The impact of fiscal policy on gender-specific employment outcomes

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1 Introduction

Women and men can experience different employment outcomes as a result of macroeconomic policies for a number of reasons such as labor market segregation, gender division of labor or labor supply dynamics. This paper's contribution to the literature is to estimate dynamic effects of fiscal policy on gender disaggregated employment rates up to 8 years using Jorda (2005)'s local projections, a method to estimate and infer impulse responses. To achieve this, I utilize a country level annual panel data for OECD countries, and control for country and time fixed effects, and country specific time trends. Because panel data will provide more observations, this approach produces results that are more generalizable than a case study does to decide the impacts of different components and subcategories of the general government budget items, and different fiscal policy tools over time. It is also helpful for identifying macroeconomic similarities and differences between the countries in terms of impacts of fiscal policy variables.

This paper also makes a contribution by investigating gender implications of efforts to reduce fiscal deficits, commonly termed "fiscal consolidation", with a narrative data derived by Devries et al. (2011). Narrative approach is a methodology to identify the changes in monetary or fiscal policies by examining historical documents (such as budgets and Greenbooks). This approach identifies discretionary policy shocks which are not a result of an economic development. Therefore, it can be a solution to the endogeneity problem which arises from fiscal policies being as a result of some economic activities. Narrative data allows me to test the effects of discretionary fiscal consolidation and the differences between tax-based and spending-based fiscal consolidation. This method helps to overcome endogeneity problem and show the difference between

cyclical and structural policies. In the scope of this paper, I only focus on structural policies with a dataset derived with a narrative approach.

I examine if fiscal consolidation affects female employment rate disproportionately in 17 OECD countries[1] during 1978-2009. I work with narrative data which allows me to test the effects of discretionary fiscal consolidation and the differences between tax-based and spending-based fiscal consolidation. I also test some labor demand (economic structure, female employment share in different economic activities) and labor supply channels (female labor force participation rate) to see through which channels fiscal policies may influence female employment rate disproportionately. This paper shows that exogenous fiscal consolidation affect female employment rate more than male employment rate, and effects are more significant when we control for the structure of the economy. However, it is not obvious that if cyclical policies and fiscal expansion - either structural or cyclical - has similar effects.

Fiscal and monetary policies are often applied at the same time. However, they potentially affect employment differently. To be able to analyze how these policy tools affect gender disaggregated outcomes, I prefer to address each policy area separately. In this essay, I would like to focus on different tools and channels of fiscal policy. They can have distinct gender effects compared to the mechanisms of monetary policy. In the later steps of the research, I will also control it for monetary policy.

2   Literature Review

My research focuses on gender specific employment outcomes of fiscal policies. In this section, I discuss the research that mostly addresses gender related employment outcomes. I start the literature review with general discussion on fiscal policy and gender. A broad literature describes the disparate effects of fiscal policies on women and men. However, this literature is general and mostly descriptive. Instead I focus on more specific employment effects and include an empirical depth.

As a general literature review on fiscal policy and gender, I discuss the relationship between gender and structural adjustment policies, gender responsive budgeting and tax policies. The main purposes of structural adjustment policies are to reduce inflation and have a low budget deficit. These policies aim to reduce the role of state by cutting public spending, decreasing public employment, and accelerating the privatization of public services (Cagatay, 2003). They tend to have worse distributive consequences for women and poor people (Cagatay, 2003; Elson, 1995; Beneria, 1995). Structural adjustment programs privatize the cost of social reproduction so they increase the unpaid work burden of women (Elson, 1995, p.1852).

Gender responsive budget analysis is an area that proposes ways to challenge the distributive outcomes implicit in standard approaches to public finance, and may represent a step towards a gender-equal and

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[1]Australia, Austria, Belgium, Canada, Denmark, France, Finland, Germany, Ireland, Italy, Japan, Netherlands, Portugal, Sweden, Spain, United Kingdom, United States

pro-poor budget. It addresses issues related to differential impacts of changes in government budget on women and men as well as how to reduce these inequalities. Cagatay (2003, p. 22) discusses possible ways to construct gender sensitive budgets : Global taxation that can be used for public provisioning of social services, debt cancelation, reallocation of military spending toward poverty reduction and social equity, opposing to anti-deficit radicalism, and demand for increased international mobility of labor can benefit women. Elson and Sharp (2010) examine three aspects of gender responsive budgeting; decision making, expenditure and revenue. On the budget decision making side, increased number of elected women representatives create a chance for a direct say on new investments and on planning and budgeting by taking into account the needs of poor people and women. On the expenditure side, they aim to reduce poverty of women by directing the government expenditure to areas like infrastructure, services, income transfers, and employment generation. On the revenue side, they point out that poor people are not in the income tax net but they pay indirect taxes such as value-added tax. These indirect taxes are usually regressive because poor people pay a higher portion of their income. This may affect women since they are mostly responsible for buying the daily necessities of the household (Elson and Sharp, 2010).

Tax policies can have different distributional impacts on women and men. Tax revenues can benefit poor people and women if they are mobilized to finance public services or to support expenditures with a motivation of reducing poverty (Grown, 2010; Valodia, 2010; Elson, 2006). However, depending on the purpose of the revenue, tax revenues may not always favor women and poor people. Valodia (2010, p.301-304) discusses the responsibilities of policy-makers for a gender equal budgeting. They can raise the revenues to finance social services but they should also consider whether these services reach the poor and other targeted groups. Policy makers should also be aware of the impact of tax policies within the household as much as between households, and the different impacts over the life cycle. Women are more sensitive to changes over their life cycle because their roles in the household, and situations that they live in change more compared to men over their lives. For example, participation of women in the labor force decrease after they have children. Those purposes are important for gender equality in tax system but they should be combined with other policy instruments. Barnett and Grown (2004) mention four 'stylized facts' that can cause gender inequality in tax system: gender differences in paid employment, women's work in the unpaid care economy, gender differences in consumption expenditure, gender differences in poverty rights and asset ownership (as cited in Grown (2010, p. 4)). Because of women's discontinuous employment, the wage gap between men and women, and the tendency of more female employment in the informal sector, women have a smaller direct tax burden but also receive fewer benefits through the tax system. The tax system does not explicitly take unpaid work into account. Women tend to spend more on the care expenses of children so they can pay more consumption taxes as a proportion of their earnings. Women also own less property than men. These factors contribute to inequalities in the tax system (Grown, 2010, p. 4-5).

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The growing field of feminist macroeconomics covers a variety of topics that emphasize the impact of differences in women's and men's employment patterns. Previous literature shows that economic crises affect men more since they hit male-intensive sectors harder; however, austerity policies can change these dynamics through their impact on the public sector. Some research discusses that restrictive fiscal policy, operating through budget cuts, have a disproportionate effect on women (Cagatay, 2003; Ortiz and Cummins, 2013). Men suffered more from economic crises at the first stage; however, later women started to have more negative effects from austerity policies since recession also hit service sector. Women also suffered as the main providers of unpaid work (p.64 Bettio and Verashchagina, 2014; Rubery, 2014, p.24,33). Albelda (2014, p. 82) points out that while male unemployment increased faster than female unemployment, men's unemployment rate also recovered faster than women's. Bettio and Verashchagina (2014, p. 58-69) highlight the discussion of 'added worker effect' versus the 'discouraged workers effect' in Europe concluding that it was 'added worker effects' in some places but not everywhere. Benefits constitute a large part of women's earnings so a decrease in benefits affects women more than men (Bellamy et al., 2006) (cited by Rubery and Rafferty, 2014, p.133).

