The heterogeneities of the euro area countries: relevance of the single monetary policy

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Abstract

This paper proposes an investigation of the heterogeneous impact of the single monetary policy on the euro area countries. Firstly, we show that each country has a national specifity about the banking and financial structures, the productive specializations, functioning of the labor markets, the inflation and the long run interest rate paths. Secondly, we estimate a Structural Vector Auto-Regressive model (SVAR) over the 1999-2015 period to visualize the heterogeneous responses of the countries following to several kind of shocks and especially a common monetary policy shock. Our results show that, each country reacts differently to the shocks. However, some similar reactions allow to distinguish two group of countries : the North and the South. Despite this distinction, the position of some countries is ambiguous, like is the case for France.

Keywords : Monetary policy, macroeconomic heterogeneities, euro area, SVAR model.

JEL classification : C32, E52, H77

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1 Introduction

Since Greece's default on 30 June 2015, [1] euro area Member States have had to come up with a third bailout plan for the country. At the very inception of the Monetary Union (MU), the Delors report (1989) already pointed to the risks inherent in building a MU without fiscal and political federalism. [2] Research on Optimum Currency Areas [3] has identified the conditions necessary to create a lasting MU. [4] Yet, on 1 January 1999, euro area member states countries gave up control over their monetary policies as the Treaty on European Union (1992) [5] established a single monetary authority. Fiscal policies have remained areas of domestic competence.

One of the specific purposes of the euro area was the convergence, [6] the single currency has not always brought Member States economies closer. Duwicquet, Mazier, and Saadaoui (2013) showed that most Member States have inadequate real exchange rates. Artus (2012b) evidenced the impact of differences in specialized production. Georgiadis (2014) highlighted heterogeneities in financial structures and labor market structures. In an economic area comprising nations as radically different as Germany and Greece, implementing a single monetary policy adjusted everyone's needs is a major challenge that has not been met. The European Central Bank's (ECB) policies are based on weighted averages without consideration to the disparity of the economic conditions. [7] But due to the Member States' structural differences, they are suited to some and detrimental to others. Duwicquet, Mazier, and Saadaoui (2013) have for instance shown that the single currency has boosted the GDP growth of Northern countries, making them increasingly competitive, but at the same time hindered activity in Southern countries, which suffer from the higher production and labor costs. Overall, the literature shows that the euro area's monetary policy is not adapted to all Member States because of their structural differences.

The literature shows that the euro area has a single monetary policy which can not be

1. Greece defaulted after failing to refund 1.5 billion euros to the International Monetary Fund.
2. See Delors (1989) ; the report on economic and monetary union in the European community, Chapter 1, section 2, paragraph 5 ; section 4 paragraph 12 ; chapter 2, section 3 paragraph 30.
3. Mundell (1961), Ingram (1969), Kenen (1969), Cooper (1977), Kindleberger (1986)
4. Labor and capital mobility, high degree of trade integration, more symmetric shocks than asymmetric shocks.
5. See EU (1992)
6. See EU (2007) (consolidated version), articles 121 and 140.
7. See Artus (2012a)

adapted for all countries given their structural and national specificities. The monetary policy risks to be more restricive for some countries and more laxist for the others. Then, this paper analyzes the relevance of the single monetary policy in an heterogeneous monetary union, in the specific case of the euro area. This paper contributes to the literature by showing, empirically, that each country reacts differently to several shocks and especially a common monetary policy shock. We confirm that a single monetary policy is adapted with difficulty for each member state without transfer or compensation mechanism. However, despite this heterogeneities, we can find two groups of countries, Northern and Southern (with East countries). Even if the position of some countries is ambiguous like is the case for France.

Then, this article asks the question of the efficiency of the single monetary policy in the euro area by analysing the heterogeneities responses between the countries following to several shocks and especially a monetary policy shock. This article is organized as follow. The section 2 presents the heterogeneities in the euro area with a literature review and a descriptive analysis, especially about the inflation and the long run interest rate paths. In the section 3 we develop a SVAR model to study the heterogeneous reactions following to several shocks and a monetary shock in particular. We conclude in the last section.

