect female and male unemployment. Whereas men are disproportionately affected in more liberal, market-oriented systems, women are disproportionately concerned in systems with little provision of public welfare services. These findings are largely in line with those of previous studies.

Finally, this thesis' findings suggest that, during the recession, male unemployment did not disproportionately increase due to high male labour shares in the private sectors. These results contradict previous research suggesting that men were disproportionately affected by the recession, due to their higher labour shares in the private sector. Then again, this thesis' findings confirm the hypothesis that female unemployment increased disproportionately during austerity, due to higher female labour shares in the public sector (Aguilar-Palacio et al., 2018; Kushi & McManus, 2017; Peinado & Serrano, 2018; Rubery & Rafferty, 2013).

In contrast to previous literature, this thesis finds that both the public and the private sectors buffer the effect of austerity and recession on male employees, if their respective MLS is high. One possible explanation of this effect within the public sector could lie in gendered employment structures within the public sector, as well as the kind of the applied austerity measure. For instance, a restructuring of the public sector may have affected administrative personnel rather than male-dominated domains including the police and defence apparatus. Further research is required to investigate this finding.

A main contribution of this thesis is the statistical testing of influential mechanisms suggested by the literature. To the knowledge of the author, this thesis is the first study to explore the effect of welfare systems and private and public labour shares on unemployment by means of interaction variables in a linear regression analysis. Most previous research had established this thesis' research hypothesis based on theoretical reasoning, qualitative research, descriptive data analysis or statistical analysis of single country cases. This thesis thus contributes to the literature by testing the findings of previous research applying a different methodology.

7.2 Limitations

This thesis' analysis is subject to some limitations. First, the usage of macro-level data limits the explanatory power of the results. Micro-level data is needed to trace individuals' employment situation before and during the recession and austerity rather measuring the aggregate employment situation in a country. Moreover, micro-level data would reveal more detailed insights into the organisation of households and potential discouraged- and added-worker effects. Finally, micro-data would enable an analysis by other demographic factors than gender, to further grasp the intersectional impact of the recession and austerity on class, age and ethnicity, amongst others. However, it is beyond the scope of this thesis to investigate micro-data on all 28 EU member states.

Second, this thesis' models may be subject to some omitted variable bias. Even though they account for country-specific time-invariant fixed effects, as well as EU-wide and country-specific time trends in unemployment, they likely fail to control for all influential factors. Such factors may include demographic variables or information on employment structures, including part-time and temporary work or labour rights. For instance, an increase in part-time or temporary work may buffer the effect of the recession and austerity on unemployment, whereas a liberalisation of labour rights may ease the dismissal of employees. It is subject to further research to investigate the explanatory power of such factors.

Third, due to its limitation in scope, this thesis is limited to the analysis of unemployment as outcome variable. The investigation of the effect of the recession and austerity on other variables is essential to fully understand gendered outcomes of recession and austerity in the labour market. Such variables include part-time and temporary work, as well as the gender pay gap.

Fourth, it is important to mention that this thesis directly compares the influence of labour shares in the private sector across all EU member states. This interpretation is limited by the fact that the vulnerability of the private sector to global macroeconomic fluctuations likely differs across EU member states. For instance, private sectors differ in their sectoral composition and trade balance. In contrast, public sectors likely comprise more similar functions across EU member states and are therefore more comparable than private sectors. However, it is beyond the scope of this thesis to control for different characteristics of national private sectors.

Finally, this thesis' models do not indicate causality between the explanatory variables and female or male unemployment. All coefficients merely express correlations. However, since the recession originated in the United States, it may be considered an exogenous treatment on all EU member states. In this case, the results may suggest a causal effect of the recession on unemployment. Then again, as the analysis shows, endogenous factors influence the effect of the recession. Even more so did endogenous factors influence whether and how austerity measures were adopted. As a precaution and for the sake of statistical correctness, all coefficients are therefore interpreted as correlations.