The share of public sector employment is an important variable that needs to be considered to be able to understand the gender impact of budget cuts. Public sector jobs and public services are essential for women's economic integration as a provider of both employment and compensation of unpaid work (Rubery, 2014, p.33). Therefore, budget cuts in the public sector affect women more heavily. Women's employment is mostly concentrated in the public sector. Because of sectoral segregation, crisis first affected male dominated sectors and then austerity affected the public sector (which can have a disproportionate impact on female workers). On the other hand, Karamessini (2014, p. 176) argues that men experiences the negative effects of budget cuts more because they constitute the higher share of public employees in Greece. However, adoption of 2010-2014 Economic Adjustment Program also affected women workers in Greece. Their employment decreased more than men's in public sector mainly because their (more) voluntary retirement. Mandel and Semyonov (2006) provides a sociological approach to the relationship betwen state interventions and women's employment opportunities. They show that welfare states help to increase women's labor force participation rate by their roles as a legislator, as a provider of social services, and as an employer. However, the state does not provide solutions for occupational inequality. Women are still overrepresented at female-typed jobs. Public employment provides job opportunities for women especially in care and services job.

Part-time jobs are another area consisting of women's integration into employment. Mandel and Semyonov (2006) mention part time and reduced working hours options in welfare state. Women combine paid and unpaid family responsibilities through part time work or reduced working hours. Although this kind of work is not a direct outcome of the welfare state, it is a common practice for women in these countries. Women are more likely to have reduced work hours (Mandel and Semyonov, 2006, p. 1913-1914). Therefore,

women might sometimes experience transition from full-time to part-time jobs instead of being unemployed as a result of fiscal policy shocks/aggregate demand shocks.

Research on relative employment rates by gender clearly demonstrates asymmetric effects that vary over the business cycle. However, specific findings vary considerably. Bredemeier et al. (2015) argue that contractionary non-fiscal shocks decreases male employment rate more than female employment rate while expansionary fiscal shocks raise female employment rate more. They explain this impact by an increase in employment in female-dominated occupations. Perivier (2018) finds mixed patterns among countries in terms of the effect of crisis and austerity on female and male employment rates. For example, while Spain is an example of 'he-cession to sh(e)-austerity'[2], in Denmark and the United Kingdom, women experienced negative effects of recession more, and in Greece both genders experienced dramatic decrease in employment. Hoynes et al. (2012) indicate that because men work at more cyclical industries, they experience more cyclical labor market outcomes as a result of both recession and recovery. They also show that some groups experience employment effects of the Great Recession more than other groups in the United States. Employment of men, blacks Hispanics, youth, and those with lower education levels decreases more than women, white, prime-aged workers, and those with higher education levels.

There is also a literature that discusses systematic effects to estimate the gender effects with cross sectional data. Ortiz and Cummins (2013) examine two variables as indicator of total government spending : public expenditure as a percentage of GDP, and the real value of public expenditure using data from International Monetary Fund (IMF) fiscal projections and IMF country reports in addition to the literature review of historical evidence and World Bank surveys. They analyze projections for 128 developing countries in 2012. They explore two sub-periods; the period of fiscal stimulus packages during 2008-09, and the period of fiscal austerity during 2010-2012. They examine four adjustment policies that are often implemented under fiscal austerity: cutting the wage bill of public sector employees, removing subsidies, achieving cost saving, and reforming old-age pensions to scale back public spending (Ortiz and Cummins, 2013, p.67-68). Their results show that all of these adjustment policies disproportionately affect children and women mostly through social sector spending allocations. Braunstein and Seguino (2018) examine the impact of economic policy and structural change on gender employment inequality in Latin America from 1990 to 2010. They evaluate the effects of social and economic policies, macroeconomic policies and measures of economic structure on gender equality. They look at the impacts of several variables. Two of the variables examined represent important fiscal policy indicators: social public expenditures made by central governments as a share of GDP and public investment as a share of GDP. They utilize two estimation techniques: simple OLS (fixed effect panel estimation technique) and two stage least squares (2SLS). Their results show that social spending increases women's employment. Even though, public investment improves both male and female

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[2](Karamessini and Rubery, 2014) use this phrase to express that recession affects sectors in which men are over-represented (construction and manufacturing), and austerity policies influence sectors that over-represent women (the public sector, services).

employment, female employment increases more. This literature contributes important findings by focusing on a specific policy (change in public spendings for example); however, does not focus on a specific aim of the fiscal policy. My research will fill in this gap by focusing on the impact of fiscal consolidation with an aim of only reducing budget deficit.

Fiscal policies sometimes affect gender-specific employment rates through work-family policies. Therefore, countries with different family policies can experience different effects of fiscal policies on employment outcomes. Sociology literature (Gornick and Meyers, 2003; Mandel and Semyonov, 2005, 2006; Budig et al., 2012; Misra et al., 2012; Boeckmann et al., 2015) considers several work-family policy indicators while explaining gender gaps and motherhood penalties. These indicators include maternal and parental leaves, family allowances, and public services for child care. Some uses an index reflecting all policy variables, and some tests each policy variables separately. There are also different approaches for formulating an index. Mandel and Semyonov (2005, 2006) use factor analysis to construct the Welfare State Intervention Index (interventions to facilitate women's employment). Gornick and Meyers (2003) create subindexes for twenty two variables. They rescale the indicators from high value (more policy support) to low value, and rescale between 0 to 1. Then they combine seven subindexes by weighing some items. Finally, they provide three indexes. On the other hand, Budig et al. (2012) focuses on two work-family policy indicators: leave policies (maternal and parental leave available to women) and childcare policies. Depending on their length, leave policies may support or discourage women's employment. While women continue their jobs after a moderate leave, they may choose to leave employment as a result of both long leave and short or no leaves (Budig et al., 2012).

To be able to identify their effect, fiscal policies should be exogenous to other variables. However, fiscal policies are endogenous and are likely to be correlated with other variables. There are different identification strategies in the literature to deal with this problem, and analyze causal effects of fiscal policies. One common way is using military spending instead of total government expenditures (Ramey and Shapiro, 1998; Ramey, 2009; Nakamura and Steinsson, 2014). However, this approach would not work in this research because military spending may have completely different gender effects than total expenditures. The conventional approach that investigates the effect of fiscal consolidation in the literature is the CAPB approach (Alesina and Ardagna, 2009). This approach can underestimate contractionary effects of fiscal consolidation. In this approach, changes in the fiscal policy variables can have nonpolicy variables that are likely to correlate with economic development that affect output. Discretionary policy changes obtained with CAPB approach may be motivated as a response to cyclical fluctuations (Guajardo, 2014). Another approach that examines the effects of fiscal policy is structural vector autoregression (SVAR) approach (Blanchard and Perotti, 2002; Perotti, 2008)[3]. This method aims to differentiate changes in fiscal variables as a response to output and

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[3]Auerbach and Gorodnichenko (2012) uses STVAR approach, which is similar to smooth transition autoregressive (STAR) models, and includes forecasts in the SVAR.

discretionary fiscal policy changes, and it controls for lags of output growth. However, changes in government revenue and spending may still be correlated with short term developments affecting output. This approach does not take "the issue of non-policy changes in cyclically-adjusted fiscal data, and of forward-looking policy responses to prospective economic conditions" into account (Romer and Romer, 2010; Guajardo, 2014, p.950). Devries et al. (2011) and Guajardo et al. (2014) use narrative approach to identify fiscal consolidation. The strength of this narrative approach is to address the problems that CAPB and SVAR approaches have. The narrative approach can identify exogenous fiscal policies that are not correlated to other economic developments in the short term.

