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Counter-cyclicalities of the fiscal policy: a woman's touch

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Abstract

The past two decades have witnessed a consistent rise in the proportion of women in the national governments of EU member states, partly attributed to policies aimed at fostering parity. The average representation of women has increased from 23.3% to 34.2%. The question of the impact of gender in the literature, despite lacking consensus, seems to suggest that women could behave differently with regard to risk aversion or even in terms of leverage over a group. This paper aims to delve into the potential influence of gender among government members on public policy. Using quarterly data from 2003 to 2021, we examine the relationship between the share of women in EU governments and its link to the management of public spending, mainly focusing on its cyclicity. Our findings indicate a positive correlation between an augmented presence of women near the budgetary decision-making process, specifically those holding economic positions in government, and an increase in the counter-cyclicity of fiscal policy. Furthermore, utilising annual data, we demonstrate that an upsurge in the representation of women in economic roles within government is linked to a reduction in pro-cyclicity. Our results, robust across various specifications and sample changes, underscore that beyond the pursuit of equal representation, fostering gender parity in political spheres could contribute to enhanced fiscal policy management.

Keywords: • Fiscal policy • Counter-cyclicity • Women representation • Risk-aversion

JEL Classification: • E62 • H30 • H61 • J16

1 Introduction

Female representation in politics has been a key issue in recent years. It is vital to the health of the political system to offer citizens a representation which tends to be identical to the composition of the population. However, women suffer more discrimination than their male colleagues when it comes to accessing positions of responsibility. To date, over 88 countries have adopted electoral law quotas favouring the inclusion of women in the lower house at the national level (Gender Quotas Database).¹ Beyond the issue of equal representation, the rise in the number of women in politics seems likely to influence public policy.

Indeed, gender is an essential characteristic studied in the experimental economics and psychological literature. Numerous studies claim that women are more risk-averse and less attracted to competitive environments than their male counterparts (Eckel and Grossman, 2008 ; Beckmann and Menkhoff, 2008 ; Bertrand, 2011 ; and Filippin and Crosetto, 2016). This type of scenario, as well as the potential assumption that women are taking more care about the future (Read and Read, 2004), have already been studied in macro-economics literature and conclude on various effects of gender on policy-making output (Fuchs and Richert, 2018 ; Masciandaro et al., 2018). In this respect, Jochimsen and Thomasius (2014), who were interested in the effect of the gender of the finance minister on the fiscal balance in Germany, specifically study the characteristics of the minister rather than the proportion of women at the centre of the budgetary process.

Moreover, focusing solely on the amount of public spending is a necessary but not sufficient condition for asserting good fiscal policy management. Indeed, in order to adhere to Keynesian theories that public spending should increase (decrease) during

¹See <https://www.idea.int/data-tools/data/gender-quotas-database/database>.

periods of economic recession (boom) in order to stabilise (and to some extent, ensure the sustainability of public finances) the economy, the fiscal policy must be counter-cyclical. However, to our knowledge, most of the papers which study the link between gender and fiscal policy focus on the quantity and the quality of public spending, but little is known about the effect of gender on the cyclicalities of the fiscal policy.

The aim of this paper is to exploit these potential micro-economics foundations to highlight the question: Could women in governments influence on the cyclicalities of the fiscal policy? Using quarterly data on the share of women in national policy-making and the fiscal balance in the 27 countries of the European Union from 2003 to 2021, we use fiscal reaction functions *à la* [Bohn \(1998\)](#) to study the relationship between the share of women in policy-making and the cyclicalities of fiscal policy.

At first sight, we did not see any relationship between the proportion of women in government and the cyclicalities of fiscal policy. Nevertheless, when deepening the analysis and considering the share of women at the centre of the budgetary process, i.e., women in economic positions, we show that an increasing share of women in economic positions within government is associated with more counter-cyclicalities in the fiscal policy management. This result is all the more true when we consider the proportion of women who hold an economic position and a seat in the cabinet (senior ministers) compared to those who do not hold a seat (junior ministers).

These results are robust to alternative sampling (dropping countries successively to avoid limiting the risk of being in the presence of an outlier) and estimators (system GMM and LSDVC to rule out the possibility of Nickell bias ([Nickell, 1981](#))). We also made a particular concern on the temporal dimension. As quarterly measurements of the fiscal balance and the cycle do not allow for isolating the discretionary component of the fiscal policy.² We, therefore, reproduce the analysis at the annual level and

²Measurements of the fiscal policy on a quarterly basis are not adjusted from the cycle. Such

still find that a higher share of women with economic responsibilities seems to reduce the pro-cyclical bias.

Overall, we found that once the thresholds of 13% and 18% of women holding economic positions in government have been passed, fiscal policy tends to respectively move from pro-cyclical to counter-cyclical (for quarterly data) and from pro-cyclical to acyclical (for annual data).

This paper does not aim to precisely isolate the channel through which women in economic ministries could influence the cyclicity of fiscal policy. Instead, it depicts this potential effect given the micro-hypotheses from the behavioural literature, considered as a whole.

The remainder of the paper is structured as follows: Section 2 provides an extensive literature review,, while section 3 delves into the data and stylised facts. Section 4 is devoted to the econometric analysis and the presentation of our principal findings. In section 5, we test alternative specifications before concluding our study in section 6.

2 Literature review

The exploration of gender disparities has gained prominence in experimental and psychological literature. Although the origins of this disparity seem complex to determine, the role of socio-economic and political conditions and the position accorded to women in various societies would probably have strongly influenced their behaviour over time.

Among these potential diverging behaviours associated with gender, numerous studies, including those by [Jianakoplos and Bernasek \(1998\)](#), [Bernasek and Shwiff](#)

measures (CAPB) are calculated on an annual basis.

(2001), Croson and Gneezy (2009) and Charness and Gneezy (2012) collectively suggest that women tend to display higher levels of risk aversion than men. Complementing these findings, Jung et al. (2018) contribute experimental evidence suggesting that women are more inclined to opt for secure job choices, even at the expense of lower remuneration, potentially contributing to the gender wage gap. Niederle and Vesterlund (2007) further delve into factors influencing preferences for competition, revealing that men tend to be more confident than women in competitive environments, possibly contributing to the observed gender selection gap in competitive scenarios.

The aversion to risk and competition may have broader implications for women in the professional sphere. Studies by Arfken et al. (2004), Del Prete and Stefani (2013), and Cabo et al. (2012) indicate the existence of a so-called “glass ceiling” effect, where women encounter greater discrimination in career progression than men. This discrimination may prompt women to adopt more conservative career strategies in navigating gender bias challenges.

In a later contribution, and in line with risk aversion, Adams and Raganathan (2017) argue that if Lehman Brothers had been managed by women, the bank would not have gone bankrupt as women seem to be better crisis managers.

Beyond individual decision-making, gender differences also manifest in group behaviour. Horn et al. (2022) utilise incentive experiments in Hungarian secondary school classes to reveal that women tend to be more altruistic than men. Additionally, Woolley et al. (2010), in attempting to calculate a group’s Collective Intelligence, show that it is not the sum of individual Intelligence Quotients (IQ) but rather the proportion of women in the group that matters, strongly correlated with listening skills, equal speaking time and social sensitivity.

Building on these behavioural disparities, a growing body of literature examines

the role of gender in economic management.

At the local level, [Chattopadhyay and Duflo \(2004\)](#) find a significant gender effect on intra-household or village resource allocation in developing countries. [Braga and Scervini \(2017\)](#) observe that Women Mayors in Italy significantly increase both the efficacy of policies targeting women and households and the efficiency of the municipal administration. They also highlight that the effect is more substantial, with a higher share of women in the municipal office.

Shifting the focus to the national level, the influence of women in politics emerges as a pivotal factor shaping the size and composition of government spending in industrialised countries ([Aidt et al., 2006](#) and [Funk and Gathmann, 2006](#)). When focusing on specific expenses, [Keneck-Massil et al. \(2023\)](#), in a recent contribution, find that women empowerment reduces of the military-related spending across a large sample of countries. Delving deeper, [Fuchs and Richert \(2018\)](#), studying the characteristics of the development minister, reveal a nuanced impact, where gender does not affect the quantity of aid sent but significantly influences aid quality. Furthermore, the proportion of women in parliament correlates with the quantity of aid. The comprehensive exploration of gender impact seems to require an assessment of the gender composition of all pivotal individuals engaged in the decision-making process. In line with this point, [Masciandaro et al. \(2018\)](#), bringing risk aversion to the fore, find that a higher share of women in central bank boards is associated with higher interest rates.

While macroeconomic literature extensively explores the link between gender and public spending, the prevailing focus remains on the quantity and quality of spending. However, to our knowledge, a gap exists in understanding the impact of gender on the cyclicity of fiscal policy.