7.3   Policy implications

In conclusion, this thesis' results suggest some policy implications. Regarding the recession's impact, the analysis has shown that, in liberal EU member states, men suffer disproportionately from increases in unemployment. Moreover, overall unemployment increases are higher than in other countries. Governments may thus opt for less liberal labour rights regulations and thereby hinder the dismissal of employees.

Furthermore, as regards the impact of austerity, the results show that female unemployment increases disproportionately in welfare systems characterised by a very low degree of decommodification. To counteract this effect, governments may expand and lower the cost of their public services to disburden women from their domestic workload as primary caretakers. Such services include child and elderly care facilities. Moreover, to balance the effect of austerity on women and men, governments may proactively incentivise women and men to equally share domestic work, for instance, through shared parental leave. Nordic welfare systems set an example as to how this can be approached.

Finally, governments may gender mainstream their austerity measures, that is to consider potential unintended gendered effects of their measures to avoid disproportionately targeting female employees within the public sector. Such gender mainstreaming would require the consideration of subsectoral labour shares of women and men within the public sector to pare down personnel in female- and male-dominated subsectors equally.

Overall, this thesis' results thus suggest that governments can take action to reduce the impact of the recession and austerity on both male and female unemployment. To do so, the gendered effects of recession and austerity must be acknowledged by policymakers and considered in the policy-making process.

8 Conclusion

This thesis has investigated the impact of the 2008 recession and subsequent austerity measures on female and male unemployment in the EU. Based on previous literature, it has analysed the influence of welfare systems as well as private-public gender job segregation on female and male unemployment during the recession and austerity. As regards the influence of gender job segregation, the thesis has tested the hypothesis that male unemployment was disproportionately affected by the recession, whereas female unemployment was disproportionately affected by subsequent austerity measures, due to their respective labour shares in the private and public sectors.

The research questions were addressed through a fixed-effects linear panel regression analysis of quarterly macro-level data from 2004Q4 to 2018Q3, spanning 56 quarters in total, on all 28 current EU member states. The influence of welfare systems, as well as private-public gender job segregation, on female and male unemployment during the recession and austerity were tested by means of interaction terms. The usage of interaction terms to investigate these influences during the recession and austerity, in particular, constitutes the main contribution of this thesis to the literature.

This thesis' findings suggest that, first, on an EU-wide scale throughout the entire time period of investigation, male unemployment was more affected by both the recession and austerity than female unemployment. This confirms the impression of a 'man-cession' but rejects the hypothesis that women were disproportionately affected by austerity. Second, in the liberal-oriented Anglo-Saxon and Baltic welfare states, characterised by a high degree of social stratification, male unemployment was disproportionately affected by both the recession and austerity. In contrast, in Eastern welfare states, marked by a very low degree of decommodification, female unemployment disproportionately increased during both the recession and austerity. This is in line with previous research on the effect of welfare systems. Third and finally, the results reject the hypothesis that men were disproportionately affected during the recession due to their high labour shares in the private sector. In contrast, high male labour shares in both the private and public sectors are found to buffer the impact of the recession austerity on male unemployment. Then again, the findings confirm the hypothesis that women were particularly affected during austerity due to their high labour shares in the public sector.

Overall, the results suggest that gender mainstreaming of government policies has the potential to mitigate gendered effects of the recession and austerity on unemployment. Policies to counteract such effects could include the extension of labour rights, the provision of public child and elderly care services, and the consideration of gendered implications of public expenditure cuts.

Further research may investigate gendered effects of recession and austerity on other outcome variables, including part-time and temporary work, as well as the gender pay gap. Moreover, the analysis of micro-data would contribute to a deeper understanding of gendered labour market dynamics during the recession and austerity.

References

Aguilar-Palacio, I., Carrera-Lasfuentes, P., Sánchez-Recio, R., Alonso, J. P. & Rabanaque, M. J. (2018). Recession, Employment and Self-Rated Health: A Study on the Gender Gap, *Public Health*, [e-journal] vol. 154, pp.44–50, Available Online: https://doi.org/10.1016/j.puhe.2017.10.013.