To consider the impact of fiscal consolidation (only with a motivation of reducing budget deficit), I use a data derived with a narrative approach. Narrative approach has been applied to identify both fiscal (such as Romer and Romer (2010); Ramey and Shapiro (1998); Ramey (2009)) and monetary policies (such as Romer and Romer (2004)). Romer and Romer (2004, 2010) identify exogenous monetary and fiscal shocks in the US respectively. Devries et al. (2011) and Guajardo et al. (2014) are the first to apply this approach to construct a dataset of tax and spending changes for multi-country analysis (for OECD countries). There are some examples that use this approach to have data for fiscal consolidation periods for OECD and Latin American countries (Devries et al., 2011), (David and Leigh, 2018).

The previous literature on fiscal policy and gender provides significant findings for the gendered effects of austerity policies, changing in public spending and public investment. However, a significant part of this literature is descriptive. For empirical ones, there is a possibility of the problem that their policy variables are likely to be correlated with the economic outlook. Macro literature (for example (Guajardo, 2014)) finds a solution to this problem by constructing a dataset derived with a narrative approach. However, this literature does not take gender differences into account. My research combines these two literature, and makes an empirical contribution by using narrative data to analyze the impact of fiscal consolidation of gender-specific employment rates. In the rest of the paper, I answer two research questions. The first one is that do fiscal policies affect female employment rates disproportionately, and the second question is that which labor demand and labor supply channels explain the disproportionate impact of fiscal policies. My hypothesis for the former is that fiscal consolidation with a motivation of decreasing budget deficit has a disproportionate impact on female employment rate. My hypothesis for the latter is that combination of female employment share in different economic activities, economic structure of the country, and female labor supply are the mechanisms that lead to different employment outcomes for women and men.

3   Conceptual Framework

Fiscal policies can affect female and male employment rates through aggregate demand shocks and specific budget decisions. Specific budget decisions including austerity policies can cause significant drop in aggre-

gate demand. This can cause stagnation which reduces employment opportunities. This channel decreases employment for both men and women, but it may have a disproportionate impact on women. Women are in a vulnerable group that can be influenced by the negative effects of contractionary fiscal policy and public sector cuts because they are heavily employed in public sector, and they need public services more as main providers of care.

Fiscal shocks affect female employment by two main channels; labor demand channels such as labor market segregation, public sector employment, and discrimination and labor supply channels such as burden of unpaid work and household bargaining. The effect of cuts in government expenditures on public sector employment is a labor demand channel. Austerity policies with budget cuts cause a drop in public sector employment. Since women are more employed in public sector, we expect that female employment will fall more than male employment. The main reason of the gender bias through public sector channel is the gender segregation in the labor market. Women have better employment opportunities in public sphere than private sector. Cuts in public spending restrict government's role as promoting growth and employment, and have implications for redistribution along class and gender lines (Cagatay, 2003, p.18). Aggregate demand shocks caused by fiscal consolidation can also affect some female intensive sectors more such as services.

Cuts in public services affect female employment through labor supply channels. When macroeconomic policies squeeze household resources through labor market dynamics, this can affect women's labor supply and paid employment in two possible ways. It may increase paid employment of women if women enter the labor force or it may decrease paid employment of women if women withdraw to focus on unpaid household work. Women are primarily responsible from both paid and unpaid care services. When there is a cut in public services, women heavily lose their jobs in public services. Female labor supply also decreases because now women need to provide more unpaid care work. Cuts in public services affect women more heavily than men because women need public services more as main providers of care. Women who do more unpaid work are required to provide care work if there is not enough provision of public care facilities. Women and poorer segments of the population are more likely to benefit from public services. The state can offset gender biases in private sector employment and transfer payments through social provisioning (Cagatay, 2003, p.19). If the state does not provide these social services and transfers, the burden of unpaid care work becomes more pronounces for women. Structural adjustment policies can increase poverty, and cause the privatization of social reproduction. The cost of reproduction shifted from public sphere to household sphere as a result of privatization (Beneria, 1995, p.1845).

Commodification or marketization bias, which means to minimize the role of public provisioning, can be also identified with the 'public service channel'. Minimizing the role of public provisioning often involves reducing budget deficits without increasing the level of taxation. Therefore, public expenditures must be cut. This has potentially serious implications for the distribution of the costs of social reproduction. Com-

modification bias will have more impact on women because the private ownership of goods and knowledge by men is more than women (Cagatay, 2003, p.20). To minimize the provisioning of public services, women have to provide more care services. This influences especially poor women also in terms of paid work. It restricts the employment opportunities to low paid and precarious forms of employment (**?**, p. 1356).

In the empirical part, I answer two research questions. The first one is if discretionary fiscal consolidation influence female employment more than male's, and the second one is by which channels, this relationship can be explained. My hypothesis is that fiscal consolidation with a motivation of reducing budget deficit affects female employment rate disproportionately, and I argue combination of some labor demand and supply channels can explain the disproportionate impact of fiscal consolidation. To show them I include three variables. Gross value added by 3 industry breakdowns, and female employment share in 3 activity branches represent labor demand channels while female labor force participation rate stands for a labor supply channel.

4   Data

Main variables for the econometric specifications include fiscal consolidation variables such as size of fiscal consolidation, tax and spending based fiscal consolidation; female and male employment rates; female employment share and gross value added in agriculture, service and industry; female labor force participation rate (FLFPP); and work family policy indicators. The main datasources are several OECD datasets, ILO datasets and a dataset derived by Devries et al. (2011) with a narrative approach for 17 OECD countries.

I employ three variables from Devries et al. (2011)'s dataset; the size of fiscal consolidation, tax based fiscal consolidation and spending based fiscal consolidation. Devries et al. (2011) construct a dataset for discretionary fiscal policy, which is not a response to cyclical fluctuations. Overall, they report 173 fiscal policy adjustments in 17 OECD economies between 1978 and 2009. They read budget documents and international institutions' reports to find out fiscal consolidation periods. To find the exogenous shocks, they do not include cyclical responses. In this dataset, fiscal consolidation, increase in taxes or decrease in government spendings, is not a response to an economic activity. Discretionary changes in taxes and government spendings may have two kinds of motivation: to reduce budget deficit and to restrain domestic demand. The dataset only records discretionary fiscal contraction motivated by a desire to reduce budget deficit. The dataset includes fiscal consolidation even for the cases followed by an adverse shock or an offsetting countercyclical discretionary stimulus. If there is another fiscal action, not motivated by cyclical fluctuations, that offsets fiscal consolidation, they compute the sum of the measures, and accept as fiscal consolidation only if the overall change shows budgetary savings. The fiscal consolidation measurements represent the year in which they come into effect, and they are at the general government level unless it is mentioned otherwise. The unit of measurement is as a percentage of GDP. They also treat temporary

and permanent measures differently. While temporary measures have positive sign for the period in which they are effective, they have negative sign when they expire. On the other hand, permanent measures have positive sign when they come into effect, and they are recorded as zero afterwards.

