

Are macroeconomic policies gender neutral?

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1. Introduction

This paper examines the distributional effects of contractionary monetary policy on female and male employment rates in OECD-Europe. The main aim is to analyze if inflation reduction policies have a disproportionate effect on female employment in Europe between 1980-2015 by using quarterly data, and identify the heterogeneity of monetary policy mechanisms in each country. The European case is especially worth examining for a number of reasons. First of all, special structure of the Eurozone helps to observe the different results of European Central Bank's monetary policy in developing and developed countries. Another benefit of doing the research about Europe is to observe the effects of 2008 Great Recession. Finally, other European countries outside of Eurozone also provide the chance of comparison.

I compare the relative employment rates of women and men between the pre-contractionary and the post-contractionary monetary policy periods by using the difference in differences approach with country level panel data. While doing this, I add country and time fixed effects to take different historical and social institutions into account in each country. This will show if monetary policy mechanism works similar or different in different circumstances. The rest of this paper includes three main parts except from concluding remarks. In the first part, I will analyze the contractionary monetary policy, and in the second part, I will review the impacts of monetary policy on female employment including the discussions in the literature.

In the final part, I will introduce my data, methodology, and econometric model; and provide the empirical analysis.

2. Contractionary Monetary Policy and Employment

In this section, I will firstly review the inflation reduction policies in general, and then I will focus on application of these policies in OECD Europe case. Finally, I will review how macroeconomic policies, especially contractionary monetary policy, can have distributional effects.

Unemployment is one of the most significant economic problems, and the cause of some other economic problems. In addition to unemployment, there are also other problems related to employment such as informal employment, underemployment, and unpaid domestic labor. Because of these problems, reducing unemployment was an important target for macroeconomic policies. As a part of macroeconomic policy, monetary policy applied by central banks was also responsible from being a part of employment creation process. Moreover, development policies were also important for many central banks in the post-Second World War period (Epstein, 2007:2).

However, since 1980s, development or decreasing unemployment is not the primary objective of economic policies for a lot of countries. Instead reducing inflation became one of the most important aims of monetary policy. For more than two decades, the main aim of the central banks of the countries with inflation targeting became maintaining price stability. The other targets such as development and employment policies lost their importance in terms of monetary policy.

In mid-1960s and 1970s, inflation was a big problem for Western economies (Sargent, 1982: 41). Therefore after this period inflation reduction policies gained importance for a lot of countries. The first country that adopted inflation targeting is New Zealand in 1990. Idea behind these policies was that high inflation causes damages for economy in the long run, and growth and employment can be maintained through reducing inflation (Epstein, and Yeldan, 2008: 3). Therefore, the primary objective of monetary policy became maintaining price stability.

However, the other economic problems are also as significant as inflation. Akyuz (2006:46 as cited in Epstein, and Yeldan, 2008: 5) mentions that main challenging of macroeconomic policy is unemployment and financial instability, not inflation. Furthermore, inflation might not be so dangerous unless it is too high. Inflation up to 20% does not create problems in terms of growth, investment, foreign direct investments or other real variables (Epstein, 2007: 7). Dominance of these inflation reduction policies surpasses the other macroeconomic targets. The results of reducing inflation policies can be against the other macroeconomic policies. Reducing unemployment is one of the main targets among these macroeconomic policies. Unemployment and informalization are the opportunity costs of lower inflation (Jayadev, 2009: 75). The results of Ball's (1997) research shows that the reason of rising unemployment during the 1980s is the tight monetary policy that aims to reduce inflation.

Inflation targeting policies has not been so successful about other sub-targets than reducing the rate of inflation. The main objectives of these policies are to reduce the rate of inflation, to enhance the credibility of monetary policy, to reduce the sacrifice

ratio associated with contractionary monetary policy, and to help to attract foreign investment (Bernanke and others (1999), Mishkin and Schmidt-Hebbel (2001) and Roger and Stone (2005) as cited in Epstein, 2007:4). However, inflation targeting could neither enhance the credibility of monetary policy nor reduce the sacrifice ratio (Bernanke and others, 1999, and Epstein, 2000, as cited in Epstein, 2007:4). Tight monetary policy is used in order to keep inflation in the low single digits, by using short-term interest rates as tool. Because of this policy, many countries could not achieve the hoped for gains in employment rates or economic growth (Epstein, 2007:1-7). The contractionary monetary policy reduces inflation rate; however, it did not result in expected gains in economic growth or employment (Epstein, Yeldan, 2008: 8). According to Epstein and Yeldan's (2008) research, the economic growth differs among countries. They observe a rise in unemployment for the post inflation-targeting period. In terms of balance of trade, there are both countries that improved trade surplus and countries with huge deficit. After adoption of inflation targeting, there was general trend towards appreciation for most countries caused by the expansion of foreign capital inflows.