Aidukaite, J. (2011). Welfare Reforms and Socio-Economic Trends in the 10 New EU Member States of Central and Eastern Europe, *Communist and Post-Communist Studies*, [e-journal] vol. 44, no. 3, pp.211–219, Available Online: https://doi.org/10.1016/j.postcomstud.2011.07.005.

Antonopoulos, R. (2009). The Current Economic and FinancialCrisis: A Gender Perspective, 562, *Levy Economics Institute, Working Papers Series*, Available Online: http://dx.doi.org/10.2139/ssrn.1402687 .

Armingeon, K. (2012). The Politics of Fiscal Responses to the Crisis of 2008–2009, *Governance*, [e-journal] vol. 25, no. 4, pp.543–565, Available Online: https://doi.org/10.1111/j.1468-0491.2012.01594.x.

Arts, W. & Gelissen, J. (2002). Three Worlds of Welfare Capitalism or More? A State-of-the-Art Report, *Journal of European Social Policy*, [e-journal] vol. 12, no. 2, pp.137–158, Available Online: https://doi.org/10.1177/0952872002012002114.

Bambra, C. (2004). The Worlds of Welfare: Illusory and Gender Blind?, *Social Policy and Society*, [e-journal] vol. 3, no. 3, pp.201–211, Available Online: https://www.cambridge.org/core/article/worlds-of-welfare-illusory-and-gender-blind/A80314EB049CB2BBF385B042FC25F4F5.

Bonoli, G. (1997). Classifying Welfare States: A Two-Dimension Approach, *Journal of Social Policy*, [e-journal] vol. 26, no. 3, pp.351–372, Available Online: https://www.cambridge.org/core/journals/journal-of-social-policy/article/classifying-welfare-states-a-twodimension-approach/C5CD6E7FD394286E42F63EACCCEA3A11.

Bredemeier, C., Juessen, F. & Winkler, R. (2017). Man-Cessions, Fiscal Policy, and the Gender Composition of Employment, *Economics Letters*, [e-journal] vol. 158, pp.73–76, Available Online: http://www.sciencedirect.com/science/article/pii/S0165176517302495.

Bredtmann, J., Otten, S. & Rulff, C. (2018). Husband's Unemployment and Wife's Labour Supply: The Added Worker Effect Across Europe, *International Labour Review*, [e-journal] vol. 71, no. 5, pp.1201–1231, Available Online: https://doi.org/10.1177/0019793917739617.

Busch, K., Hermann, C., Hinrichs, K. & Schulten, T. (2013). Euro Crisis, Austerity Policy and the European Social Model, *European Economic and Social Policy*, Berlin, Available Online: https://europe-solidarity.eu/documents/ES_crisis.pdf.

Esping-Andersen, G. (1990). The Three Worlds of Welfare Capitalism, [e-book] Cambridge: Polity Press, Available Online: http://ludwig.lub.lu.se/login?url=http://search.ebscohost.com/login.aspx?direct=true&db =sih&AN=COMP1391556933&site=eds-live&scope=site.

Esping-Andersen, G. (2009). Incomplete Revolution: Adapting Welfare States to Women's New Roles, Oxford: Blackwell Publishers.

European Commission. (2019a). Balance of Payments (BoP) Assistance, *European Commission*, Available Online: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-financial-assistance/loan-programmes/balance-payments-bop-assistance_en#overview-of-balance-of-payments-assistance-programmes [Accessed 9 April 2019].

European Commission. (2019b). European Financial Stabilisation Mechanism, *European Commission*, Available Online: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-financial-assistance/loan-programmes/european-financial-stabilisation-mechanism-efsm_en#efsmprogrammes [Accessed 9 April 2019].

European Stability Mechanism. (2019). European Stability Mechanism, *European Stability Mechanism*, Available Online: https://www.esm.europa.eu/ [Accessed 9 April 2019].

Eurostat. (2019a). Eurostat Database, Available Online: https://ec.europa.eu/eurostat/data/database [Accessed 13 April 2019].

Eurostat. (2019b). Eurostat: What We Do, Available Online: https://ec.europa.eu/eurostat/about/overview/what-we-do [Accessed 26 April 2019].