2 The heterogeneities in the euro area : which problems for the monetary policy transmission ?

2.1 Literature review : what is the link between heterogeneities and monetary policy ?

Several studies have shown that a single monetary policy cannot be perfectly adapted to each country of the monetary union due to their structural differences. Jondeau and Sahuc (2008) for instance evidenced the negative impact of heterogeneities in the optimal design of monetary policy. Angelini, Del Giovane, Siviero, and Terlizzese (2002), Brissimis and Skotida (2008) and Cristadoro, Saporito, and Venditti (2012) showed that a monetary policy taking into account national characteristics and individual information would benefit members of a

MU. In this case, a literature review allows to understand that the duality between the heterogeneities of the member states and the single monetary policy could be problematic in therms of efficiency and consistency of the monetary policy.

Penot, Pollin, and Seltz (2000) and Artus (2012b) [8] have demonstrated that heterogeneities hinder the objective of a monetary policy adapted to each euro area member. Indeed, the ECB considers the average welfare for the entire euro area, and sets its monetary policy on the basis of average inflation, ignoring potential disparities. Therefore, the monetary policy is adapted to countries whose inflation rate is close to average, and inadequate for the others. Additionally, Germany, France, Italy and Spain make up 75% of the union's GDP ; the smaller economies have little weight in monetary policy decisions and their needs are neglected. In the same way, we could find a situation where some countries are in economic recession while the others increase own GDP.

Much of the literature has focused on analyzing the differences in banking and financial structures as an explanatory factor of differences in monetary policy transmission. Those papers mainly analyse the link between banking and financial structures and monetary policy transmission. For instance, Coudert and Mojon (1997) and Penot, Pollin, and Seltz (2000) have shown how differences in banking structures (weight of bank funding in the economy, degree of competition between banks, density of the banking sector etc) affect monetary policy transmission. Likewise, Hendricks and Kempa (2008) examined the impact of banking and financial heterogeneities using the case of the credit channel in France, Germany, Italy and Netherlands. More recently, some authors have made attempts at using post-subprime crisis data, such as Ciccarelli, Maddaloni, and Peydro (2013) on the impact of financial vulnerabilities on transmission mechanisms. For instance, a higher share of variable rate loans makes the private sector more sensitive to a monetary policy shock, likewise when the savings share is high. [9] The share of variable rate credits and private debt are higher in the South than in the North, [10] making the South more exposed to a monetary policy shock [11] Following a change in the nominal interest rate, the response of private debt will differ between North and South.

8. Penot, Pollin, and Seltz (2000) explained that the ECB considers a weighted average of data for all countries, which prevents it from taking individual national data into account.

9. See Blot and Labondance (2013).

10. In 2014, the savings rate of the North was 15.35% vs. 11.6% for the South (Eurostat).

11. See Boutillier, Bagrielli, and Monfront (2005).
In per cent of GDP, private debt in the South exceeds the North after 2008 (Eurostat).

Second, national productive specializations also play an important role in monetary policy transmission. Georgiadis (2014) has shown that capital intensive countries have higher investment and credit needs than service-oriented countries. Additionally, differences in monetary policy transmission and impact are caused by variations in firm size, industrial specialization, export capacity. For instance, if the interest nominal rate changes, the largest firms have easier access to alternative sources of financing. Duwicquet, Mazier, and Saadaoui (2013) have examined the trade performances of Northern countries and Southern countries. They show that the euro induced a 13% devaluation for Austria, Germany, Finland and Netherlands and a 23% overvaluation for Greece, Portugal and Spain compared with an hypothetic individual currency. Besides, in Northern countries, we find higher average firm size and more industrial exporters than Southern countries. [12] Then Northern firms are more financially stable and they have easier access to alternatives to bank financing, particularly since the scale of financial markets is bigger than in the South [13]. Thus, a nominal interest rate shock could have less impact on exporting firms in the North.