Recent literature on budget cycles has predominantly concentrated on factors such

as fiscal rules (Larch et al., 2021 ; Gootjes and Haan, 2022). However, traditional arguments have consistently highlighted the significance of political economy factors in influencing fiscal policies. Lane (2003) introduces the concept of the 'voracity effect,' illustrating how individual policymakers, plagued by deficit bias, tend to run deficits irrespective of prevailing cyclical conditions. Additionally, Alesina and Perotti (1995), Hallerberg et al. (2007), Talvi and Vegh (2005), and Beetsma et al. (2009) demonstrate that political dispersion and fragmentation make expenditure control more challenging. The presence of a deficit bias is further exacerbated by short-term thinking and political competition, as those in power may increase spending before elections to secure voter support or accumulate debt, constraining subsequent administration's flexibility and may ultimately modify the cyclicity of fiscal policy.

Despite the acknowledged impact of political decision-makers on spending cyclicity, little is known about the specific characteristics of these decision-makers that influence spending and, consequently, the cyclicity of fiscal policy.

This literature gap prompts a legitimate question about whether gender, particularly the share of women in governments, can exert an influence on the cyclicity of fiscal policies. Notably, micro-hypotheses supporting enhanced risk aversion (Croson and Gneezy), concern for the future (Read and Read), and influence over the group (Woolley et al.) could be argued as potential explanations for this relation. Although the arguments mentioned above tend to show a difference in behaviour between genders, our article does not seek to explore the specific micro-founded reasons that could explain the effect of women's share on cyclicity.

3 Data on women’s representation and stylised facts

3.1 How the budget is voted in EU countries

One concern in our analysis might be that the electoral system might affect fiscal policy. [Persson and Tabellini \(2004\)](#) explain that presidential regimes with a majoritarian system are less subject to political cycles than parliamentary regimes with a proportional system; as in the latter, politicians have to gather support to form a majority. Even if we are not explicitly dealing with electoral cycles here, the difference between systems of representation could lead to changes in the cyclicity of fiscal policy by manipulating spending on the eve of an election and could affect our results. [Table A.1](#) provides an overview of the different political systems in our sample (i.e., the members of the European Union). It is worth noting the stability of the regimes over our analysis period, during which, to our knowledge, there have been no major constitutional changes. Although there is a diversity of regimes within the EU, all states are democracies bound by European budgetary rules, defined in the Treaty on the Functioning of the European Union (1958) and the Stability and Growth Pact (2005). These rules outline the procedure. First, the preparation of the draft budget: the Minister of Finance prepares the annual draft budget for the coming year. This draft is based on the country’s political priorities and financial commitments within the European framework and is discussed within the government. The draft budget is then submitted to the national parliament for debate and adoption. Members of parliament can propose amendments. Finally, if the national parliament adopts the draft budget, it is signed into law by the Head of State. It is important to note that all EU member states are also subject to budgetary surveillance by the European Commission and the Council of the European Union to ensure that European budgetary rules are respected. In the event of non-compliance, measures can be taken to

rectify the situation, including financial sanctions.³

In our context, women's ability to deliver counter-cyclical fiscal policies could be influenced by the very nature of the budgeting process. Indeed, as long as ministries of finance or ministries implied in economic decisions at large are consulted, some specific features in the behaviour of their members could be reflected in national policies.

3.2 On women's representation among EU national governments

Data on the share of women in government comes from the women and men in the decision-making database produced by the European Institute for Gender Equality (EIGE). One of the advantages of this database is that it is possible to obtain data on the share of women on a quarterly basis. This allows us to increase the temporal dimension and better capture changes in representatives, as election and ministerial reshuffles could occur anytime during a given year.

³Furthermore, it is worth reminding that under the European treaties (Maastricht, 1992; and following), the public deficit of a European Union Member State must not exceed 3% of its GDP. Public debt is capped at 60% of GDP (both indicators being kept in recent reforms).

Figure 1: Average share of women in EU governments

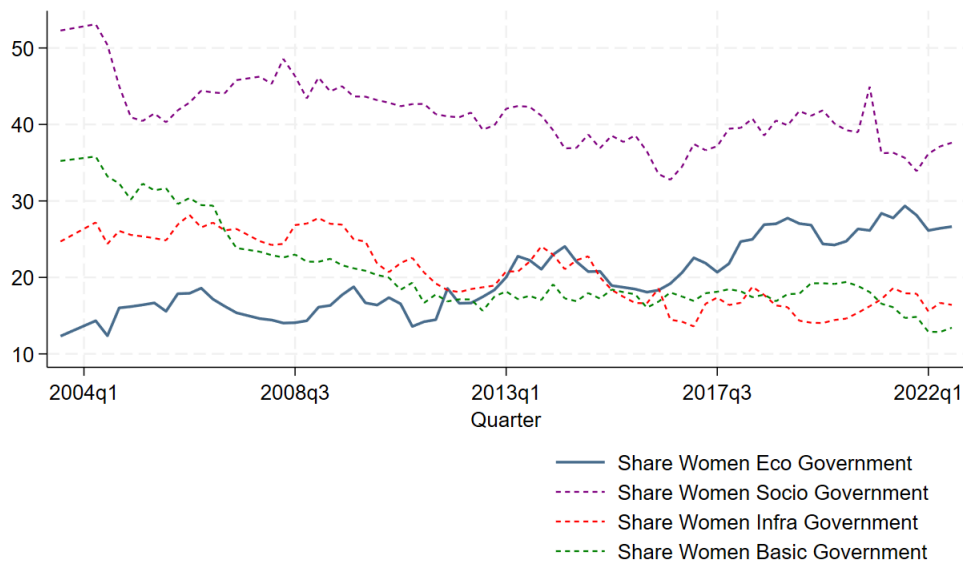


Mean of the share of women in national governments for all the 27 European countries between 2003 and 2022.

Figure 1 shows the average share of women, by quarter, for all member countries over our sample period (2003-2022). There has been a marked increase in the proportion of women since 2003, from around 24% to 34% in 2022. Far from achieving perfect parity, this improvement in female representation results from inclusion policies at both European and national levels, such as the introduction of quotas in the electoral process for certain member countries. Almost 57% of the EU countries have adopted Electoral law quotas (Gender Quotas Database). Although the introduction of quotas is relatively widespread among member countries, to our knowledge, no member country has quotas on government posts. Indeed, the composition of the government is a matter for the head of government and is often the result of political calculation to ensure a strong majority in the assembly (particularly true for parliamentary systems). The parity in some governments (e.g. the Borne government in France) is more the result of political and electoral will. Parity does not, however, guarantee equal gender distribution in key positions.

More than just the share of women in the government, the database also provides details on the share of women according to the position defined by the BEIS typology. Although the names of the ministries and their classification in BEIS may differ from country to country, there are four main categories: B stands for Basic and mainly concerns the regalian ministries (Defence, Foreign Affairs, Justice, Interior, etc.); E for Economic ministries (Finance, Economy, Budget, etc.); I means Infrastructure ministries (Infrastructure, Transport, etc.) and S refers to Socio-cultural ministries (Health, Education, Culture, etc.).⁴

Figure 2: Average share of women in EU governments according to the functions



Mean of the share of women in national governments for all the 27 European countries between 2003 and 2022 according to the functions.

The average percentage of women in the different positions of the BEIS classification per quarter in the European Union is shown in figure 2. The share of women is highest in socio-cultural positions, oscillating between 40% and 50%. In areas classified as basic and infrastructure, the average share across EU countries is much lower

⁴More details on the BEIS Typology can be found here: https://eige.europa.eu/sites/default/files/wmid_mapping_natadmin_1.pdf

and has been falling throughout the period. Conversely, women’s share in economic posts seems to increase, from around 10% in 2003 to 30% in 2022. On average, and even though this phenomenon is decreasing, women are less represented in government. However, they are also more likely to be confined to socio-cultural positions than their male counterparts, who occupy more regalian or economic positions.

Table 1: Descriptive statistics

	count	mean	sd	min	max
Share of women	1974	26.18085	13.50993	0	60
Share of junior women	1829	18.80437	18.50126	0	100
Share of senior women	1974	25.89443	14.57456	0	63.2
Share of women with economic functions	1974	20.07452	17.91134	0	87.5
Share of junior women with economic functions	1808	15.00985	22.5784	0	100
Share of senior women with economic functions	1974	18.24656	19.58108	0	80

These statistics relate to the proportion of women in the national government. Junior means that the minister does not have a seat in the cabinet. For the share of women in junior, senior and economic posts, the ratio is made between the number of women and the total number of members in the same category, i.e. the share of junior women is calculated as the number of women in junior posts out of the total number of juniors in government. Source: Authors’ elaboration.