Table 1: Summary statistics of variables for OECD countries

	count	mean	sd	min	max
ratio of employment rates f/m	581	.778605	.1273873	.3965245	.9863201
female employment rate	581	57.86231	10.57329	25.1	81
male employment rate	581	74.17797	5.250057	59.2	85.2
size of fiscal consolidation	544	.0031401	.0070018	-.0075	.0474
N	680				

I use different datasets for the rest of the variables. Employment rates and labor force participation rate data comes from International Labor Organization database of labor statistics. Gross value added in each economic activity data comes from the OECD National Accounts Statistics database. Female employment share as a percentage of total employment in each economic activity data is author's calculation from the data constructed from the OECD Annual Labour Force Statistics (ALFS) database. I present summary statistics for main variables of OECD countries in Table 1.

In addition to these data sources, I also use work-family policy indicators. I have data for work-family policy indicators from three sources. The first one provides data for length of maternity, paternity, and parental leave; maternity, paternity, and parental leave benefits, and enrollment of children in a publicly supported formal child care or preschool (Irene Boeckmann; Budig and Misra, 2012). These data are available at the cross country level. The second source includes maternity leave, parental leave, family allowances, early childhood care, family taxation policies, healthcare and diversity indicators. [4] The third source, OECD Family Database, also provides data for work-family policy indicators. For the purpose of this paper, I will use the 'public policies for families and children' data from OECD Family Database.

5 Methodology

In this paper, I use local projections estimation methodology with fixed effect country level panel data. I utilize annual country level panel data, derived with a narrative approach, for 17 OECD countries from 1995 to 2015. Local projections have some advantages. It is a flexible method to estimate dynamic effects. It is easy to include nonlinearities and state-dependent dynamic responses (Jorda and Taylor, 2013). For example, by this method, I can explain differences in the impacts of fiscal consolidation and fiscal expansion periods

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[4]'This dataset was created by Misra, Budig, Boeckmann, Moller, and Strader, with support from grants (0600926, 0751505, and 1022183) from the National Science Foundation'.

on gender disaggregated employment rates. The advantage of narrative approach is to identify discretionary contractionary and expansionary fiscal policies that are not a response to an economic development.

My main dependent variable is the ratio of female employment rate to male employment rate. I also look at the impacts of fiscal policy variables on both female and male employment rates separately to observe if both employment rates are affected significantly. As a further study, I will also check the ratio of part time employment rates since we can observe transfers from full time employment to part-time employment. Looking at the impact of fiscal policies on part time employment rates will be useful to see if there is any gender impact. Fiscal policy shocks may also affect the time spent for unpaid domestic care work. Because women do more unpaid care work, female time use for care work as a dependent variable would show if there is any gender impact. Even though an analysis of time use data would be another important approach, sufficient data are not available.

The main independent variable will be the size of fiscal consolidation, which is independent from economic activity. Additionally, I employ tax based and spending based fiscal consolidation data to provide information on whether they have different effects. As robustness checks, I include gross value added, female employment share in each economic activity, and FLFPR variables. Even though the data is not available for whole period, I also present an overview of the effects of work family policy indicators.

In the rest of the paper, I present the empirical analysis to answer several research questions. Does fiscal consolidation with a purpose of reducing budget deficit affect female employment rate disproportionately in 17 OECD countries during 1978-2009? By which mechanisms can we explain this relationship? Do different work family policies change these effects? The following section discusses these questions. Since the main exogenous variable is fiscal consolidation (reflects a decrease in government expenditures or an increase in tax revenues), a negative effect means a decrease in government expenditures leads to relative decrease in female employment rate. Standard errors are robust to both arbitrary heteroskedasticity and arbitrary autocorrelation.

6   Empirical Analysis

6.1   The impact of fiscal consolidation

Contractionary and expansionary discretionary fiscal policies might have different gender outcomes. My hypothesis is that while contractionary policy disproportionately affect female employment, expansionary policy might have more benefits for male employment. By using the narrative data set, I can test the effect of contractionary discretionary fiscal policy whereas a narrative data for expansionary policy is not available to test this hypothesis.

In this section, I only focus on contractionary discretionary fiscal policy. I report the impact of the size

of fiscal consolidation, tax based fiscal consolidation, and spending based fiscal consolidation on the ratio of female employment rates to male employment rates. Employment rate data comes from the International Labor Organization database of labor statistics. I use narrative data for fiscal variables. Devries et al. (2011) provides narrative data for fiscal consolidation in 17 OECD countries [5] between 1978-2009. For these 17 OECD countries, I indicate the impact of the size of fiscal consolidation between 1978-2009[6].

Econometric specifications with local projections methodology can be expressed as follows:

$$er_{ct+h} - er_{ct} = \beta_{1h}FC_{ct} + \beta_{2h}X_{ct} + \mu_{ch} + \tau_{th} + \eta_{ch} + \varepsilon_{cth} \qquad (1)$$

where er means the ratio of female emloyment rate to male employment rate, $er_{ct+h} - er_{ct}$ shows the accumulated change from time t to t+h, and β_{1h} is the impulse response in horizon h. FC shows the size of fiscal consolidation as a % of GDP, μ_c is country fixed effects, τ_t is time fixed effects, η_c is country specific trends, and ε_{ct} is the error term. X_{ct} shows several possible control variables[7]. So far I have included gross value added by 3 industry breakdowns (agriculture, service, and industry), female employment share in 3 activity branches (agriculture, service, and industry), female labor force participation rates as control variables. By having these variables in the regression, I will be able to comment on the possible channels.

Table 2: Definitions of Variables

Indicators	
Variables	Definitions
er	Ratio of female employment rate to male employment rate
fer	Female employment rate
mer	Male employment rate
μ	Country fixed effects
τ	Time fixed effects
η	Country specific trends
ε	Error term
X	Several possible control variables
EA_i	Gross value added in agriculture, service, and industry
$FLFPR$	Female labor force participation rate
$fshare_i$	Female employment share in agriculture, service and industry
FC	Size of fiscal consolidation as a % of GDP
TFC	Tax based fiscal consolidation
SFC	Spending based fiscal consolidation

The local projection for the benchmark specification is as follows.

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[5] Australia, Austria, Belgium, Canada, Denmark, France, Finland, Germany, Ireland, Italy, Japan, Netherlands, Portugal, Sweden, Spain, United Kingdom, United States

[6] Results of regressions are presented in the tables in Appendix C.

[7] Table 2 shows definitions of all variables in the paper.

$$er_{c,t+h} - er_{c,t} = \beta_1 FC_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \tag{2}$$

In this specification, I include two way fixed effects and country specific time trends. Figure 1 and Table 3 report the results for the cumulative impact of the size of fiscal consolidation. There are 428 observations. When the size of the shock increases, female employment rate decreases more than male employment rate. Results are statistically significant for 3rd, 4th, and 5th horizons. 1 level of increase (in this case it means %100 of GDP) in the size of fiscal consolidation decrease the ratio f/m up to 0.457.

