

## **Revisiting the effects of government size and labour market institutions on macroeconomic volatility: The case of the eurozone**

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### **Abstract**

We revisit the role of government size and labour market institutions on macroeconomic volatility, for the case of the eurozone since the adoption of the euro, which can provide a more homogeneous setting to test for macroeconomic volatility. The behaviour of the volatility of inflation looked rather different from that of GDP. Neither government size nor labour market institutions seemed to affect the volatility of GDP, except when demographic factors were included into the estimated equation; whereas lower volatility of inflation was related to a lower share of non-prime age workers and lower wage volatility.

*Keywords:* macroeconomic volatility, government size, labour market institutions, eurozone

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### **1. Introduction**

The study of macroeconomic volatility is relevant for several reasons. In particular, a high macroeconomic volatility may lead to welfare losses resulting from deviations from a smooth consumption path, something regarded as optimal by risk-averse individuals. In addition, by raising uncertainty, macroeconomic volatility can affect adversely the growth path of both output and consumption; see Loayza et al. (2007).

Following the influential work of Layard et al. (1991), the importance of labour market institutions for explaining the evolution of unemployment has been greatly emphasized in the literature. In particular, the interaction of labour market institutions and adverse economic shocks would be crucial in order to account for the heterogeneity of unemployment experiences across European countries (Blanchard and Wolfers, 2000). The empirical emphasis on the role of labour market institutions has been boosted by the emergence of the so-called search and matching theory (Mortensen and Pissarides, 1994; Pissarides, 2000). This theory describes the formation of new jobs from the interaction of searchers in the labour market, where an instantaneous adjustment is prevented by the existence of frictions in the market.

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However, the evidence of labour market institutions on macroeconomic volatility is not too abundant and rather inconclusive, both in terms of the variables employed and the results; see Rumler and Scharler (2011), Merkl and Schmitz (2011), Campolmi and Faia (2011), or Faccini and Rosazza Bondibene (2012). More recently, we can mention Gnocchi et al. (2015) who, by means of Spearman partial rank correlations, showed that more flexible institutions were associated with lower business cycle volatility; whereas Abbritti and Weber (2018) obtained that higher employment protection and union density reduced the volatility of unemployment and increased that of inflation, with the opposite effects found for higher unemployment benefits.

On the other hand, and following earlier work by Galí (1994), Fatás and Mihov (2001) argued that those countries with larger governments should have milder economic fluctuations, due to the role of income taxes and government purchases as automatic stabilizers. The authors found evidence of a strong negative correlation between government size and the volatility of business cycles, in a cross section for both OECD countries and US states. This conclusion, in turn, is related to Rodrik's (1998) claim that more open economies should have larger governments, in order to provide social insurance against the higher external risk and volatility associated with external openness. However, Carmignani et al. (2011) found that larger government size was associated with higher volatility, and stressed the role of institutions that limit government discretion, in particular central bank independence and a stable nominal exchange rate regime. Also, when including in the analysis the demographic composition of the labour force, Iseringhausen and Vierke (2019) obtained that a larger share of prime-age workers (i.e., those aged between 30 and 59 years) would be associated with lower output volatility, while higher public expenditure would increase it.

Notice that the above mentioned papers, with the exception of Merkl and Schmitz (2011) and Campolmi and Faia (2011) (in the latter case, just for the volatility of inflation), analyse the OECD countries. In this paper, we will revisit the role of government size and labour market institutions on macroeconomic volatility, for the case of the eurozone since the adoption of the euro as a common currency. In addition, the eurozone can provide a more homogeneous setting to test for macroeconomic volatility, since the member countries share a common monetary policy and so differences in macroeconomic volatility cannot be due to differences in monetary policies.