Fenger, H. J. M. (2007). Welfare Regimes in Central and Eastern Europe: Incorporating Post-Communist Countries in a Welfare Regime Typology, *Contemporary Issues and Ideas in Social Sciences*, [e-journal] vol. 3, no. 2, Available Online: http://journal.ciiss.in/index.php/ciiss/article/viewFile/45/37.

Ferrera, M. (1996). The 'Southern Model' of Welfare in Social Europe, *Journal of European Social Policy*, [e-journal] vol. 6, no. 1, pp.17–37, Available Online: https://doi.org/10.1177/095892879600600102.

Gálvez-Muñoz, L., Rodríguez-Modroño, P. & Addabbo, T. (2013). The Impact of European Union Austerity Policy on Women's Work in Southern Europe, 108, *CAPPaper*, Modena, Italy, Available Online: https://www.researchgate.net/profile/Paula_Rodriguez-Modrono/publication/277770949_The_impact_of_European_Union_austerity_policy_on _women's_work_in_Southern_Europe/links/5572d12508ae7536374e1d20.pdf.

Giannakopoulos, N. (2015). The Added Worker Effect of Married Women in Greece during the Great Depression, 66298, Available Online: https://mpra.ub.uni-muenchen.de/66298/.

Gornick, J. C. & Jacobs, J. A. (1998). Gender, the Welfare State, and Public Employment: A Comparative Study of Seven Industrialized Countries, *American Sociological Review*, [e-journal] vol. 63, no. 5, pp.688–710, Available Online: http://www.jstor.org/stable/2657334.

Haas, B., Steiber, N., Hartel, M. & Wallace, C. (2006). Household Employment Patterns in an Enlarged European Union, *Work, Employment and Society*, [e-journal] vol. 20, no. 4, pp.751–771, Available Online: https://doi.org/10.1177/0950017006069813.

Kantola, J. & Lombardo, E. (2017). Gender and the Economic Crisis in Europe: Politics, Institutions and Intersectionality, Springer.

Karamessini, M. & Rubery, J. (2014). Women and Austerity: The Economic Crisis and the Future for Gender Equality, Vol. 11, Routledge.

Karamessini, M. & Rubery, J. (2017). The Challenge of Austerity for Gender Equality in Europe: A Consideration of Eight Countries at the Center of the Crisis, in *Gender and Time Use in a Global Context*, [e-book] Springer, pp.51–74, Available Online: https://doi.org/10.1057/978-1-137-56837-3_3.

Kushi, S. & McManus, I. P. (2016). Gender, Crisis and the Welfare State: Female Labor Market Outcomes Across OECD Countries, *Comparative European Politics*, [e-journal] vol. 16, no. 3, pp.434–463, Available Online: https://doi.org/10.1057/cep.2016.21.

Kushi, S. & McManus, I. P. (2017). Gendered Costs of Austerity: The Effects of the Great Recession and Government Policies on Employment Across the OECD, *International Labour Review*, [e-journal], Available Online: https://doi.org/10.1111/ilr.12059.

Leamer, E. E. (2008). What's a Recession, Anyway?, Paper 14221, National Bureau of Economic Research, Available Online: https://www.nber.org/papers/w14221.pdf.

Leibfried, S. (1992). Towards a European Welfare State?, in C. Jones (ed.), *New Perspectives on the Welfare State in Europe*, [e-book] Routledge, pp.128–151, Available Online: https://www.taylorfrancis.com/books/e/9781134912353/chapters/10.4324/97802034158 63-17.

Leschke, J. & Jepsen, M. (2014). Is the Economic Crisis Challenging the Prevailing Gender Regime?: A Comparison of Denmark, Germany, Slovakia, and the United Kingdom, *Social Politics: International Studies in Gender, State and Society*, [e-journal] vol. 21, no. 4, pp.485–508, Available Online: https://muse.jhu.edu/article/563319.