Finally, we also use a distinction based on having a seat in the cabinet (senior ministers) and those who do not (junior ministers). Table 1 provides descriptive statistics for the share of women in the governments of our sample countries between 2003 and 2022. While on average, the share of women in EU governments represents 26.18% over the period, there is considerable disparity between countries. We can see that the share of women in key economic positions is lower, at around 20%. Once again, there is a marked disparity between countries. We can also see that the proportion of women with a cabinet post (senior) is lower than the proportion without one (junior), whatever the type of ministry.

Overall, in addition to being less represented and having different ministries than men, women also have less power in the positioning within the ministerial office.

3.3 Is there some unobserved heterogeneity affecting women’s share in governments?

To understand the disparity in women’s representation in government and to study whether this could result from specific characteristics, we perform simple correlations between our main variable and a set of country-level covariates.

Table 2 presents this analysis, in which we control for various factors that may correlate with women’s share in the government. First, we control for an index giving us the hourly wage gap between men and women in the private sector between 2007 and 2021 (Eurostat). Next, we study the female employment rate for each country between 2003 and 2022 (Eurostat). We also investigate whether or not our variables correlate with the political system. We include a time-invariant dummy that takes the value of 1 if the system is parliamentary and 0 otherwise (semi-presidential or presidential). Finally, we introduce a dummy that takes the value of 1 if the country is a former Soviet bloc country. In all regressions, we also control for the size of the government, dummies for GDP per capita deciles, the government’s political orientation, and year-fixed effects.

Columns (1)-(4) show OLS estimates with the share of women in government as the dependent variable. We can see that none of our variables seem to be correlate with women’s presence in government. Thus, the positioning of women in society does not seem to be related to the share of women in power in our sample. Indeed, the share of women in government may appear to be a fairly exogenous phenomenon, as they are appointed and not elected. Columns (5)-(8) estimate the percentage of women in government holding economic positions. Once again, none of our variables appear to be related. However, to control as much as possible for the specificity of the countries, we will introduce country-fixed effects to control for all characteristics

Table 2: Share of Women in Government

VARIABLES	(1) Overall	(2) Overall	(3) Overall	(4) Overall	(5) Economic	(6) Economic	(7) Economic	(8) Economic
Gender Pay Gap	0.0292 (0.267)				-0.152 (0.520)			
Female Employment Rate		-0.290 (0.235)				0.326 (0.326)		
Political System			4.139 (4.156)				3.446 (4.925)	
Post Communist Countries				-6.330* (3.794)				4.323 (8.147)
Observations	1,426	1,785	1,785	1,785	1,426	1,785	1,785	1,785
Number of id	27	27	27	27	27	27	27	27
Government Size FE	YES	YES	YES	YES	YES	YES	YES	YES
Income FE	YES	YES	YES	YES	YES	YES	YES	YES
Political Orientation	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.243	0.111	0.231	0.219	0.0957	0.126	0.0870	0.0950

Robust standard errors in parentheses

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

For columns (1)-(4), the LHS variable is the share of women in government.

For columns (5)-(8), the LHS variable is the share of women with economic positions

that are invariant over time.

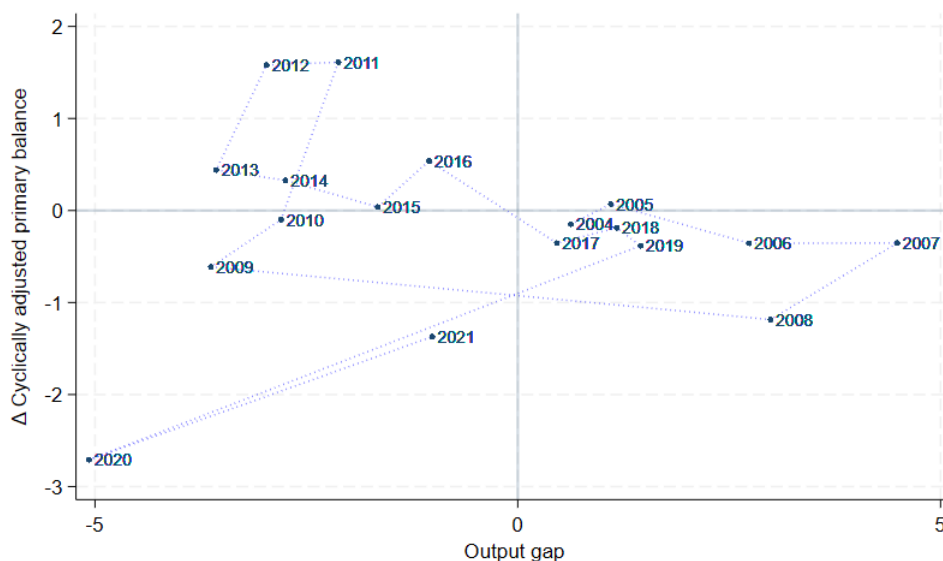
Overall, the European Union framework allows us to be reassured about the relative comparability of the countries in our sample. Even if there is heterogeneity in the electoral system, all the countries in our sample are democracies, and the budget voting process is oriented by European treaties. In addition, these different systems do not seem to impact on the share of women in government, allowing us to limit the extent to which unobservable heterogeneity can affect our results.

3.4 Cyclical behaviour of the fiscal policy in the EU

As stated above, based on micro-hypotheses presented on the literature in potential diverging average behaviours between women and men, this paper aims to unveil a correlation between these divergences and the cyclicity of fiscal policy. The fiscal stance's cyclicity is indeed an essential feature of the stabilisation function of macroeconomic policies. In this regard, it is often considered that reducing expenditures during booms and increasing them during recessions is the optimal behaviour. The so-called counter-cyclicity of the fiscal policy is then associated with *inter alia*

enhanced levels of growth (Aghion et al., 2007) and more sustainable levels of public debt (Alberola et al., 2006).

Figure 3: Fiscal stance in the EU 2004-2021



Years of (more) counter-cyclical fiscal policy are those in the first and third quadrants, while years of (intensified) pro-cyclical policies lie in the second and fourth quadrants.

Figure 3 aims to give a preliminary picture of the cyclicity of the fiscal policy in our sample. To do so, we follow Alesina et al. (2015) and plot the average change in our annual measure cyclically adjusted primary balance (Y-axis) against the average annual output gap in EU countries (X-axis).⁵ Unsurprisingly, EU countries have known output levels considerably below their potential in 2009 (financial crisis) and 2020/2021 (COVID crisis). However, decreased balance levels were also observed during these years, suggesting counter-cyclicity of the fiscal policy. In our sample, the years of austerity following the financial crisis (2011-2013) combined lower levels of output with increasing measures of the fiscal stance in line with the pro-cyclicity hypothesis and thus in line with Alesina et al. Interestingly, the fiscal stance before

⁵We prefer to use our annual data for better clarity of the chart and to better capture the discretionary fiscal responses through the use of the CAPB.

the financial crisis appears to be somewhat decoupled from the business cycle. Indeed, the 2004-2007 period has been marked by a low variation of the adjusted balance in spite of an increasingly favourable economic environment. The cyclicity of the fiscal policy is analysed more accurately in sections 4 and 5 of the paper.

4 Model and main results

4.1 Model and data used

Our analysis is based on a traditional fiscal reaction function pioneered by [Bohn \(1998\)](#). In order to test for a potential dampening (or exacerbating) effect of women’s representation in governments over the cycle, we augment this reaction function with a variable capturing the share of women within governments.⁶ The model used then becomes:

$$balance_{i,t} = \beta_1 balance_{i,t-1} + \beta_2 cycle_{i,t} + \beta_3 W_{i,t} + \beta_w W_{it} \cdot cycle_{i,t} + \beta_4 X_{i,t-1} + \mu_i + \rho_t + \epsilon_{i,t} \quad (1)$$

On the left-hand side of the equation, $balance_{i,t}$ is our measure of the fiscal stance. We alternate between two measures for the budgetary aggregate, namely the overall fiscal balance (hereafter FB) and the primary fiscal balance (hereafter PFB), which allows to exclude the interest payments. While many authors working with annual data use cyclically adjusted measures of the fiscal stance (e.g. through AMECO) to isolate discretionary decisions, such measures are not available on a quarterly basis. As mentioned above, the interest in using quarterly data is to isolate more precisely decisions (especially on the fiscal stimulus side) that could occur in a shorter span than the traditional yearly framework.⁷ Nonetheless, the second part of our analysis

⁶The stationarity of our variables has been previously checked. Results are available upon demand.