## 2. Data

We will focus on the volatility of GDP and inflation, for the founding member countries of the eurozone (except Luxembourg due to the lack of some data). The time period is 2001-2019, using non-overlapping four-year periods to avoid the effect of cyclical fluctuations. Volatility has been measured as the standard deviation of either the change in GDP or inflation. Regarding the possible explanatory factors of macroeconomic volatility, our main interest will be on the variables government size and labour market institutions, using for the latter three alternative proxies, namely, employment protection, volatility of real wages, and demographic composition of the labour force<sup>1</sup>. In addition, several control variables have been added, namely

- Financial development
- Trade openness
- Volatility of the real effective exchange rate (REER)
- Government balance
- Growth

The exact definition of each variable and the data sources are shown in Table 1.

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<sup>1</sup> We have tried to incorporate into the analysis some other proxies of labour market institutions (in particular, collective bargaining coverage and trade union density), but unfortunately they were not available in the OECD dataset in some years for several countries.

Table 1. Definition of the variables and data sources.

<i>Variable</i>	<i>Source</i>	<i>Definition</i>
<i>Output</i>	AMECO	Gross Domestic Product, at 2015 prices
<i>Inflation</i>	AMECO	Consumer prices (2015 = 100), rate of change, in %
<i>Government size</i>	AMECO	Total expenditure, general government, as % of GDP (excessive deficit procedure)
<i>Employment protection</i>	OECD.stats.org	Strictness of employment protection – individual and collective dismissals (regular contracts)
<i>Wages</i>	OECD.stats.org	Average annual wages at 2019 prices
<i>Demographics</i>	OECD.stats.org	Ratio of the 15-29 and 60-64 years old workers to the entire labour force
<i>Financial development</i>	Eurostat	Private sector credit flow (net amount of liabilities in which the sectors non-financial corporations, households and non-profit institutions incur with households along the year), consolidated (i.e. data do not allow for transactions within the same sector), as % of GDP
<i>Trade openness</i>	AMECO	Exports plus imports of goods and services, as % of GDP
<i>REER</i>	AMECO	Real effective exchange rates, based on unit labour costs (total economy) (2015 = 100)
<i>Government balance</i>	AMECO	Net lending (+) or net borrowing (-), general government, as % of GDP (excessive deficit procedure)
<i>Growth</i>	AMECO	Growth of GDP per head, at 2015 prices, in %

### 3. Empirical results

The results of the econometric estimations appear in Table 2. The equations have been estimated using the two-step system GMM method, which provides finite sample corrections for reported standard errors, and allows controlling the unobservable sectoral heterogeneity as well as correcting for the endogeneity of regressors. For each dependent variable, we present three columns with the results for the three alternative proxies of labour market institutions, i.e., employment protection, volatility of real wages and demographics. Several diagnostic tests were performed (namely, AR(2), Durbin, Wu-Hausman, Hansen, and Kleibergen-Paap), showing in general no problems regarding the specification of the model.

As can be seen in the table, the behaviour of the volatility of inflation looks rather different from that of GDP. Starting with our variables of interest, a higher government size appears to be related to lower GDP volatility, and to a smaller extent in the case of inflation volatility, only when *demographics* is included into the equation. Next, regarding labour market institutions, they don't seem to affect volatility too much; if any, a lower share of non-prime age workers (i.e., those aged below 30 and above 59) would be related with lower GDP and inflation volatility, and lower wage volatility with lower volatility for inflation, but not for GDP.

Regarding the other variables, lower GDP volatility would be associated with a greater financial development, lower trade openness (although in this case only when *demographics* is included into the equation), and lower REER volatility. These results would be in line with those of, e.g., Easterly et al. (2001), Denizer et al. (2002) or Dabla-Norris and Srivisal (2013) in the case of financial development; Easterly et al. (2001) for trade openness; and Easterly et al. (2001), Andrews and Rees (2009) or Dabla-Norris and Srivisal (2013) for REER volatility. In turn, lower inflation volatility would be associated with lower financial development (unlike the case of GDP volatility), lower trade openness, a higher government balance (i.e., a smaller government deficit) and higher GDP growth. To conclude, notice that the sign of the effect on macroeconomic volatility of the variable financial development is somewhat controversial. So, the results of Dabla-Norris and Srivisal (2013) suggest that, above a certain level, the beneficial

effects of financial development on volatility should diminish and might even become negative, a situation that would be characteristic of advanced countries; a similar result was already found by Easterly et al. (2001).