Lewis, J. (1992). Gender and the Development of Welfare Regimes, *Journal of European Social Policy*, [e-journal] vol. 2, no. 3, pp.159–173, Available Online: https://doi.org/10.1177/095892879200200301.

Lumley, T., Diehr, P., Emerson, S. & Chen, L. (2002). The Importance of the Normality Assumption in Large Public Health Data Sets, *Annual Review of Public Health*, [e-journal] vol. 23, no. 1, pp.151–169, Available Online: https://doi.org/10.1146/annurev.publhealth.23.100901.140546.

Orloff, A. (1996). Gender in the Welfare State, *Annual Review of Sociology*, [e-journal] vol. 22, no. 1, pp.51–78, Available Online: https://doi.org/10.1146/annurev.soc.22.1.51.

Orloff, A. S. (1993). Gender and the Social Rights of Citizenship: The Comparative Analysis of Gender Relations and Welfare States, *American Sociological Review*, [e-journal] vol. 58, no. 3, pp.303–328, Available Online: http://www.jstor.org/stable/2095903.

Pascall, G. & Manning, N. (2000). Gender and Social Policy: Comparing Welfare States in Central and Eastern Europe and the Former Soviet Union, *Journal of European Social Policy*, [e-journal] vol. 10, no. 3, pp.240–266, Available Online: https://doi.org/10.1177/a013497.

Peinado, P. & Serrano, F. (2018). Gender Inequality in the Labour Market and the Great Recession, in Arestis P. & Sawyer M. (eds), *Inequality. International Papers in Political Economy*, [e-book] Palgrave Macmillan, Cham, Available Online: https://doi.org/10.1007/978-3-319-91298-1_6.

Périvier, H. (2018). Recession, Austerity and Gender: A Comparison of Eight European Labour Markets, *International Labour Review*, [e-journal] vol. 157, no. 1, pp.1–37, Available Online: https://doi.org/10.1111/ilr.12032.

Perugini, C., Žarković Rakić, J. & Vladisavljević, M. (2016). Austerity and Gender Wage Inequality in EU Countries, 76306, Munich, Available Online: https://mpra.ub.uni-muenchen.de/76306/.

Perugini, C., Žarković Rakić, J. & Vladisavljević, M. (2018). Austerity and Gender Inequalities in Europe in Times of Crisis, *Cambridge Journal of Economics*.

Quaglia, L., Eastwood, R. & Holmes, P. (2009). The Financial Turmoil and EU Policy Co-Operation in 2008*, *JCMS: Journal of Common Market Studies*, [e-journal] vol. 47, no. s1, pp.63–87, Available Online: https://doi.org/10.1111/j.1468-5965.2009.02014.x.

Razzu, G. & Singleton, C. (2018). Segregation and Gender Gaps in the United Kingdom's Great Recession and Recovery, *Feminist Economics*, [e-journal] vol. 24, no. 4, pp.31–55, Available Online: https://doi.org/10.1080/13545701.2018.1451907.

Rubery, J. (2015). Austerity and the Future for Gender Equality in Europe, *ILR Review*, [e-journal] vol. 68, no. 4, pp.715–741, Available Online: http://journals.sagepub.com/doi/pdf/10.1177/0019793915588892.

Rubery, J. & Rafferty, A. (2013). Women and Recession Revisited, *Work, Employment and Society*, [e-journal] vol. 27, no. 3, pp.414–432, Available Online: https://doi.org/10.1177/0950017012460314.

Seguino, S. (2009). The Global Economic Crisis, Its Gender Implications, and Policy Responses, *Fifty-Third Session of the Commission on the Status of Women, United Nations*, Available Online: https://www.uvm.edu/~sseguino/pdf/global_crisis.pdf.

Serrano, F. (2010). The Spanish Fiscal Policy During the Recent 'Great Recession', *Journal of Post Keynesian Economics*, [e-journal] vol. 32, no. 3, pp.371–388, Available Online: https://www.tandfonline.com/doi/pdf/10.2753/PKE0160-3477320303.