⁷It is worth noting that some authors have proposed enhanced procedures of cyclical adjust-

tests the robustness of our results in an annual context that enables us to use the cyclically adjusted primary balance (CAPB) as the dependent variable.

In the quarterly framework, the choice is between seasonally adjusted measures and gross measures of both the dependent variable (FB or PFB) and the variable used to construct $cycle_{i,t}$ which captures the output gap. Our variable of interest, the share of women within governments, is not likely to vary substantially from one quarter to the next. More especially, there is no particular reason to believe that our variable of interest could be affected by some seasonal movements evolving in the same (opposite) direction as those affecting the fiscal stance. Using this non-adjusted measure for the dependent variable is then expected to introduce some noise in the analysis without *a priori* creating a bias. To ensure the veracity of this statement, we use a seasonally and calendar-adjusted (hereafter SCA) measure of the overall fiscal balance⁸ in further robustness checks. The GDP variable used to build the output gap in the quarterly analysis is available for all 27 countries in its SCA version and is therefore preferred over the Non-Seasonally Adjusted (NSA) measure.

More specifically, the output-gap variable ($cycle_{i,t}$) is constructed using the Hodrick-Prescott (HP) filter with the recommended value for the smoothing parameter ($\lambda = 1600$) when dealing with quarterly data.

The variable $W_{i,t}$ in equation 1 is the share of women represented in different executive power branches. Hereafter, when we mention specific executive power branches, such as ministers having economic functions, our variable should be read as the share of women among ministers with economic functions and not the share of ministers with economic functions being women within the government. Coefficient β_3 depicts

ment on quarterly data (Carnazza et al., 2020) and see their application on higher frequency data (quarterly data) as a considerable improvement for the conduct of fiscal policy.

⁸The SCA measure for the overall fiscal balance is available for a sufficient number of countries (23) compared to the same measure for the primary fiscal balance (4 countries).

the direct correlation between the share of women and the fiscal stance, but $W_{i,t}$ is essentially of use to our analysis for building our interest variable, i.e., the interaction term $W_{it} * cycle_{i,t}$. In this sense, the coefficient β_2 is used for evaluating the fiscal policy’s cyclical, with counter-cyclical denoted by a positive sign (pro-cyclical by a negative sign). The positivity of our coefficient of interest, β_w , then denotes an enhancement (dampening) of the counter-cyclical (pro-cyclical) of the fiscal policy, while a negative β_w suggests dampening (enhancement) of the counter-cyclical (pro-cyclical).

$X_{i,t-1}$ is a vector of traditional control variables used in the literature; knowingly, the debt ratio (in % of GDP) as higher debt levels make contractionary fiscal policies more likely (necessary but not sufficient condition for sustainability of fiscal finances, Bohn, 1998) and inflation rate to catch inflationary dynamics.⁹ Political variables often used in the literature are selected to complement economic control variables. These variables all stem from the Comparative Political Data Sets (CPDS at the annual level). Table A.2 details the variables used, their definitions and the related sources.

4.2 Unconditional results

Table 3 displays the results from standard fiscal reaction functions excluding the share of women variable and the interaction term of interest in our paper. We first estimate the functions without the political factors as they decrease our time span due to data availability.¹⁰ The results alternate between two dependent variables that are the overall fiscal balance (FB) and the primary fiscal balance (PFB). From

⁹The effect of inflation on budget balances might not be clear, as outlined by Tujula and Wolswijk (2004) as it could automatically increase tax receipts but could also trigger a rise in interest rates penalising economic activity.

¹⁰The variables used to capture political features all stem from the Comparative Political Data Set (CPDS), made available until 2021.

Table 3: Standard fiscal reaction functions without the interaction dummy

	(1)	(2)	(3)	(4)
	FB	PFB	FB	PFB
Cycle	14.91** (5.445)	10.41** (4.996)	13.42** (5.133)	9.234* (4.853)
Inflation	-27.88 (17.62)	-30.57 (17.93)	-32.98 (19.79)	-36.75* (20.08)
L.Debt	0.00368 (0.0239)	0.0245 (0.0191)	-0.00177 (0.0258)	0.0209 (0.0206)
L.FB	0.0328 (0.102)		0.0143 (0.104)	
L.PFB		0.0199 (0.101)		0.00269 (0.103)
Crisis			-4.196*** (1.486)	-5.915*** (1.796)
Change in Gov.			-0.585*** (0.170)	-0.572*** (0.176)
Gov. support			0.0115 (0.0149)	0.0141 (0.0150)
Cabinet composition			-0.00958 (0.150)	-0.0291 (0.139)
Election			0.359* (0.206)	0.362* (0.208)
Dependency			0.176 (0.353)	0.153 (0.379)
EMU			0.129 (0.526)	0.464 (0.501)
FRSI			0.472 (0.376)	0.410 (0.371)
Constant	-1.151 (1.759)	0.263 (1.244)	-3.982 (5.610)	-2.517 (5.923)
Observations	1947	1947	1862	1862
R-squared	0.290	0.288	0.300	0.302

OLS estimations include country and time-fixed effects. Robust standard errors are displayed in parentheses.
 * p<0.10, ** p<0.05, *** p<0.01.

our results, it cannot be confidently confirmed that fiscal policy is counter-cyclical. Indeed, even if the three first columns display a positive and significant coefficient at the 5% threshold, the results over the PFB and including political factors seem to suggest acyclicity (at the 5% threshold) of the fiscal policy. Additionally, a potential explanation could be provided regarding the counter-cyclicity of some measures. This part of the study does not rule out the effect of automatic stabilisers (which are, by definition, counter-cyclical), as cyclically adjusted fiscal stance measures are not available on a quarterly basis.

4.3 Baseline results (quarterly framework)

Table 4 introduces the results with the interaction dummies. The first panel of regressions interacts the cycle with the share of women within the government. Columns (1)-(4) show no effect of women's representation within governments on the behaviour of fiscal policy. The coefficients on the interaction term are indeed positive but not significant at the 5% threshold. While the voting process of the budget is likely to involve all the ministers, some of them may naturally exert more influence on the final value of fiscal aggregates. As such, one might argue that the budget should essentially follow the decisions made by the ministries with economic functions (in a collegial context) or at least by the ministry of finance (in a perfectly hierarchical context). One could also suggest that only the ministers with economic functions are more likely to react to conjunctural events (especially for downturns) via additional spending. Therefore, we attempt to capture these priorities in the budget hierarchy by focusing on the share of women within the government having economic responsibilities, as defined by the BEIS classification. As described in section 3.2, BEIS stands for Basic, Economy, Infrastructure and Socio-cultural functions. These four

categories classify the ministers according to their primary function. The economic function is of particular interest to us as discretionary and cyclical impulses are more likely to be under the responsibility of these ministers.¹¹ The hypothesis of these additional ministries pertaining to the category being less subject to cycles would create some noise in our analysis. Then, if we find a counter-cyclical effect of the share of women among economic ministries, these types of ministries (that could be decoupled from the cycles) would draw the coefficients towards acyclicity, constituting a lower bound.

The results showing this economic consideration are displayed in the second panel [columns (5)-(8)] of table 4. Columns (5)-(7) show no evidence pleading for a direct influence exerted by the share of women on the fiscal stance. In contrast, column (8) suggests that a higher share of women working on economic functions is associated with lower deficits (positive coefficient significant at the 5% threshold). Our coefficient of interest is associated with the interaction variable. In this regard, the positive and significant coefficient across all specifications prevents us from rejecting the positive correlation between the share of women in ministries with economic functions and the counter-cyclicity of the fiscal policy. As stated before, this study aspires not to reveal a specific micro-hypothesis, among those presented in section 2, that could explain precisely why the share of women in economic ministries could induce more counter-cyclicity. The objective is more to analyse whether all these micro-hypotheses combined could create a correlation between our variable of interest and the cyclicity of the fiscal policy.

Among our set of control variables, it is interesting to observe that the stock of

¹¹Nonetheless, we should mention that the economic categorisation may be relatively large depending on the country; in this regard, while this category always includes the ministries of finance and/or economic affairs, it can also cover additional ministries such as agriculture or tourism depending on the country.

government debt, despite having the expected positive sign, is not significantly correlated to our different measures of fiscal stance. One explanation of this phenomenon could be related to the frequency of the data used in this first section of the analysis. Indeed, the stock of debt is traditionally associated with lower deficits in the annual framework; this condition is necessary (but not sufficient) to ensure the sustainability of the fiscal policy. However, we use the quarterly frequency in our analysis to isolate impulsive fiscal responses to the cycle; we then believe that this timely fiscal policy management may dampen the relation between debt and fiscal balance, especially in the event of sudden economic downturns.