In the inflation target regime, monetary policy focuses on 'setting the policy interest rate'. Exchange rate is left to the global financial markets, and 'floating/flexible' exchange rate system is implemented. On the other hand, according to structuralist tradition, it is important to have a stable and competitive real exchange rate because it influences employment and economy in general (Epstein and Yeldan, 2008: 15-16). In the empirical analysis below, I will look at the different cases with and

without competitive exchange rate in order to see if it changes the impact of inflation reduction policies on employment.

OECD Europe countries also follow inflation reduction policies. European Central Banks (ECB) applies a single monetary policy for every Eurozone member countries. These countries constitute a large part of my data sample. The primary objective of ECB is to maintain price stability¹. Central Banks of the rest of my sample have also the same main goal so they are all inflation-targeting countries. The target is to keep inflation at very low level. For example, for Central Banks of most countries (ECB and Sweden) the target is below 2%, and for Iceland and Norway, it is below 2.5%. The actual rate differs among countries. Most countries decide the interest rate (Central Bank policy rate) to achieve this purpose. However, Denmark maintains price stability through both the monetary and the exchange rate policy.

Similarly to the most of the world, OECD Europe countries also have well-defined separation between economic policy responsibilities. Central Banks are responsible from keeping the interest rate low, and they are not directly responsible from other targets. Although ECB and Central Bank of Czech Republic (CNB) state that they support the general economic policies leading to sustainable growth, full employment and balanced economic growth; the primary objectives of ECB and CNB are still the same: maintaining price stability, which is hierarchically superior to the other objectives.

In Eurozone, each member country decides their fiscal policies; however, they follow the single monetary policy applied by ECB. Eurozone's single monetary policy

¹ Treaty on the Functioning of the European Union, Article 127(1).

may not work for all countries. This policy can result in unexpected or undesired consequences for other economic objectives. These countries do not have the opportunity to use fiscal and monetary policies correspondingly.

Macroeconomic policies are sometimes in favor of one group such as in terms of class, gender, or race. In other words, macroeconomic policies have distributional effects. Recent research shows that contractionary monetary policy has also distributional effects on different groups (Jayadav, 2009, Abell, 1991; and Seguino and Heintz, 2010). Workers are more influenced by negative impacts of higher unemployment, and capitalists are more affected by higher inflation negatively. Therefore workers are unemployment averse while capitalists are inflation averse (Jayadav, 2009: 72). Moreover, we can observe these different distributional effects in terms of race and gender. For example, women and black people are disproportionately influenced by contractionary monetary policy in the United States (Abell, 1991; and Seguino and Heintz, 2010). This paper also aims to observe if there is such distributional impact of contractionary monetary policy in terms of gender in OECD-Europe.

3. Gender Aspect of Monetary Policy

Women and men employments have different dynamics so unemployment of women and men should be examined under different groups. Because of patriarchal norms, males usually have the breadwinner role in the family, whereas females are responsible mostly from reproductive activities, and less engaged in paid work. For these reproduction activities, women do domestic work, which is unpaid. Labor force participation rate of women is usually lower, and unemployment rate of

women is usually higher than men. Even if they participate in labor force, it is usually more difficult for women to find a job. Moreover, a significant number of women are employed in informal employment.

Economic policies can be used to increase women employment, and remove the inequality between women and men in the labor market. If the unemployment problem is just left to the market conditions, women will continue to be disadvantaged in the labor market. However, if some economic policy tools are used, positive discrimination can be applied for women, and they can overcome these disadvantages. To remove the inequality between women and men's employment, we should observe which policy is in favor of women, which policy is against women, or which policy is gender neutral. If we can find a robust relationship between these policies and female employment, it should be taken into account when preferring macroeconomic policies. In this respect, as starting point, I will focus on contractionary monetary policy.

Although the impact of fiscal policy on women's employment is well developed, the impact of monetary policy on women's employment is still a pretty new research topic for macroeconomics and feminist economics. The main research papers on this field are Abell (1991), Braunstein and Heintz (2006), Tachtamanova and Sierminska (2009), and Seguino and Heintz (2010). Although they do not ask the exact same question, the research of Berument, Dogan and Tansel (2005, 2008) can also be related to this research area.