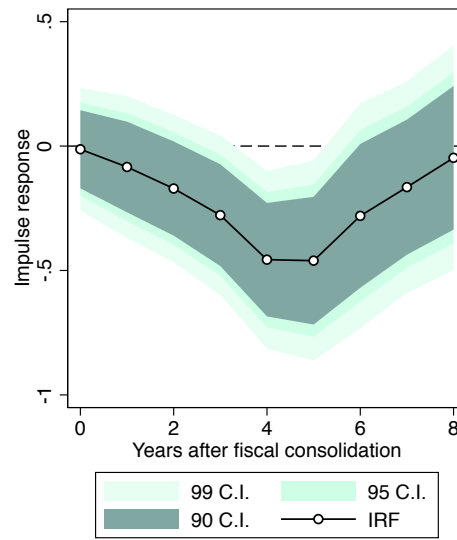**Figure 1:** The cumulative impact of the size of fiscal consolidation

Table 3: Results

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
size	-0.084	-0.171	-0.278**	-0.457***	-0.461***	-0.281	-0.165	-0.047
	(0.111)	(0.115)	(0.124)	(0.139)	(0.156)	(0.176)	(0.165)	(0.175)
N	428	427	428	428	428	428	428	428

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

I also examine the effect of the size of fiscal consolidation on both female and male employment rates. The following equations test this impact:

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$$fer_{c,t+h} - fer_{c,t} = \beta_1 FC_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \tag{3}$$

$$mer_{c,t+h} - mer_{c,t} = \beta_1 FC_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \tag{4}$$

where fer is female employment rate and mer is male employment rate. Figure 2 shows the results. Fiscal consolidation has negative significant impact on female employment rate for the first four horizons. Around three years after the fiscal consolidation, the effect on male employment rate starts to decrease whereas the impact is still statistically significant and continues to be large for female employment rate.

Figure 2: The impact of fiscal consolidation on employment rates

(a) female employment rate   **(b)** male employment rate
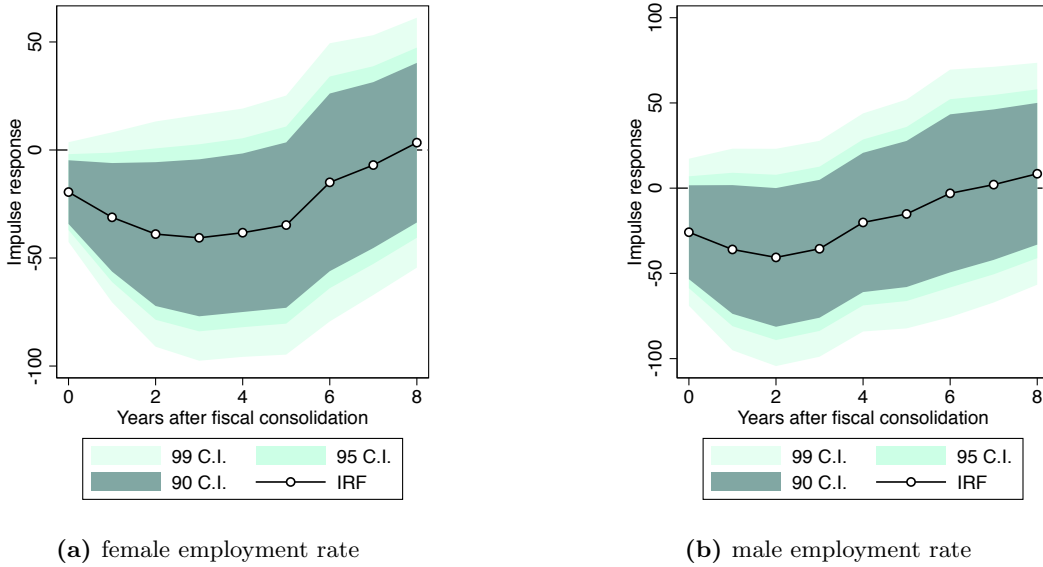
Following graphs in Figure 3 include some control variables to explain the channels/for robustness check. Firstly, I include female labor force participation rate to consider the labor supply channel. Labor force participation rate data comes from International Labor Organization database of labor statistics.

$$er_{c,t+h} - er_{c,t} = \beta_1 FC_{ct} + \beta_2 FLFPR_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \tag{5}$$

where FLFPR shows female labor force participation rate. There are 426 observations. While statistical significance does not change in this case, coefficients are larger.

Figure 3: The impact of the size of fiscal consolidation
Controlling for following labor supply and demand channels
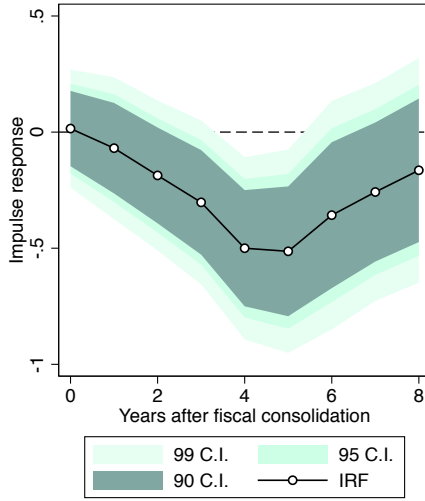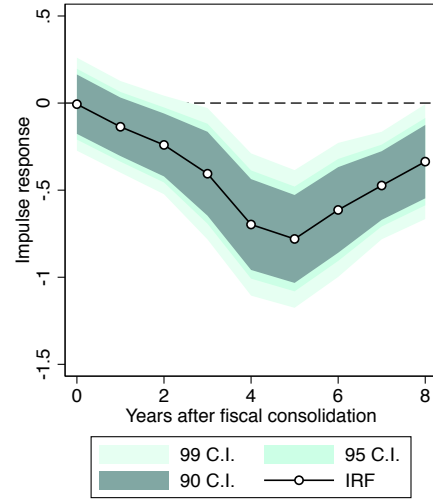

(a) female labor force participation rate

(b) gross value added in agriculture and service
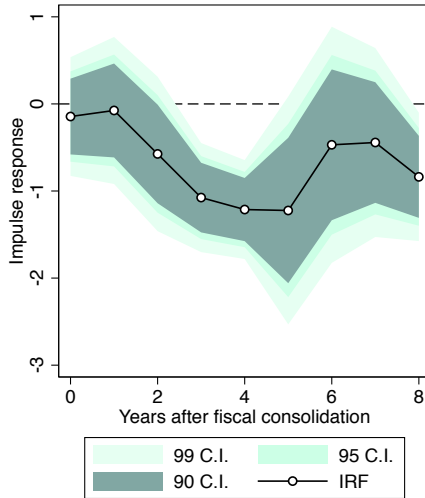
(c) female employment share in agriculture, service, and industry
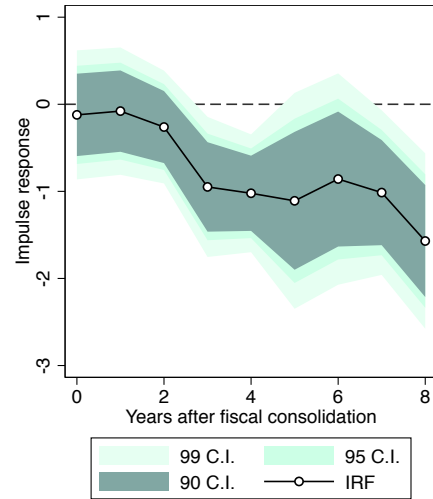
(d) all channels

The other channels that I will consider are related to different economic activities; agriculture, industry, and services [8]. In the first specification, I added gross value added in each economic activity (as a percentage), and in the second specification I added female employment share as a percentage of total employment in each economic activity. Gross value added in each economic activity data comes from the OECD National Accounts Statistics database. There are 301 observations.