Our dummy variable for years of crises naturally displays a negative coefficient and is significant at the 1% threshold despite including quarter-fixed effects. Interestingly, both political-budget-cycle variables, changes in government and elections, are significant at the 5% level with opposite signs. In this sense, while changes in government seem to reduce fiscal balance, elections seem to be associated with a higher fiscal stance.

In this hypothetical context, where women are elected during contractionary periods because they are assumed to be better crisis managers, one could argue that our results could be artificially driven by higher representation of women during bad times. This concern is first limited by the timing of elections, which is (most of the time) determined by constitutions (and then somewhat exogenous). Second, this first panel of results concern the government members and are therefore appointed instead of being elected.

Table 4: Main results (quarterly NSA data)

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB
Cycle	6.013 (10.65)	0.122 (10.16)	3.831 (10.20)	-1.980 (10.02)	5.787 (7.039)	0.705 (6.400)	4.249 (6.715)	-0.628 (6.326)								
Women	0.0132 (0.0263)	0.0165 (0.0250)	0.0155 (0.0263)	0.0208 (0.0253)	0.0148* (0.00797)	0.0172* (0.00862)	0.0151* (0.00816)	0.0182** (0.00840)								
Cycle · Women	0.405 (0.353)	0.466 (0.360)	0.442 (0.350)	0.513 (0.365)	0.508** (0.189)	0.538*** (0.185)	0.524*** (0.183)	0.559*** (0.180)								
Inflation	-28.01 (18.16)	-30.78 (18.48)	-33.74 (20.20)	-37.74* (20.45)	-27.35 (17.82)	-30.04 (18.17)	-33.04 (19.88)	-36.88* (20.18)								
L.Debt	0.00234 (0.0243)	0.0229 (0.0192)	-0.00338 (0.0263)	0.0188 (0.0208)	0.00220 (0.0241)	0.0230 (0.0191)	-0.00330 (0.0258)	0.0193 (0.0204)								
L.FB	0.0316 (0.103)		0.0133 (0.104)		0.0292 (0.102)		0.0107 (0.103)									
L.PFB		0.0181 (0.101)		0.000969 (0.103)		0.0151 (0.101)		-0.00226 (0.102)								
Crisis			-4.413***	-6.195***	-3.199***		-4.398***	-6.163***								
Change in Gov.			(1.495)	(1.796)	(1.021)		(1.394)	(1.690)								
Gov. support			-0.586***	-0.572***			-0.612***	-0.605***								
Cabinet composition			(0.167)	(0.172)			(0.156)	(0.162)								
Election			0.0112	0.0139			0.0139	0.0168								
Dependency			(0.0145)	(0.0145)			(0.0149)	(0.0151)								
EMU			-0.0289	-0.0555			-0.0186	-0.0408								
FRSI			(0.145)	(0.132)			(0.150)	(0.138)								
Constant	-1.383 (1.704)	-0.0287 (1.215)	-4.416 (5.374)	-3.094 (5.677)	-1.326 (1.733)	0.0612 (1.220)	-4.263 (5.303)	-2.847 (5.546)								
Observations	1947	1947	1862	1862	1947	1947	1862	1862								
R-squared	0.291	0.290	0.302	0.304	0.295	0.295	0.306	0.309								

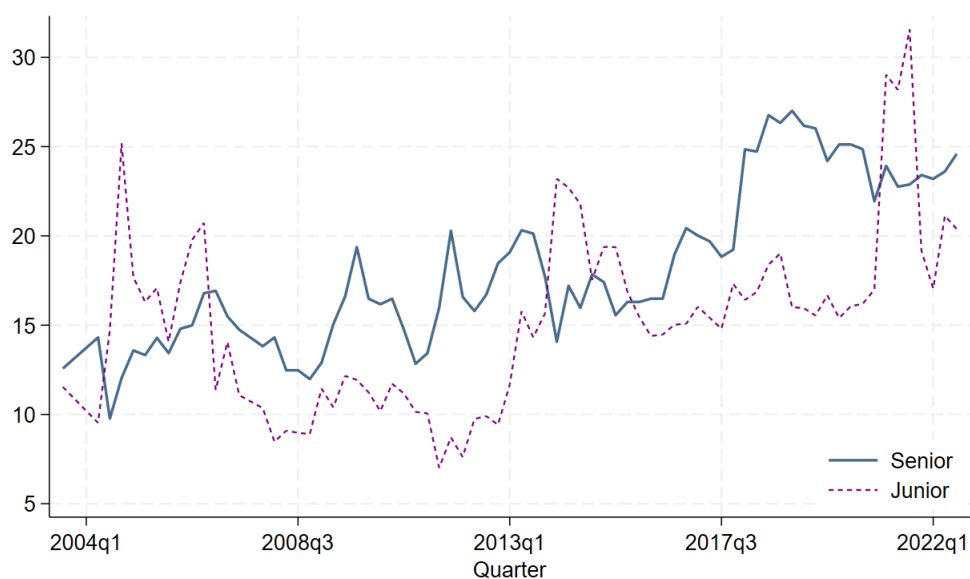
OLS estimations including country and time fixed effects. Robust standard errors are displayed in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

5 Heterogeneity and robustness

5.1 Junior vs senior ministers

Our dataset (EIGE) allows us to desegregate further the analysis regarding the share of women in ministries with economic functions. In this additional specification, we consider separately the members who have seats in the cabinet (senior ministers) and those who do not (junior ministers). In this respect, some countries systematically offer a seat in the cabinet while others do not. Hence, this heterogeneity reduces the number of observations for the so-called junior ministers and mainly applies to those countries where some members might not have a seat. We exploit this additional breakdown for both heterogeneity and robustness purposes. Indeed, some countries automatically ensure a seat in the cabinet to their members ; more generally, a high share of the members naturally has a seat in the cabinet. Therefore, the share of women in ministries with economic functions is likely close to that of women qualified as senior members in those ministries. Nonetheless, there is no automatic correlation between the above-mentioned senior and junior members in those ministries. Figure 4 lines the evolution of the share of women (mean across all countries) in those two categories.

Figure 4: Evolution of the share of women in ministries with economic functions



The solid (blue) line should be interpreted as the share of women among government members with economic functions having a seat in the cabinet (senior members). The dashed (purple) line should be interpreted as the share of women among government members with economic functions who do not have a seat in the cabinet (junior members).

From this chart, there is no apparent common movement between those two series.¹² The absence of correlation between the share of women among junior and senior members provides us with an interesting potential robustness check in addition to a simple heterogeneity analysis. If omitted variables were to be both correlated with our variable of interest and the fiscal stance, our estimations would result in a biased beta. Using two uncorrelated measures for the share of women limits the likelihood of our results being driven by potential confounders. From a theoretical perspective, we expect a positive and significant interaction term when focusing on members having a seat in the cabinet. One could argue that junior members could face a lower influence on the budget, and the resulting coefficient might be lower.

The results using the share of women among junior and senior members in eco-

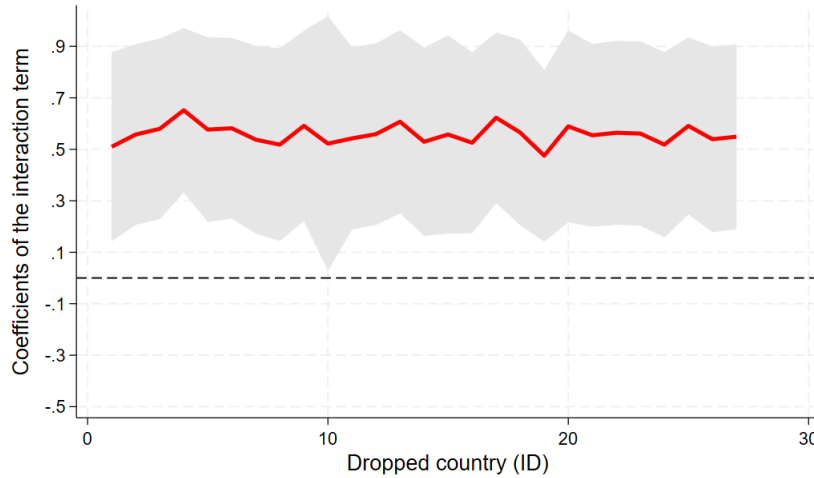
¹²Simple regressions with country-fixed effects (with or without time-fixed effects) also allow us to rule out the correlation between those two series. Results are available upon demand.

conomic ministries are reported in table A.3. As expected, the results on senior members are similar to those obtained in table 4, with a positive and significant coefficient for the interaction term. Interestingly, the coefficient of the interaction term in the controlled settings when focusing on the junior members [columns (7) and (8)] remains positive and significant. The value of those coefficients is nonetheless lower than those for the senior members, suggesting a lower influence over the cycle of female members who do not have a seat in the cabinet. The statistical significance of the interaction terms for both measures (being uncorrelated) provides us with an interesting setup to limit the concern of potentially shared movements that would affect both our variable of interest and the fiscal balance. It is also interesting to note that the coefficient for the level variable *Women* is significant when analysing the PFB for the senior members only.