Stuckler, D., Basu, S., Suhrcke, M., Coutts, A. & McKee, M. (2009). The Public Health Effect of Economic Crises and Alternative Policy Responses in Europe: An Empirical Analysis, *The Lancet*, [e-journal] vol. 374, no. 9686, pp.315–323, Available Online: https://doi.org/10.1016/S0140-6736(09)61124-7.

Wall, H. J. (2009). The 'Man-Cession' of 2008-2009: It's Big, but It's Not Great, *The Regional Economist*, Available Online: https://www.stlouisfed.org/publications/regional-economist/october-2009/the-mancession-of-20082009-its-big-but-its-not-great.

Appendix A

Summary statistics of all continuous variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Female unemployment rate	1,559	9.035087	4.688762	2.7	31.8
Male unemployment rate	1,559	8.65356	4.412216	1.8	26.8
GDP growth	1,568	2.090753	3.971558	-19.3	29.3
Government expenditure (log-transformed, first differences)	1,568	0.0032791	0.1481561	-0.9844637	0.8827629
Government debt as % of GDP (log-transformed, first differences)	1,512	0.006944	0.0525282	-0.2179275	0.5972271
Female labour share in the public sector	1,563	65.10872	5.303653	42.62295	77.70961
Female labour share in the private sector	1,563	37.45012	3.704195	23.4957	48.21648
Male labour share in the public sector	1,563	34.34271	5.432419	16.83381	57.37705
Male labour share in the private sector	1,555	62.31191	3.675204	51.76302	76.5043

Appendix B

Pairwise correlations

Female unemployment

Variables	Female unemployment rate	GDP growth	Government expenditure (log, 1st diff.)	Government debt, % of GDP (log, 1st diff.)	Recession dummy	Austerity dummy
Female unemployment rate	1					
GDP growth	-0.2148	1				
Government expenditure (log, 1st diff.)	-0.0273	0.0303	1			
Government debt, % of GDP (log, 1st diff.)	0.0869	-0.4568	0.0359	1		
Recession dummy	0.2316	-0.6952	-0.0061	0.3668	1	
Austerity dummy	0.1571	-0.2210	-0.0458	0.1010	0.1963	1

Male unemployment

Variables	Male unemployment rate	GDP growth	Government expenditure (log, 1st diff.)	Government debt, % of GDP (log, 1st diff.)	Recession dummy	Austerity dummy
Male unemployment rate	1					
GDP growth	-0.2530	1				
Government expenditure (log, 1st diff.)	-0.0412	0.0303	1			
Government debt, % of GDP (log, 1st diff.)	0.1767	-0.4568	0.0359	1		
Recession dummy	0.2614	-0.6952	-0.0061	0.3668	1	
Austerity dummy	0.1742	-0.2210	-0.0458	0.1010	0.1963	1

Appendix C

Stepwise modelling of Models 1 and 2 as pooled OLS and FE models

Model 1	(a)	(b)	(c)	(d)	(e)	(f)
	Female unempl. rate (OLS)	Female unempl. rate (OLS)	Female unempl.t rate (OLS)	Female unempl. rate (FE)	Female unempl. rate (FE)	Female unempl. rate (FE)
GDP growth	-0.100*** (0.0237)	-0.100*** (0.0237)	-0.0723*** (0.0232)	-0.182*** (0.0335)	-0.181*** (0.0334)	-0.115*** (0.0300)
Gov. exp. In million € (log, first diff.)		-0.303 (0.445)	-0.302 (0.534)		-0.258 (0.318)	-0.283 (0.337)
Gov. debt, % of GDP (log, 1st dif.)			0.0799 (1.185)			0.158 (1.004)
Eurozone dummy			-1.207*** (0.235)			-1.916** (0.707)
Bailout dummy			2.246*** (0.270)			2.268*** (0.782)
Constant	9.942*** (0.819)	9.978*** (0.822)	9.791*** (0.773)	10.43*** (0.426)	10.46*** (0.432)	10.49*** (0.532)
Obs.	1,559	1,559	1,508	1,559	1,559	1,508
R-squ. within				0.672	0.672	0.713
R-squ. between	0.779	0.779	0.809	0.373	0.373	0.400
R-squ. overall				0.464	0.464	0.501
No. of countries				28	28	28