Abell (1991) indicates that distributional effects of monetary and fiscal policy on unemployment are neither gender-neutral nor race-neutral. He focuses on 1974-

1980, 1980-1987 periods in the US by using VAR methodology. White-male is the most benefited group among them. According to his research, black females were the other group that benefited significantly. Because of polarized job market, racial and gender unemployment rates are not identical. White-males are employed in primary sector while women, minorities, and youths are employed in secondary sector.

As Elson (2007) also mentions, Braunstein and Heintz (2006) is the pioneering study about the link between the monetary policies and gender equality in employment. They emphasize the disproportioned effects of inflation reduction on employment, and the difference of its impacts for women and men. Another question they ask is that 'how are monetary policy indicators connected to gender-specific employment effects'? They examine the relationship between inflation reduction policies and men and women's formal employment for 51 'inflation reduction periods' in 17 low and middle-income countries. They apply Hodrik-Prescott filter to the employment series in their estimation. Their results show that contractionary monetary policy has negative disproportionate effects on women's employment. On the other hand, maintaining a competitive exchange rate can help to reduce this impact. For non-contractionary monetary policy period, they do not find a strong relationship between policy instrument and women's formal employment.

Tachtamanova and Sierminska (2009) investigate whether the policies for reducing inflation cause disproportionate unemployment effects for women for nine OECD countries between 1980 and 2004, using quarterly data. Those countries are

Canada, Finland, Italy, Japan, Norway, Spain, Switzerland, the US, and the UK so their analysis focuses on developed countries. They use single equation regression and vector autoregression analysis methodologies for economy wide, and sector analysis. They conclude that the link between short-term interest rate and employment is weak for the industrial countries that they researched, and it does not vary by gender.

Seguino and Heintz (2010) focus on the impacts of contractionary monetary policy on gender and race in the US from 1979-2008. They use federal funds rate, the interest rate on overnight loans between banks, as the indicator of contractionary monetary policy. In their paper, they examine 'the impact of the federal funds rate on the relative unemployment rates of different social groups'. According to their results, monetary policy is neither gender nor race neutral. Unemployment, as a result of contractionary monetary policy, affects black and white women more negatively than white men. Moreover, black women have the burden more than white women.

Berument, Dogan and Tansel (2005) focus on the effects of the exogenous shifts in income and monetary policy on overall unemployment rate and the unemployment rate by different levels of education by gender in Turkey for the period from 1988:01 to 2003:04. Most of their findings are similar across gender. Exchange rate have statistically significant effect on unemployment only for total and female high school level. Berument, Dogan and Tansel (2008) look for the effects of the indicators of macroeconomic policy shocks; real GDP, price, exchange rate, interbank interest rate, money supply, on total employment and the employment by

branches of economic activity for the period from 1988:01 to 2004:04 in Turkey. Their results show that the exchange rate and the interbank interest rate innovations have statistically significant effect on unemployment only in manufacturing for both innovations and finance-insurance sector.

There are several reasons that we can consider as an explanation of gender differences in the economy, and how macroeconomic policies can have distributional effect on gender. One of the explanations for the gender differences in the economy is the sexual division of labor. The sexual division of labor both includes the pattern of work allocation between women and men, and the social practices which classify some works as suitable for women but unsuitable for men, or suitable for men but unsuitable for women (Elson, 1995: 3).

We can observe the gender inequality in the economy as the segregation of women in occupations. In sub-Saharan Africa and Southern Asia, women are primarily employed in agricultural sector as 'unpaid family workers'. For the rest of the economies, women are usually concentrated in the service sector (UN 2000:114, as cited in Elson, 2007: 5-6). Service sector is also segregated. Women work in community, social and personal services, while men work in financial and business services. In industry, women are primarily engage in food processing, textile, and garment production (ILO 2004: 12 as cited in Elson, 2007: 6). Moreover, women are concentrated in informal works more than men.

Tachtamanova and Sierminska (2009: 325-327) mention the reasons that can cause the different effects of interest rate on female and male unemployment rate. They are employment and occupation segregation, gender differences in labor market

attachment, job tenure, and discrimination. They state that empirical evidence shows that women and men work in different fields of employment, and women has narrower range of occupation in the labor market. They have different accesses to labor market attachment such as in the care economy. Women are involved in full-time employment less than men, and they have shorter tenure.

Employer's preference is also influential in gender discrimination. Women are usually considered as cheap labor force so especially some labor-intensive sectors employ women to raise their profits.