5.2 Testing for outliers and alternative estimation methods

Another potential concern could be the presence of outliers driving our results. The estimated coefficients could be increased due to some countries with a high share of women for our variable of interest and where the conduct of the fiscal policy is particularly counter-cyclical. Therefore, we test the robustness of our results when dropping each country from the sample. Figure 5 plots the evolution of the interaction term estimated in column (8) of table 4 after having dropped individually each country from the sample. Each country is denoted by the ID attributed in our dataset. The estimated coefficient for the interaction term remains significant across all our reduced samples then, confirming the robustness of our results to potential outliers.

Figure 5: Coefficient of the interaction term for each country dropped



The red line represents the value (on the Y-axis) of the interaction term (the variable of interest) after individually dropping each country from the sample (country ID on the X-axis). The grey band covers the 95% confidence interval; the dashed line is the zero Y axis.

Up to this point, all the estimations were conducted using fixed effects regression. This choice was motivated by the availability of data in our quarterly analysis with $T > N$ ($T = 72, N = 27$), limiting the probability of facing a [Nickell \(1981\)](#) bias. Nonetheless, we re-estimate our results using two standard methods in the fiscal cyclicity literature, knowingly the Nickell bias-corrected least-squares dummy variable method (LSDVC, [Bruno \(2005\)](#)) and the GMM à la [Blundell and Bond \(1998\)](#). The results using these two additional methods are reported in [table 5](#). The interaction term is still significant and positive across all specifications, highlighting the stability of our main results to alternative estimation methods. It is also interesting to observe that the level variable *Cycle* seems to indicate the counter-cyclicity of the fiscal policy even when there are no women in the economic ministries.

Table 5: Main results, robustness to alternative estimation methods

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	FB	PFB	PFB	FB	FB	PFB	PFB	FB	FB	PFB	PFB	FB	FB	PFB	PFB	
Cycle	33.96*** (4.557)	29.65*** (4.486)	31.90*** (4.632)	28.49*** (4.603)	31.62*** (8.696)	31.88*** (8.387)	30.12*** (8.812)	29.76*** (8.872)								
Women	0.0140** (0.00641)	0.00886 (0.00628)	0.0110 (0.00856)	0.0125 (0.00853)	0.0128 (0.00816)	0.0102 (0.0108)	0.0105 (0.00741)	0.0134 (0.00870)								
Cycle · Women	0.707*** (0.193)	0.768*** (0.190)	0.580*** (0.169)	0.631*** (0.168)	0.695*** (0.182)	0.797*** (0.179)	0.576** (0.188)	0.643*** (0.189)								
Inflation	-6.298 (5.752)	-11.52** (5.671)	-2.733 (13.47)	-4.254 (13.43)	-3.465 (12.08)	-13.88 (12.11)	-0.490 (14.97)	-4.372 (14.95)								
lagdebt	0.0133** (0.00642)	0.0165*** (0.00631)	-0.00431 (0.00481)	0.0174*** (0.00479)	-3.465 (0.0127)	-13.88 (0.0120)	-0.490 (0.0183)	-4.372 (0.0173)								
L.FB	0.161*** (0.0201)		0.0665*** (0.0217)		0.213 (0.119)		0.115 (0.112)									
L.PFB		0.154*** (0.0200)		0.0651*** (0.0221)		0.0517 (0.108)		-0.00949 (0.107)								
Crisis			-2.383*** (0.284)	-2.408*** (0.283)			-2.276*** (0.341)									
Change in Gov.			-0.565*** (0.159)	-0.561*** (0.158)			-0.543*** (0.126)									
Gov. support			0.0205* (0.0119)	0.0280** (0.0119)			0.0194 (0.0121)									
Cabinet composition			-0.0379 (0.0740)	-0.0582 (0.0740)			-0.0364 (0.107)									
Election			0.379 (0.241)	0.421* (0.241)			0.378* (0.191)									
Dependency			-0.0974 (0.101)	-0.335*** (0.0997)			-0.0905 (0.180)									
EMU			-0.397 (0.609)	-0.0727 (0.605)			-0.369 (0.461)									
FRSI			0.452** (0.177)	0.276 (0.177)			0.412 (0.335)									
Constant																
ar1p																
ar2p																
Hausen																
N	1947	1947	1862	1862	1947	1947	1862	1862	1947	1947	1862	1862	1862	1862	1862	1862

Robust standard errors are displayed in parentheses. In the GMM specification, the instruments were replaced with their principal components to avoid the too-many-instruments problem (see Kapetanios and Marcellino, 2010) * p<0.10, ** p<0.05, *** p<0.01

5.3 Testing the stability of the results in the annual framework

As mentioned above, cyclically adjusted measures of the fiscal stance are not available on a quarterly basis. These measures are generally highly scrutinised in the annual framework. In this respect, we decide to reiterate the analysis employing annual data. Compared to the quarterly basis that we used to isolate impulsive fiscal responses from the government more precisely, the annual framework not only allows us to use cyclically adjusted measures of the fiscal stance but also to use a measure of the output gap that is made available to a large public and easily monitorable by policymakers (rather than internally calculated using statistical filters). It is also worth noting that these measures are comprehensively forecasted, somewhat ensuring their visibility for policy decisions.

Data for the cyclically adjusted primary balance (CAPB) and the output gap, defined as the gap between the actual value and the potential value of the GDP rather than a trend, stem from AMECO (Annual Macro-Economic Database of the European Commission). Regarding our variable of interest, the share of women in ministries with economic functions, we simply compute the average of the share of women for the four quarters composing each year. The debt data is simply the value observed in Q4 of each year, debt being a stock, and the annual inflation is retrieved from Eurostat. All data from CPDS are already annually computed (the details for the variables used are made available in table [A.2](#)).

The results from the annual estimates are displayed in table [6](#). We solely use LSDVC and GMM methods for these annual estimates as our T (18) is inferior to N (27) and thus more exposed to the Nickell bias. The cycle is significantly and negatively correlated to the fiscal stance this time (as usual in recent annual analyses,

e.g., see Gootjes and Haan, 2022). This difference could be due to the different frequency of the data and/or more probably to the measure used for the fiscal balance. Indeed, the use of the CAPB is aimed at focusing on the discretionary decisions from the government. In this sense, compared to the overall balance and the PFB, the CAPB is not subject to automatic stabilisers, which could have made the fiscal policy counter-cyclical in the first place. Interestingly, the fiscal stance reacts positively to higher levels of debt in the annual analysis in accordance with the necessary conditions for fiscal sustainability.

Regarding the interaction term, the correlation found using quarterly data holds. The share of women in economic ministries seems to be associated with more counter-cyclical (less pro-cyclical) of the fiscal policy across all specifications.¹³ The robustness of this result to outliers is tested in figure 6. The retained specification for this test is the same as in column (4) of table 6.¹⁴ The estimated coefficient is robust to successively dropping each country from the sample as it remains significant at the 5% level.

The main objective of this paper is to highlight a potential correlation between women's representation within governments and the cyclical of fiscal policy. Therefore, we have only discussed the statistical significance of the results up to this point. This choice is partly motivated by the construction of our output-gap variable in the quarterly setup using a statistical filter (making the interpretation lying on the choices for our measure). The measure in the annual framework being constructed using a calculated potential GDP, the interpretation of the economic significance of our results is made more accessible. We then explore, in figure 7a and 7b the marginal

¹³The amplitude of the coefficients has drastically diminished compared to the quarterly framework. This decrease can naturally find roots in the change of the dependent variable, which also has a consequent reduced amplitude as it erases the change in the fiscal stance due to stabilisers.