Model 2	(a)	(b)	(c)	(d)	(e)	(f)
	Male unempl. rate (OLS)	Male unempl. rate (OLS)	Male unempl. rate (OLS)	Male unempl. rate (FE)	Male unempl. rate (FE)	Male unempl. rate (FE)
GDP growth	-0.154*** (0.0365)	-0.154*** (0.0365)	-0.114*** (0.0321)	-0.289*** (0.0574)	-0.289*** (0.0574)	-0.190*** (0.0477)
Gov. exp. In million € (log, first diff.)		-0.230 (0.533)	-0.435 (0.661)		-0.216 (0.215)	-0.361 (0.251)
Gov. debt, % of GDP (log, 1st dif.)			3.604** (1.477)			2.683* (1.456)
Eurozone dummy			-2.777*** (0.277)			-2.735** (1.037)
Bailout dummy			3.452*** (0.378)			2.919** (1.292)
Constant	8.357*** (0.716)	8.383*** (0.718)	9.546*** (0.701)	9.051*** (0.441)	9.076*** (0.439)	9.866*** (0.589)
Obs.	1,559	1,559	1,508	1,559	1,559	1,508
R-squ. within				0.634	0.634	0.681
R-squ. between:	0.660	0.660	0.737	0.206	0.205	0.349
R-squ. overall				0.366	0.366	0.499
No. of countries				28	28	28

Appendix D

Marginal effects of recession and austerity (Models 5 and 6)

Model 5.1: FLS in the private sector and female unemployment, marginal effect of the recession

FLS (private sector)	Recession dummy	Margin	Std. Err.	z	P>|z|	[95% Conf. Interval]	
0.2	0	3.307349	3.135775	1.05	0.292	-2.83866	9.453355
0.2	1	4.732771	3.528436	1.34	0.180	-2.18284	11.64838
0.25	0	4.817269	2.232607	2.16	0.031	.4414401	9.193099
0.25	1	6.541881	2.553651	2.56	0.010	1.536816	11.54695
0.3	0	6.32719	1.329601	4.76	0.000	3.721221	8.93316
0.3	1	8.350991	1.580892	5.28	0.000	5.252499	11.44948
0.35	0	7.83711	0.427784	18.32	0.000	6.998669	8.675552
0.35	1	10.1601	0.619773	16.39	0.000	8.945368	11.37483
0.4	0	9.347031	0.479599	19.49	0.000	8.407034	10.28703
0.4	1	11.96921	0.419315	28.54	0.000	11.14737	12.79105
0.45	0	10.85695	1.381625	7.86	0.000	8.149016	13.56489
0.45	1	13.77832	1.369065	10.06	0.000	11.095	16.46164
0.5	0	12.36687	2.284648	5.41	0.000	7.889045	16.8447
0.5	1	15.58743	2.340869	6.66	0.000	10.99941	20.17545

Model 5.2: MLS in the private sector and male unemployment, marginal effect of recession

MLS (private sector)	Recession dummy	Margin	Std. Err.	z	P>|z|	[95% Conf. Interval]	
0.5	0	23.01033	3.212591	7.16	0.000	16.71377	29.30689
0.5	1	26.70379	2.890157	9.24	0.000	21.03919	32.3684
0.53	0	19.3965	2.436827	7.96	0.000	14.62041	24.17259
0.53	1	22.82055	2.153253	10.60	0.000	18.60025	27.04085
0.56	0	15.78267	1.661178	9.50	0.000	12.52682	19.03852
0.56	1	18.9373	1.418935	13.35	0.000	16.15623	21.71836
0.59	0	12.16884	0.885953	13.74	0.000	10.43241	13.90528
0.59	1	15.05405	0.695456	21.65	0.000	13.69098	16.41712
0.62	0	8.555008	0.119662	71.49	0.000	8.320475	8.789541
0.62	1	11.1708	0.217569	51.34	0.000	10.74437	11.59723
0.65	0	4.941182	0.669129	7.38	0.000	3.629712	6.252652
0.65	1	7.287553	0.839292	8.68	0.000	5.64257	8.932536
0.68	0	1.327348	1.444009	0.92	0.358	-1.50286	4.157553
0.68	1	3.4043	1.566808	2.17	0.030	0.333412	6.475187