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[8]It is also possible to include subcategories of these economic activities, and present a more detailed variety of economic activities.

$$er_{c,t+h} - er_{c,t} = \beta_1 FC_{ct} + \beta_{2i} \sum_i EA_{ict} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \qquad (6)$$

where EA shows the default category for gross value added in each economic activity. Figure 3b shows that after the first horizon, the negative effect of fiscal policy on female employment rate is statistically significant for the following 7 horizons. 1 level of increase in the size of fiscal consolidation cause -0.78 decreases the ratio f/m 5years after the fiscal consolidation.

Female employment share as a percentage of total employment in each economic activity data is author's calculation from the data constructed from the OECD Annual Labour Force Statistics (ALFS) database.

$$er_{c,t+h} - er_{c,t} = \beta_1 FC_{ct} + \beta_{2i} \sum_i fshare_{ict} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \qquad (7)$$

where $fshare$ shows female employment share in each economic activity. Including female employment share data leads to a drop in the number of observations to 75.

The following specification includes all control variables.

$$er_{c,t+h} - er_{c,t} = \beta_1 FC_{ct} + \beta_2 FLFPR_{ct} + \beta_{3i} \sum_i EA_{ct} + \beta_{4i} \sum_i fshare_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \qquad (8)$$

Figure 3d shows the impact of fiscal consolidation when controlled for all three channels with 75 observations. If we include all channels, the number of observations falls dramatically. In this case, negative effects of fiscal consolidation is statistically significant for all horizons after the third one.

Fiscal consolidation can be examined into two groups; tax based and spending based fiscal consolidation. The local projections for tax based fiscal consolidation is

$$er_{c,t+h} - er_{c,t} = \beta_1 TFC_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \qquad (9)$$

where TFC shows the tax based fiscal consolidation. TFC_{ct} is equal to 1 when there is a tax based fiscal consolidation, and 0 otherwise. The local projections for spending based fiscal consolidation is

$$er_{c,t+h} - er_{c,t} = \beta_1 SFC_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct} \qquad (10)$$

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where SFC shows the spending based fiscal consolidation. SFC_{ct} is equal to 1 when there is a spending based fiscal consolidation, and 0 otherwise.

Figure 4 shows the cumulative impact of tax based fiscal consolidation and spending based fiscal consolidation. If the fiscal consolidation is tax based, the negative impact of it becomes significant after the 4th horizon. If the fiscal consolidation is spending based, it has significant negative impact on female employment rate relative to male's for 3rd, 4th and 5th horizons. Impacts of spending based fiscal consolidation becomes significant earlier than the tax based fiscal consolidation but tax based fiscal consolidation has significant effect for a longer time.

Figure 4: Tax based vs. spending based fiscal consolidation
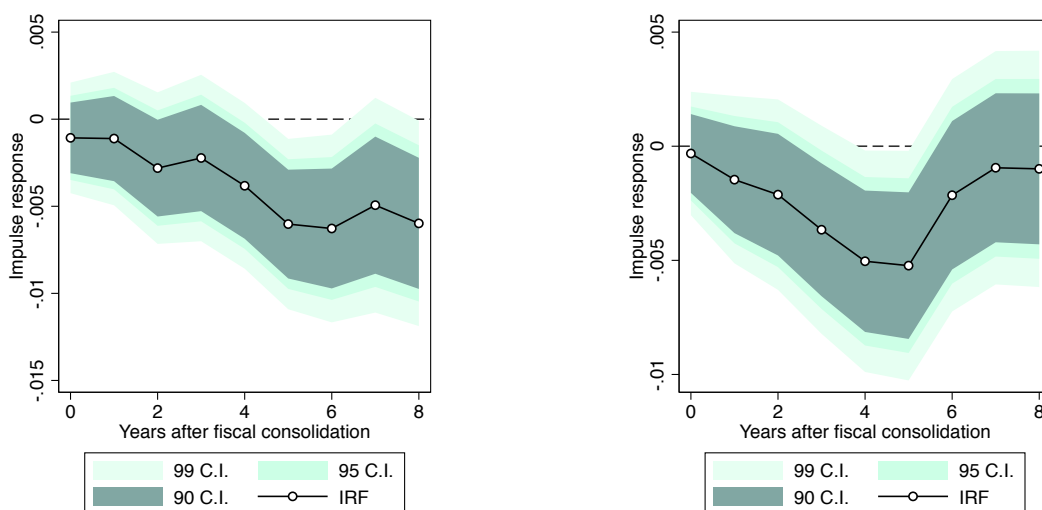
(a) The impact of tax based fiscal consolidation (b) The impact of spending based fiscal consolidation

Preliminary results of local projections with narrative data show that fiscal consolidation has mostly negative impact on female employment more than male employment in OECD countries. In this section, I report the results that show the impact of fiscal consolidation, which has the motivation of reducing budget deficits. This is different that previous section in which fiscal policies also include cyclical policies[9].

6.2 Work-family policy indicators

In this section, I add work family policy variables to the analysis. I gather work-family policy indicators (WFPIs) from the OECD Family Database. I mainly focus on five indicators under 'public policies for families and children' section. I present summary statistics for these indicators below in Table 4. Following Budig et al. (2012)'s approach, I believe especially two work-family policy indicators can have significant

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[9]In these sections, country samples are also different. However, as a robustness check, I did the same analysis with common countries in these samples. The results are similar, and they are presented in the Appendix E.

effects on female employment rate; length of maternity and parental leave available to mothers in weeks, and proportion of children aged 0-2 enrolled in formal childcare and preschool. For the former, data is available for the whole period; however, for the latter, data is available for only a few years and some countries. Therefore, I use the available year's childcare data or the average of available years' childcare data for the whole period in a country. Because leave policies may have a non-linear effect on women's employment, I will use a quadratic term for this indicator. Equations 11 and 12 show the possible specifications with these two indicators. However, there might be some problems with using these specifications that I discuss in the following paragraph.

Table 4: Summary statistics for work-family policy indicators

	obs	mean	sd	min	max
Total public social expenditure on families as a % of GDP	80	2.5075	.8990536	.9	4.2
Length of maternity and parental leave available to mothers in weeks	544	35.66434	36.76111	0	161
Length of paid paternity and parental leave reserved for fathers in weeks	544	2.016728	5.237779	0	28
Proportion of children aged 0-2 enrolled in formal childcare and preschool	21	32.5381	10.81557	14.9	49.4
Proportion of children aged 3-5 enrolled in preprimary education or primary school	11	86.72727	12.89272	66.3	100.1
N	544				

$$er_{c,t+h} - er_{c,t} = \beta_1 FC_{ct} + \beta_2 FAM12A_{ct}^2 + \beta_3 FAM12A_{ct} + \beta_4 FAM13_c + \varepsilon_{ct} \tag{11}$$

where $FAM12A$ shows length of maternity and parental leave available to mothers in weeks.

$$er_{c,t+h} - er_{c,t} = \beta_1 FC_{ct} + \beta_2 FAM13_c + \varepsilon_{ct} \tag{12}$$

where $FAM13$ indicates proportion of children aged 0-2 enrolled in formal childcare and preschool.