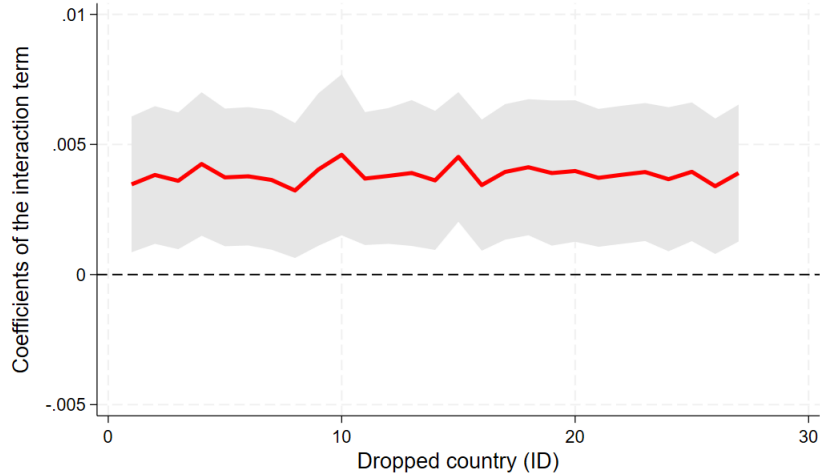
¹⁴The GMM specification is preferred for this test due to the high computational intensity of the LSDVC method.

Table 6: Annual estimates

	(1)	(2)	(3)	(4)
	LSDVC	GMM	LSDVC	GMM
L.CAPB	0.644*** (0.0384)	0.559*** (0.0425)	0.656*** (0.0421)	0.553*** (0.0491)
Cycle	-0.0949** (0.0414)	-0.0931* (0.0489)	-0.143*** (0.0439)	-0.141*** (0.0503)
Women	0.00136 (0.00789)	0.00226 (0.00612)	0.00608 (0.00823)	0.00778 (0.00625)
Cycle · Women	0.00341** (0.00168)	0.00350*** (0.00117)	0.00369** (0.00177)	0.00383*** (0.00134)
L.Debt	0.0262*** (0.00710)	0.0266*** (0.00520)	0.0380*** (0.00864)	0.0370*** (0.00667)
Crisis	-0.951*** (0.202)	-1.004*** (0.247)	-1.231*** (0.243)	-1.284*** (0.349)
Inflation			0.149** (0.0647)	0.158 (0.128)
Change in Gov.			-0.224 (0.174)	-0.220 (0.147)
Gov. support			0.0150 (0.0120)	0.0144** (0.00710)
Cabinet composition			0.0766 (0.0881)	0.0677 (0.0818)
Election			0.0886 (0.245)	0.0853 (0.185)
Dependency			-0.0998 (0.118)	-0.0835 (0.102)
EMU			-0.0700 (0.496)	-0.152 (0.276)
FR			-0.107 (0.237)	-0.0777 (0.192)
Constant		-2.221*** (0.447)		-2.393 (1.820)
ar1p		0.00959		0.0145
ar2p		0.200		0.121
Hansen		0.284		0.554
N	505	505	477	477

Robust standard errors are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

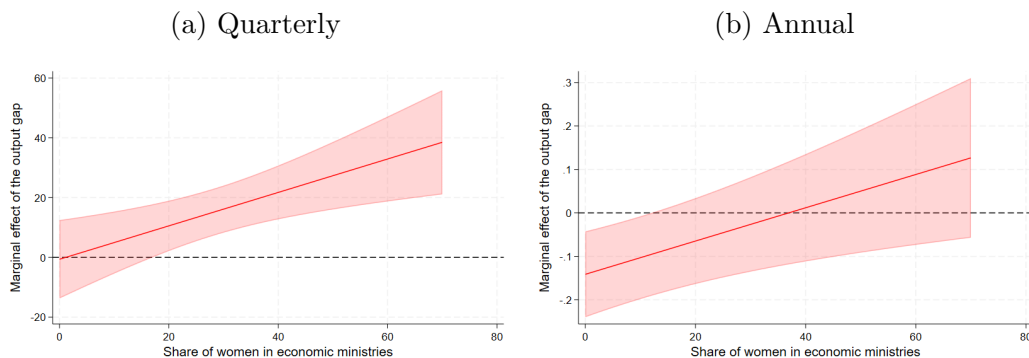
Figure 6: Coefficient of the interaction term for each country dropped (annual)



The red line represents the value (on the Y-axis) of the interaction term (the variable of interest) after individually dropping each country from the sample (country ID on the X-axis). The grey band covers the 95% confidence interval; the dashed line is the zero Y axis.

effect of the output gap conditional on the share of women in economic ministries. In the quarterly analysis, the fiscal policy is acyclical when the share of women in economic ministries equals 0. The fiscal policy becomes counter-cyclical when the share of women overpasses 18%. In the annual framework, it is interesting that the fiscal policy never becomes counter-cyclical despite higher shares of women in economic ministries (the conditional threshold for counter-cyclicality is above 100%). Nonetheless, a 13% or higher share seems to mark a change in the fiscal policy from pro-cyclical to acyclical. Given the changes in the amplitude of our coefficients from the quarterly to the annual framework, the relative proximity of those thresholds for changing the state of cyclicalty could be seen as reassuring. Overall and most importantly, the direction of the coefficients both in the quarterly and the annual framework tends to suggest a positive correlation between the share of women in economics ministries and the stabilising behaviour of the fiscal policy.

Figure 7: Conditional effects of the output gap



The red line represents the output gap's conditional coefficient (on the Y-axis) depending on the share of women in ministries with economic functions (X-axis). The light-red band covers the 95% confidence interval; the dashed line is the zero Y-axis.

6 Conclusion

We present new evidence on the role of women in government using a sample of the 27 EU countries over the quarters 2003-2021. The share of women in government has increased over the past decade in the EU, though parity is still a long way off in some countries, from around 24% on average to 34%. Yet, the share of women in the government seems to matter: we show a relation between the share of women with economic functions in the government and the counter-cyclicality of the fiscal policy. On the other hand, the share of women in government is not correlated with the cyclicality of fiscal policy, which tends to underline the importance of the positions closer to the budget process. Additionally, this effect is more prominent for the share of women with economic functions and sitting in the cabinet (senior ministers) than those without seats (junior ministers).

Our results are robust to the successive exclusion of countries in our sample, allowing us to verify the absence of outliers. We also check that our results are not sensitive to estimator changes: GMM & LSDVC.

Although our sample of countries is heterogeneous in terms of standard of living,

the place of women in society and the system of representation (i.e. parliamentary system vs presidential system), they are all democracies, and their membership of the EU guarantees us a certain comparability in terms of the budgetary procedure enshrined in the EU treaties. However, particular attention is paid to the time dimension. Since quarterly measures of the fiscal balance and economic cycle do not provide the means to isolate the discretionary element of fiscal policy, limitations arise in this regard. We, therefore, reproduce the analysis at the annual level and find that the effect remains significant.

Finally, we determined that surpassing the thresholds of 13% (for annual framework) and 18% (for quarterly framework) representation of women in governmental economic functions results in a shift in fiscal policy dynamics. Specifically, this transition is characterised by a change from pro-cyclical to counter-cyclical patterns in the case of quarterly data and a shift from pro-cyclical to acyclical patterns for annual data.

More generally, our paper sheds new light on the role of women in public policy. Although many authors in the experimental economics or psychological literature study how women may adopt different preferences and behaviours from men regarding risk, altruism or self-confidence, we have not sought here to demonstrate what micro-founded mechanism might mediate this effect. Our results suggest that policies aimed (i.e. quota policies) to achieve parity could lead to better management of public spending.

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Appendix

Table A.1: Political system in European Union

Country	Political system	System of parliament	Election procedure for the lower house
Austria	Parliamentary republic	Bicameral	Proportional ballot
Belgium	Parliamentary monarchy	Bicameral	Proportional ballot
Bulgaria	Parliamentary republic	Unicameral	Proportional ballot
Croatia	Parliamentary republic	Unicameral	Proportional ballot
Cyprus	Presidential republic	Unicameral	Proportional ballot
Czechia	Parliamentary republic	Bicameral	Proportional ballot
Denmark	Parliamentary monarchy	Unicameral	Proportional ballot
Estonia	Parliamentary republic	Unicameral	Proportional ballot
Finland	Parliamentary republic	Unicameral	Proportional ballot
France	Semi-presidential republic	Bicameral	Single-member plurality system
Germany	Parliamentary republic	Bicameral	Mixed system
Greece	Parliamentary republic	Unicameral	Proportional ballot
Hungary	Parliamentary republic	Unicameral	Mixed system
Ireland	Parliamentary republic	Bicameral	Proportional ballot
Italy	Parliamentary republic	Bicameral	Mixed system
Latvia	Parliamentary republic	Unicameral	Proportional ballot
Lithuania	semi-presidential republic	Unicameral	Mixed system
Luxembourg	Parliamentary monarchy	Unicameral	Proportional ballot
Malta	Parliamentary republic	Unicameral	Proportional ballot
Netherlands	Parliamentary monarchy	Bicameral	Proportional ballot
Poland	semi-presidential republic	Bicameral	Single-member plurality system
Portugal	semi-presidential republic	Unicameral	Proportional ballot
Romania	semi-presidential republic	Bicameral	Proportional ballot
Slovakia	Parliamentary republic	Unicameral	Proportional ballot
Slovenia	Parliamentary republic	Bicameral	Proportional ballot
Spain	Parliamentary monarchy	Bicameral	Proportional ballot
Sweden	Parliamentary monarchy	Unicameral	Proportional ballot

Source: Authors' elaboration.