Labor market segregation in terms of gender can cause that women and men are concentrated on different sectors. Contractionary monetary policy can affect some sectors more than other sectors. This relation can work through both interest rate and exchange rate. It is important to test if female intensive sectors are more interest rate sensitive. If this is the case, inflation reduction policies may affect female intensive sectors more through interest rate channel. On the other hand, as Heintz (2006) mentions increasing policy interest rate can cause appreciation of real exchange rate. This can influence employment in export sectors in which women are mostly employed in a lot of countries. Therefore, it is also possible that contractionary monetary policy affects female employment through exchange rate channel.

Sectorial impact can be one part of the story. However, there can also be other channels to explain this disproportionate impact on employment. Seguino and Heintz (2010) make robustness check with education and sectors for their analysis. Even though they find that education and sector also have effect on different

unemployment rate of women and men, the coefficient of policy interest rate is still negative and statistically significant. For this part of the relation, one alternative could be different forms of employment for women and men. Women are usually employed in the precarious forms of employment, and in case of economic downturn, they tend to be discharged first (Seguino and Heintz, 2010: 1). There can also be additional channels to explain these relations. My plan is first to test these channels, and see if empirical results support these mechanisms. I also would like to see if there is another mechanism that can explain these policy employment relations.

Economic downturns are usually not gender neutral. This gender impact of economic downturns can show itself in different ways. It can be discouraged-worker effect or added-worker effect for women. Economic downturns can occur as a result of economic crises, austerity policies, budget cuts, or contractionary monetary policy. This paper will mostly focus on contractionary monetary policy. Type of policy can also be effective to decide the gender specific effects; discouraged-worker effect or added-worker effect.

There are different findings in the literature about if contractionary monetary policy has gender bias, and affects women disproportionately. While Braunstein and Heintz (2006) finds this relation for low and middle income countries, and Seguino and Heintz (2010) for the US; Tachtamanova and Sierminska (2009) cannot find a strong relationship for nine OECD countries. One of the focuses of this research is also to test if this relation works differently in different countries and to find the reason of heterogeneity between different countries. My sample is OECD-Europe

countries. In the first step, I will look at monetary policy-gender relation in general, and then try to catch the heterogeneity among these countries.

4. Empirical Analysis

i. Data

My data sources are mainly OECD datasets and IMF International Financial Statistics (IFS). For employment rates of women and men, inflation, short-term interest rates, and labor force participation rate of women and men; I prefer OECD Short-Term Labor Market Statistics, OECD Main Economic Indicators (Consumer Prices), OECD Monthly Monetary and Financial Statistics (MEI), and OECD Labor Force Statistics, respectively. For some countries and some variables, IMF-IFS has more detailed datasets so I will use them in these cases. IMF-IFS provides data for actual Central Bank policy rates for some countries; while in OECD dataset, only short-term interest rates² are available. I use Central Bank policy rate data for Denmark, Norway, Turkey, and the UK, while I use short-term interest rate data for the rest of the sample. For exchange rate data, I will combine OECD National Account Statistics and IMF-IFS datasets. In this paper, I examine the effects of contractionary monetary policy instruments on the ratio of female employment rate to male employment rate. I use quarterly data for the period from 1980 to 2015 as soon as data is available. Because data is not available for the whole period, I make unbalanced country-level panel data analysis. In further steps of the research, I am planning to get data from domestic sources to turn the data into balanced panel data. I have 1353 observations for all variables. The range of female labor force participation

² I use it as a proxy for central bank policy rate.

and employment rates is higher than male labor force participation and employment rates. Standard deviation of both rates for female is around 11. While minimum female employment rate is 21.9 (Turkey), maximum is 83.9 (Iceland). These rates give an idea about how heterogeneous the labor market for female workers in OECD-Europe.

ii. Methodology

This paper analyzes the impact of contractionary monetary policy on relative employment rates (female/male) in OECD-Europe countries by using difference-in-differences methodology with fixed effect country level panel data. The aim is to compare pre-contractionary monetary policy period and post-contractionary monetary policy period. For each country, I need to identify the periods for each policy application. Because difference in differences method can provide a better understanding of implications of a policy instrument, this method is relevant. In the current case, this approach makes it possible to observe the difference between pre-contractionary monetary policy and post-contractionary monetary policy periods.