Table 2. Macroeconomic volatility in the eurozone.

	Dependent variable: volatility of					
	GDP			inflation		
dependent variable (t-1)	-0.627 (-1.11)	-0.598 (-1.01)	-0.637* (-1.82)	0.250*** (14.63)	0.299*** (14.14)	0.268*** (8.98)
government size	0.012 (0.45)	0.007 (0.36)	-0.038** (-2.08)	0.001 (0.20)	-0.003 (-0.89)	-0.006 (-1.58)
employment protection	-0.149 (-0.50)	-	-	-0.026 (-0.80)	-	-
volatility of real wages	-	-0.197 (-0.86)	-	-	0.114** (2.45)	-
demographics	-	-	0.100** (2.24)	-	-	0.016* (1.68)
financial development	-0.030* (-1.86)	-0.036* (-1.82)	-0.055* (-1.85)	0.013*** (2.63)	0.016*** (2.95)	0.008 (1.27)
trade openness	0.009 (0.99)	0.010 (0.98)	0.006** (2.27)	0.004*** (2.99)	0.003*** (2.96)	0.002* (1.76)
volatility of REER	0.600* (1.85)	0.657** (1.99)	0.573*** (3.98)	-0.063 (-0.79)	-0.100 (-1.25)	-0.080 (-1.06)
government balance	-0.111 (-0.62)	-0.110 (-0.70)	-0.106 (-1.46)	-0.082*** (-2.98)	-0.079*** (-2.79)	-0.091*** (-3.29)
growth	0.042 (0.25)	-0.022 (-0.14)	0.046 (0.64)	-0.070*** (-3.84)	-0.045** (-2.50)	-0.064*** (-4.00)
Test <i>p</i> -values:						
AR(2)	0.237	0.298	0.115	0.673	0.968	0.766
Durbin	0.000	0.000	0.000	0.044	0.043	0.049
Wu-Hausman	0.000	0.000	0.001	0.109	0.107	0.120
Hansen	0.178	0.170	0.169	0.308	0.398	0.308
Kleibergen-Paap	0.000	0.000	0.000	0.010	0.001	0.006

Notes:

- (i) *z* statistics in parentheses; \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.
- (ii) AR(2) is a test of second-order serial correlation.
- (iii) Durbin and Wu-Hausman are tests of the exogeneity of the regressors.
- (iv) Hansen is a test of the validity of the instruments.
- (v) Kleibergen-Paap is a test for weak instruments.

#### 4. Conclusions

The study of macroeconomic volatility is relevant because it can affect negatively economic performance for several reasons, e.g., on leading to deviations from a smooth consumption path, or raising uncertainty about the future. Two variables mentioned in the literature that could be related to macroeconomic volatility are government size and labour market institutions; two variables indeed, for which the empirical evidence is not too abundant, unlike others related to financial development or external openness, in various ways. In this paper, we have revisited the role of government size and labour market institutions on macroeconomic volatility, for the case of the eurozone since the adoption of the euro as a common currency. Notice that the eurozone can provide a more homogeneous setting to test for macroeconomic volatility, since

the member countries share a common monetary policy and so differences in macroeconomic volatility cannot be due to differences in monetary policies.

The behaviour of the volatility of inflation looked rather different from that of GDP. Neither government size nor labour market institutions seemed to affect the volatility of GDP, except when demographic factors were included into the estimated equation; the only significant influences were those of financial development and REER volatility, with a negative and positive sign, respectively. In turn, a lower volatility of inflation seemed to be related to a lower share of non-prime age workers and lower wage volatility; other variables favourably influencing inflation volatility were lower financial development, lower trade openness, a smaller government deficit, and higher GDP growth.

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