Table A.2: Sources and definitions of the variables

Variable	Definition	Source
FB (Fiscal Balance)	Quarterly Net lending/Net borrowing of the general government (S13) in % of GDP	Eurostat
PFB (Primary Fiscal Balance)	Quarterly Primary Net lending/Net borrowing of the general government (S13) in % of GDP	ECB
CAPB	Annual cyclically-adjusted primary balance.	AMECO
Women	Share of women within the executive power. Classification of functions according to the BEIS. Quarterly data	European Institute for Gender Equality (EIGE)
Cycle	Deviation from trend using the HP filter on quarterly GDP data. Quarterly GDP in chained linked volumes (2010), Million Euros, Seasonally and Calendar Adjusted (SCA)	Eurostat
Debt	Quarterly debt levels for the general government in % of GDP	Eurostat
Inflation	Quarterly inflation rates. Recalculations from authors based on monthly Consumer Price Index (CPI, base year 2015)	Eurostat
Change in Gov.	Number of changes in government per year.	Armingeon et al. (2022) , CPDS
Gov. support	Total government support: seat share of all parties in government. Weighted by the number of days in office in a given year.	Armingeon et al. (2022) , CPDS
Cabinet composition	Cabinet composition (Schmidt-Index). Indicator from 1 [hegemony of right-wing (and centre) parties] to 5 [hegemony of social-democratic and other left parties].	Armingeon et al. (2022) , CPDS
Election	Dummy variable for the years of election.	Armingeon et al. (2022) , CPDS
Dependency	Population over 65, as a percentage of population.	Armingeon et al. (2022) , CPDS
EMU	Dummy variable with value 1 for member states of the Economic and Monetary Union (EMU).	Armingeon et al. (2022) , CPDS
FR	Fiscal Rules Strength Index (FRSI)	Fiscal Rules Database, Directorate-General for Economic and Financial Affairs

Table A.3: Heterogeneity depending on seats in the cabinet

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		
	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB	FB	PFB	
Cycle	8.368 (6.662)	3.163 (5.955)	7.107 (6.292)	2.128 (5.823)	11.25 (7.046)	6.504 (6.589)	8.527 (6.633)	4.120 (6.403)									
Women	0.0142* (0.00731)	0.0173** (0.00745)	0.0130* (0.00756)	0.0169** (0.00736)	0.00258 (0.00712)	0.00322 (0.00722)	0.00362 (0.00627)	0.00470 (0.00633)									
Cycle · Women	0.436** (0.184)	0.483** (0.178)	0.426** (0.177)	0.477** (0.172)	0.305* (0.150)	0.281* (0.160)	0.366** (0.126)	0.346** (0.133)									
Inflation	-26.09 (17.91)	-28.61 (18.25)	-31.59 (20.31)	-35.22* (20.65)	-24.84 (18.03)	-27.21 (18.28)	-29.88 (20.84)	-33.28 (21.08)									
L.FB	0.0275 (0.102)		0.00996 (0.103)		0.0264 (0.111)		0.00482 (0.113)										
L.Debt	0.00372 (0.0238)	0.0248 (0.0185)	-0.00140 (0.0254)	0.0216 (0.0199)	0.0114 (0.0256)	0.0320 (0.0216)	0.00687 (0.0285)	0.0295 (0.0243)									
L.PFB	0.0125 (0.101)		-0.00396 (0.102)	-0.00396 (0.102)		0.0172 (0.108)		-0.00337 (0.111)									
Crisis			-4.228*** (1.436)	-5.958*** (1.716)			-4.166** (1.696)	-6.306*** (1.919)									
Change in Gov.			-0.596*** (0.159)	-0.588*** (0.164)			-0.600*** (0.173)	-0.573*** (0.178)									
Gov. support			0.0137 (0.0146)	0.0169 (0.0146)			0.0146 (0.0169)	0.0167 (0.0169)									
Cabinet composition			-0.0153 (0.149)	-0.0373 (0.137)			-0.0531 (0.138)	-0.0709 (0.130)									
Election			0.381* (0.203)	0.393* (0.204)			0.456** (0.196)	0.437** (0.197)									
Dependency			0.149 (0.339)	0.117 (0.359)			0.300 (0.344)	0.293 (0.353)									
EMU			0.197 (0.556)	0.554 (0.535)			0.638 (0.608)	0.949 (0.605)									
FRSI			0.450 (0.371)	0.380 (0.363)			0.390 (0.374)	0.330 (0.377)									
Constant	-1.393 (1.689)	-0.0223 (1.185)	-3.945 (5.382)	-2.435 (5.608)	-2.380 (2.134)	-0.571 (1.535)	-7.681 (5.321)	-6.082 (5.364)									
Observations	1947	1947	1862	1862	1793	1793	1708	1708									
R-squared	0.295	0.296	0.305	0.309	0.296	0.293	0.308	0.309									

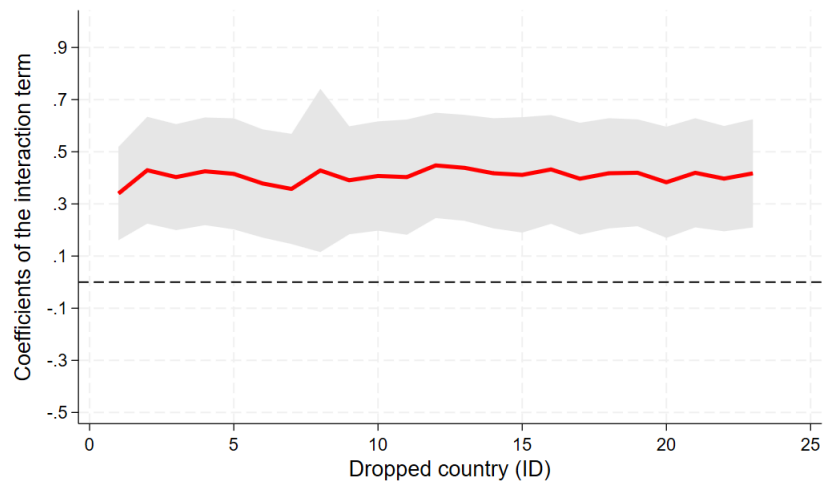
OLS estimations including country and time fixed effects. Robust standard errors are displayed in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Table A.4: Main results (quarterly SCA data)

	(1)	(2)	(3)	(4)
	FB	FB	FB	FB
Cycle	6.684 (3.996)	5.203 (3.999)	-0.569 (4.531)	-2.022 (4.618)
Women			0.00719 (0.00446)	0.00748 (0.00491)
Cycle · Women			0.403*** (0.102)	0.407*** (0.105)
Inflation	-0.0832 (5.266)	1.930 (7.158)	0.561 (5.301)	2.143 (7.277)
L.Debt	-0.00384 (0.00918)	-0.00850 (0.00954)	-0.00500 (0.00922)	-0.00966 (0.00956)
L.FB	0.477*** (0.0666)	0.445*** (0.0747)	0.472*** (0.0667)	0.440*** (0.0747)
Crisis		-1.111 (0.908)	-0.578 (0.499)	-1.205 (0.862)
Change in Gov.		-0.329 (0.222)		-0.338 (0.214)
Gov. support		0.0102 (0.00993)		0.0123 (0.00996)
Cabinet composition		-0.0165 (0.0798)		-0.0179 (0.0816)
Election		0.344 (0.258)		0.361 (0.250)
Dependency		0.0360 (0.193)		0.0291 (0.182)
EMU		0.0438 (0.335)		0.0802 (0.335)
FRSI		0.429* (0.245)		0.432* (0.244)
Constant	-0.829 (0.783)	-1.658 (2.730)	-0.922 (0.787)	-1.770 (2.576)
Observations	1667	1594	1667	1594
R-squared	0.524	0.527	0.528	0.532

OLS estimations including country and time fixed effects. Robust standard errors are displayed in parentheses. Due to availability of SCA data, the sample is reduced to 23 countries. * p<0.10, ** p<0.05, *** p<0.01.

Figure A.1: Coefficient of the interaction term for each country dropped (SCA)



The red line represents the value (on the Y axis) of the interaction term (the variable of interest) after individually dropping each country from the sample (country ID on the X axis). The grey band covers the 95% confidence interval and the dashed line is the zero Y axis.