The number of observations for each variable varies in the dataset. The tables below indicate the average length of leave available to mothers and fathers by country. There is a variation among the countries.

Table 5: Summary statistics for the length of maternity and parental leave available to mothers in weeks

Country	mean	sd	obs
Australia	0	0	32
Austria	79.5	19.534915	32
Belgium	19.46875	6.7249385	32
Canada	29.96875	14.638624	32
Denmark	37.9375	16.813853	32
Finland	133.3125	51.202594	32
France	20.875	10.310502	32
Germany	64.940626	30.067891	32
Ireland	14.6875	6.0877322	32
Italy	47.700001	0	32
Japan	35.5	22.871309	32
Netherlands	15.3125	5.2451975	32
Portugal	14.84375	3.34268	32
Spain	15.3125	.96511741	32
Sweden	55.965625	6.8036807	32
United Kingdom	20.96875	6.468207	32
United States	0	0	32
Total	35.664	36.761	544

Table 6: Summary statistics for the length of paid paternity and parental leave reserved for fathers in weeks

Country	mean	sd	obs
Australia	0	0	32
Austria	9.75	12.354965	32
Belgium	5.8250001	6.8656697	32
Canada	0	0	32
Denmark	6.75	8.4814789	32
Finland	2.53125	2.7236642	32
France	.5	.87988269	32
Germany	.81562498	2.5764578	32
Ireland	0	0	32
Italy	0	0	32
Japan	0	0	32
Netherlands	.91249999	4.6539438	32
Portugal	1.790625	3.9963175	32
Spain	.546875	.50989204	32
Sweden	4.425	3.7601476	32
United Kingdom	.4375	.84002688	32
United States	0	0	32
Total	2.0167279	5.2377785	544

Even though WFPIs have significant gender implications, I do not include them as independent variables in the econometric specifications because there is a correlation between the fixed effects (country-specific time effects) and some work-family indicators[10]. Fixed effects might capture some part of WFPIs' effects. Therefore, including both variables in the same specification would not show the correct coefficients. However, not including fixed effects may also create some problems. In this case, we might ignore the effects of some other variables that are captured in the fixed effects but not correlated with WFPIs. In addition, the number of observations is not enough to interpret the results accurately.

The total public social expenditure on families is one of the WFPIs, and it can be an alternative to fiscal policy variables. I test the effect of the total public social expenditure on families on the dependent variable, the ratio of female employment rate to male employment rate. According to OECD definition, this indicator includes financial support that is exclusively for families and children, and there are three types of public spending on family benefit; child-related cash transfers to families with children, public spending on services for families with children, and financial support for families provided through the tax system (OECD Family Database). The following specification represents the estimation:

$$er_{c,t+h} - er_{c,t-1} = \beta FAM11 + \mu_c + \varepsilon_{ct} \tag{13}$$

where $FAM11$ shows the total public expenditure on families as a % of GDP. In this regression, I only include country fixed effects because there are not observations for each year in the sample. Results are reported in Table 7, and they show that the effect of the total public social expenditure is positive and statistically significant for the first three years. There are only 80 observations for this variable so it may not give us the accurate coefficients.

Table 7: The effect of total public expenditures on families

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
Public exp	0.017***	0.012***	0.011***	-0.003	-0.008	-0.016	-0.024**	-0.040***
	(0.006)	(0.004)	(0.004)	(0.008)	(0.010)	(0.012)	(0.012)	(0.013)
N	80	80	80	80	80	80	80	80

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

If we include both country and time fixed effects:

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[10]The correlation between the individual effects and the leave available to mothers is -0.41, and the correlation between the individual effects and the proportion of children in childcare (age:0-2) is -0.53.

$$er_{c,t+h} - er_{c,t-1} = \beta FAM11 + \mu_c + \tau_t + \varepsilon_{ct},\qquad(14)$$

the results will change slightly, which are reported in Table 8.

Table 8: The effect of total public expenditures on families

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
Public exp	0.016***	0.018***	0.015***	0.001	-0.004	-0.013	-0.020*	-0.024**
	(0.005)	(0.005)	(0.005)	(0.008)	(0.011)	(0.012)	(0.011)	(0.012)
N	80	80	80	80	80	80	80	80

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

7 Conclusion

In this paper, I examine the effects of fiscal consolidation on the ratio of female employment rate to male employment rate in 17 OECD countries working with narrative fiscal consolidation data. Local projections methodology with a narrative data allows me to examine the impact of fiscal consolidation, which maybe different than fiscal expansion periods. The results show that discretionary contractionary fiscal policy usually decreases female employment rate more than male employment rate or male employment rate recovers faster than female employment rate. Dynamic results indicate that the effect is usually statistically significant after the second year, and lasts for a while. I control the results for female labor force participation rate, economic structure, and female employment share in different economic activities. Controlling for other variables usually changes the size and significance of an effect. Specifically when we control the results for the economic structure of each country (case b in Figure 3), fiscal consolidation has a negative statistically significant impact on the relative employment rates for all years starting from the second year after fiscal consolidation.

This research shows that depending on the motivation of fiscal policy, gender implications may change. Policy makers should be aware of the fact that fiscal consolidation with a motivation to reduce budget deficit decreases employment rates with a larger effect on female employment rate, and the effects last for several years. Contractionary macroeconomic policies have negative employment outcomes in general but it also creates unequal outcomes for women and men. Having work family policies with an aim of achieving gender equality may also decrease this gender inequality which arise from contractionary fiscal policy.

There is need for more research on gender implications of fiscal policies. A further research could address the impact of discretionary fiscal expansion on gender disaggregated employment rates because expansionary

and contractionary policies can affect different economic activities or they may have different effect on female labor supply. Even though, fiscal consolidation has a disproportionate negative impact on female employment for several years, fiscal expansion may affect male employment more positively than female employment. A further research can study the effect of fiscal policy on female time use for care work for a specific country or several countries if the time use data is available and consistent among countries. For the further research, it will be useful to control the effects of fiscal policies for monetary policy.

A   Additional results

Table 9: Results controlled for economic structure

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
size	-0.136	-0.240**	-0.406***	-0.697***	-0.780***	-0.614***	-0.473***	-0.336***
	(0.102)	(0.110)	(0.146)	(0.159)	(0.153)	(0.149)	(0.120)	(0.128)
Agriculture	0.010***	0.015***	0.018***	0.018***	0.020***	0.020***	0.020***	0.018***
	(0.003)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Services	0.001	0.001	0.001	-0.000	-0.003**	-0.005***	-0.007***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N	301	300	301	301	301	301	301	301

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Results controlled for female employment share in economic activities

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
size	-0.075	-0.574*	-1.076***	-1.213***	-1.224**	-0.470	-0.443	-0.838***
	(0.328)	(0.344)	(0.243)	(0.220)	(0.508)	(0.526)	(0.421)	(0.286)
FESAgriculture	0.000	-0.001	-0.000	-0.001	-0.001	-0.000	-0.001	-0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
FESIndustry	0.003	0.006**	0.005	-0.000	0.002	-0.005	0.004	0.012***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
FESServices	0.003	0.014**	0.017***	0.020***	0.034***	0.028***	0.037***	0.035***
	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.008)	(0.008)	(0.008)
N	75	75	75	75	75	75	75	75