I apply the following methodology to decide the periods for policy application. Following the method of Ball (1997), and Braunstein and Heintz (2006), I identify the deflationary periods in each country, then I examine if these periods are a response to a monetary policy instrument. However, there are some small differences in the calculation of these episodes. Inflation data is consumer prices for all items, and it shows the percentage change on the same period of the previous year. I use moving averages of consumer prices to obtain trend inflation. I tried two methods to calculate moving averages. In the first one, I take average of the quarter I

focus, the previous and the following quarters. In the second version, I take the average of four quarters; the quarter I focus, one previous quarter and two following quarters. The deflationary periods are between “peaks” and “troughs”. I pay attention to have four quarters before and after the peak. Moreover, the deflationary episodes should be large enough (mostly at least two points depending on the standard deviation of the trend inflation in each country). If these periods are a response to a contractionary monetary policy, I label these periods as deflationary episodes, and use as the treatment variable in the analysis.

I apply the following method in order to decide if these periods are a response to a contractionary monetary policy. After inflation data, I examine short-term interest rate, central bank policy rate and exchange rate data. If decline in the inflation is a response to a change in interest rates (either short-term or central bank policy rate), then the periods of decrease in inflation will consist of the periods for policy implication. Moreover, I will consider the distinction between the periods with and without competitive exchange rates. I specify 128 periods as deflationary episodes for 23 countries³.

iii. Econometric Model

Although I also check the effects of contractionary monetary policy on female and male employment rates separately, my focus will be on the ratio in order to capture the relative impact. Therefore, the dependent variable is the ratio of female employment rate to male employment rate (er_{ct}). The independent variables are the dummy for contractionary monetary policy, country fixed effects, time fixed effects,

³ I have not included Hungary and Switzerland yet since I do not have interest rate data for these countries.

country specific trends, and the ratio of female labor force participation rate to male labor force participation rate ($lr_{c,2000}$) as a control variable. The econometric model in the paper is as follows:

$$er_{ct} = \beta_1 lr_{c,2000} + \beta_2 D_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct};$$

where 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. To avoid endogeneity, I choose only a year for labor force participation rate in the beginning of sample. In this stage, I did not take exchange rates into account.

The reason why I also run separate regressions for female and male employment rates is to be able to see what is the source of disproportionality if there is. The regressions for female employment rate and male employment rate are as follows:

$$fer_{ct} = \beta_1 flr_{c,2000} + \beta_2 D_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct},$$

$$mer_{ct} = \beta_1 mlr_{c,2000} + \beta_2 D_{ct} + \mu_c + \tau_t + \eta_c + \varepsilon_{ct};$$

where fer_{ct} is female employment rate, mer_{ct} is male employment rate, $flr_{c,2000}$ is female labor force participation rate, and $mlr_{c,2000}$ is male labor force participation rate. The results of regressions are reported below on Table1. The results for time fixed effects, country fixed effects, and country specific trends are not shown on the table but included in the regression. The first column shows the impact of deflationary episodes, and the ratio of labor force participation rates on the ratio of female employment rate to male employment rate. Although the coefficient of deflationary episodes is negative, the effect is very small and it is not statistically significant. The second and third column show the impact of deflationary episodes and labor participation rates on female employment rate and male employment rate

respectively. In these cases, both female and male employment rates drop during the deflationary episodes. The coefficient is statistically significant for female employment rate at 1% level while it is statistically significant for male employment rate at 5% level.

Table 1: The Impact on Employment Rates during Deflationary Episodes

	(1)	(2)	(3)
VARIABLES	er	fer	mer
lr	4.368*** (1.381)		
DE	-0.000995 (0.000947)	-0.304*** (0.105)	-0.271** (0.130)
flr		-1.559 (0.985)	
mlr			-7.642*** (2.062)
Constant	-2.775** (1.115)	159.0** (66.01)	706.8*** (171.2)
Observations	1,353	1,353	1,353
R-squared	0.990	0.985	0.924

Standard errors in parentheses

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

The regressions above compare the periods before the contractionary monetary policy and after the contractionary monetary policy. However, they do not directly calculate the effect of Central Bank policy interest rate. As robustness check, I plan to try variations of both short-term interest rate as proxy of Central Bank policy rate, and its interaction with deflationary episodes as independent variables. In addition, I will also take exchange rates into account, and try to observe if having competitive real exchange has any effect.

4. Concluding Remarks

The results above show us both female male employment rates are negatively affected during deflationary episodes as expected. However, determining the relative effects still requires more research. For this purpose, I plan to improve the econometric model with some robustness checks. I also try to show the mechanisms of contractionary monetary policy on employment rates.

There are several research questions I intend to answer with this research. My main question is whether contractionary monetary policy has disproportionate effect on female employment rates. Another important question is if monetary policy and employment in terms of gender relation alter in different countries - especially between developed and developing countries - or periods. Another important aim of this paper is to explain the mechanisms for this relation.

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