Model 6.1: FLS in the public sector and female unemployment, the effect of austerity

FLS (public sector)	Austerity dummy	Margin	Std. Err.	z	P>|z|	[95% Conf. Interval]	
0.4	0	12.06593	2.134791	5.65	0.000	7.881812	16.25004
0.4	1	12.83746	1.982989	6.47	0.000	8.950873	16.72405
0.45	0	11.31723	1.711152	6.61	0.000	7.963431	14.67102
0.45	1	12.39007	1.581819	7.83	0.000	9.289758	15.49038
0.5	0	10.56853	1.287631	8.21	0.000	8.044818	13.09224
0.5	1	11.94267	1.181246	10.11	0.000	9.627474	14.25787
0.55	0	9.819828	0.864403	11.36	0.000	8.12563	11.51403
0.55	1	11.49528	0.78218	14.70	0.000	9.962225	13.02833
0.6	0	9.071128	0.442308	20.51	0.000	8.20422	9.938037
0.6	1	11.04789	0.389317	28.38	0.000	10.28484	11.81093
0.65	0	8.32243	0.057686	144.27	0.000	8.209366	8.435493
0.65	1	10.60049	0.120851	87.72	0.000	10.36363	10.83736
0.7	0	7.57373	0.412632	18.35	0.000	6.764987	8.382473
0.7	1	10.1531	0.448246	22.65	0.000	9.274553	11.03164
0.75	0	6.825031	0.834535	8.18	0.000	5.189373	8.460688
0.75	1	9.705705	0.842927	11.51	0.000	8.053597	11.35781
0.8	0	6.076331	1.257727	4.83	0.000	3.611231	8.541431
0.8	1	9.258311	1.242341	7.45	0.000	6.823367	11.69326

Model 6.2: MLS in the public sector and female unemployment, the effect of austerity

MLS (public sector)	Austerity dummy	Margin	Std. Err.	z	P>|z|	[95% Conf. Interval]	
0.15	0	9.561156	2.604997	3.67	0.000	4.455456	14.66686
0.15	1	14.52836	2.876895	5.05	0.000	8.889754	20.16697
0.2	0	9.109689	1.933695	4.71	0.000	5.319716	12.89966
0.2	1	13.50232	2.142539	6.30	0.000	9.303023	17.70162
0.25	0	8.658221	1.262815	6.86	0.000	6.183149	11.13329
0.25	1	12.47628	1.409925	8.85	0.000	9.71288	15.23968
0.3	0	8.206754	0.593791	13.82	0.000	7.042944	9.370563
0.3	1	11.45024	0.684664	16.72	0.000	10.10832	12.79216
0.35	0	7.755287	0.113283	68.46	0.000	7.533256	7.977317
0.35	1	10.4242	0.181948	57.29	0.000	10.06759	10.78081
0.4	0	7.303819	0.758575	9.63	0.000	5.817038	8.7906
0.4	1	9.398156	0.825172	11.39	0.000	7.780848	11.01546
0.45	0	6.852352	1.428425	4.80	0.000	4.05269	9.652014
0.45	1	8.372115	1.553118	5.39	0.000	5.328059	11.41617
0.5	0	6.400884	2.099457	3.05	0.002	2.286024	10.51575
0.5	1	7.346074	2.286243	3.21	0.001	2.865119	11.82703
0.55	0	5.949417	2.770813	2.15	0.032	.5187238	11.38011
0.55	1	6.320032	3.020779	2.09	0.036	.3994143	12.24065
0.6	0	5.497949	3.442302	1.60	0.110	-1.24884	12.24474
0.6	1	5.29399	3.755897	1.41	0.159	-2.06743	12.65541