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Results controlled for female labor force participation rate

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
size	-0.069	-0.187	-0.303**	-0.500***	-0.513***	-0.358*	-0.258	-0.164
	(0.118)	(0.125)	(0.137)	(0.152)	(0.170)	(0.191)	(0.182)	(0.188)
Female labor force participation rate	0.000	-0.000	-0.001	-0.001*	-0.002***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N	426	426	426	426	426	426	426	426

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Results

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
size	-0.079	-0.262	-0.949***	-1.022***	-1.109**	-0.859*	-1.014***	-1.570***
	(0.284)	(0.251)	(0.312)	(0.263)	(0.481)	(0.471)	(0.367)	(0.391)
FLFPR	0.009***	0.008***	0.005**	0.001	-0.002	-0.000	0.001	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)	(0.003)	(0.002)
Agriculture	-0.001	0.014*	0.007	0.002	0.008	-0.005	0.004	-0.009
	(0.008)	(0.008)	(0.009)	(0.008)	(0.007)	(0.010)	(0.009)	(0.010)
Services	-0.003**	-0.000	-0.001	0.002	0.001	-0.005**	-0.010***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
FESAgriculture	0.000	-0.001*	-0.001	-0.001	-0.001	0.001	0.001	0.000
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
FESIndustry	0.005*	0.005*	0.005	-0.001	0.000	-0.002	0.007*	0.018***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)
FESServices	-0.014**	-0.003	0.005	0.019***	0.035***	0.026***	0.027***	0.022***
	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)	(0.008)	(0.008)	(0.008)
N	75	75	75	75	75	75	75	75

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Results - the impact on female employment rate

	(1) fer1	(2) fer2	(3) fer3	(4) fer4	(5) fer5	(6) fer6	(7) fer7	(8) fer8
size	-31.168**	-38.928*	-40.655*	-38.294*	-34.754	-14.979	-6.983	3.388
	(15.271)	(20.236)	(22.086)	(22.309)	(23.274)	(24.996)	(23.343)	(22.455)
N	428	427	428	428	428	428	428	428

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Results - the impact on male employment rate

	(1) mer1	(2) mer2	(3) mer3	(4) mer4	(5) mer5	(6) mer6	(7) mer7	(8) mer8
size	-35.963	-40.631	-35.564	-20.120	-15.146	-3.040	2.060	8.449
	(22.953)	(24.736)	(24.585)	(24.837)	(26.056)	(28.176)	(26.837)	(25.270)
N	428	427	428	428	428	428	428	428

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Results - tax based

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
taxbased	-0.001	-0.003*	-0.002	-0.004**	-0.006***	-0.006***	-0.005**	-0.006***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
N	428	427	428	428	428	428	428	428

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 16: Results - spending based

	(1) rfm1	(2) rfm2	(3) rfm3	(4) rfm4	(5) rfm5	(6) rfm6	(7) rfm7	(8) rfm8
spendbased	-0.001	-0.002	-0.004**	-0.005***	-0.005***	-0.002	-0.001	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
N	428	427	428	428	428	428	428	428

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

B Unit Root Tests

I apply fisher type unit root test with augmented Dickey Fuller specifications to each panel. I prefer fisher type unit root test because it can be used with an unbalanced panel data. I present the test results for both sections on tables below. The tables shows the p values of unit root tests.

Table 17: P values for the unit root test

Variables	(1)	(2)	(3)	(4)
ratio-er	p<0.001	0.99	0.003	0.98
female-er	0.39	0.73	0.65	0.103
male-er	p<0.001	0.143	p<0.001	p<0.001
female-lfpr	p<0.001	0.008	p<0.001	p<0.001
agriculture	p<0.001	0.42	p<0.001	0.48
service	0.13	0.76	p<0.001	p<0.001
industry	0.486	0.95	p<0.001	p<0.001
FESagri	p<0.001	0.005	0.04	0.04
FESind	0.73	0.97	p<0.001	0.235
FESser	p<0.001	0.92	0.0035	p<0.001

Notes:(1):AR(1) process without a trend, no lags (2):AR(1) process with a trend, no lags (3): AR(1) process without a trend, with an additional lagged difference term, (4):AR(1) process with a trend, with an additional lagged difference term

C Comparison with government expenditure data

Figure 5: Same countries

(a) Eurostat data - government expenditures

(b) Narrative data - fiscal consolidation
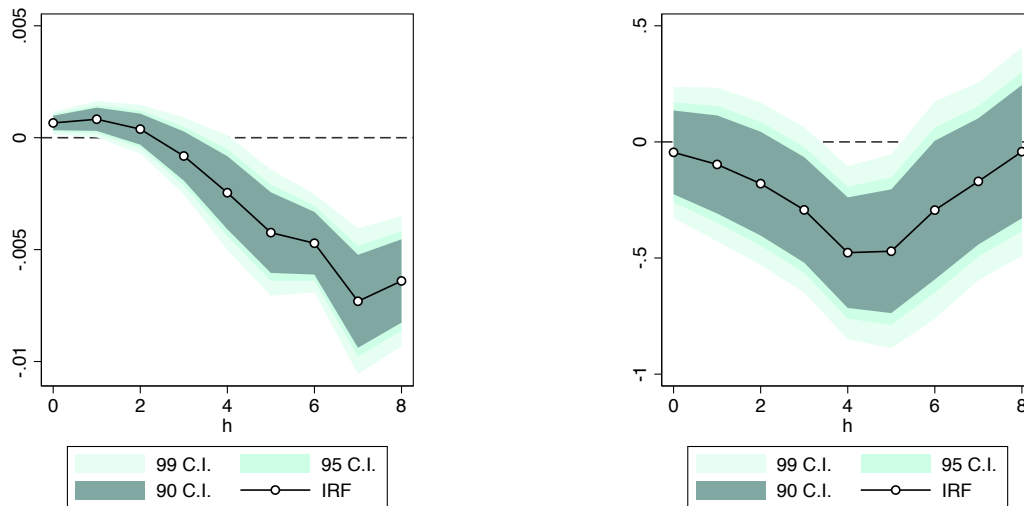
I estimate impacts on female to male employment rates with different datasources for same countries [11]. Figure 5a shows the effect of changes in government expenditure on the ratio of employment rates while Figure 5b indicates the impact of fiscal consolidation. The interpretations of the graphs are different. Because the main exogenous variable in Figure 5a is government expenditure, a negative effect means that an increase in government expenditures leads to a relative decrease in female employment rate/ a decrease in government expenditures leads to a relative increase in female employment rate. Since the main exogenous variable in Figure 5b is fiscal consolidation (reflects a decrease in government expenditures or an increase in tax revenues), a negative effect means a decrease in government expenditures leads to relative decrease in female employment rate. Changes in government expenditures affects female employment more than male employment in the first horizon while they have more effect on male employment rates for last five horizons. On the other hand, structural fiscal consolidation has statistically significant disproportionate impact on female employment rates for 3rd, 4th, 5th and 6th(?) horizons.

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[11] Austria, Belgium, Denmark, France, Finland, Germany, Ireland, Italy, Netherlands, Portugal, Sweden, Spain, United Kingdom

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