Lastly, the literature has also emphasized the impact of heterogeneities between european labor market structures on differences in monetary policy transmission. Georgiadis (2014) has shown that labor market rigidity levels impact the Central Bank's inflation anticipations and therefore the adjustment of wages to economic activity. Penot, Pollin, and Seltz (2000) highlighted the impact of unionization rate, union bargaining power and the system's degree of centralization on inflation expectations. Differences in flexibility levels and wages cause differences in productivity, wage levels and competitiveness. The higher unionization rate in the North [14] means more bargaining power for employees, [15] especially as the unemployment rate is lower than in the South, [16] which reinforces the weight of the labor supply in wage bargaining. Conversely, the lower unionization rate in the South, which also has a structurally higher unemployment rate than the North, means that monetary policy transmission is less efficient due to the lesser adjustment of wages to inflation. Additionally, the South has a higher degree of

12. See Artus (2012b).
13. The stock market index increased by 44% in the North between 1999 and 2015 vs. 13% in the South (OECD).
14. The Northern unionization rate decreased from 30.8% in 1999 to 24% in 2015 (20.5% to 19% in the South) (OECD).
15. See Penot, Pollin, and Seltz (2000)
16. The unemployment rate in the North was 5.37% in 2015 vs. 13.41% in the South (Eurostat).

employment protection, leading to more rigidity. Thus, a nominal interest rate shock could have a different impact in the two groups of countries, characterized by different wage adjustments.

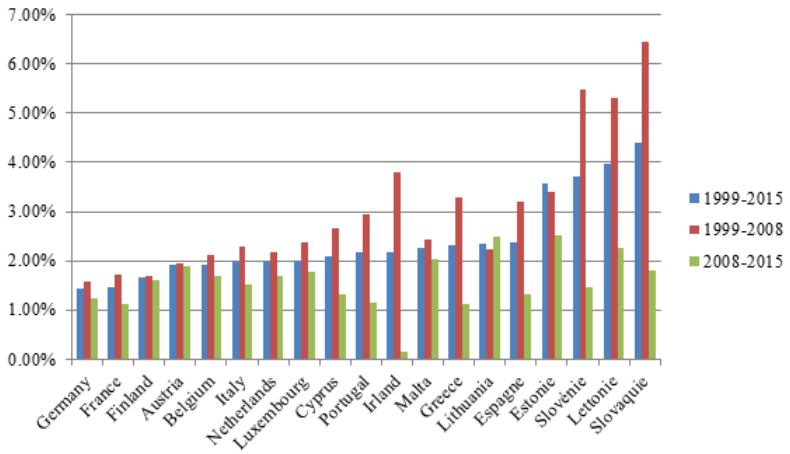
2.2 Descriptives analysis : a different inflation and long run interest rates despite a single monetary policy

The ECB has for first mission, the control of the inflation rate on average in the euro area. We could study the dipsersion level to measure the heterogengeity level.

As shown by the Figure 1, the euro area seems to be in a case where the monetary policy is single while we observe a structural differences of the inflation rate. [17] Gemany is the least inflationary country in the euro area on the period 1999-2015 while Slovakia is the most inflationary, although Slovakia has been integrated in the euro area in 2009. Among the "old countries", Spain is the most inflationary. If we separate the period in two sub periods (1999-2008 and 2008-2015) we also observe some heterogeneities. For the period 2008-2015, all countries are in disinflation process compared with the period 1999-2008, excepted Lithuania which has accelerated own inflation rate. Likewise, some countries have pratically make the objective of close but below of 2% (Austria, Malta, Latvia for instance) while, others countries are almost in deflation process like Irland. Then, despite a single monetary policy which excludes the national specificities, we note some heterogeneities concerning the inflation rate of the euro area countries.

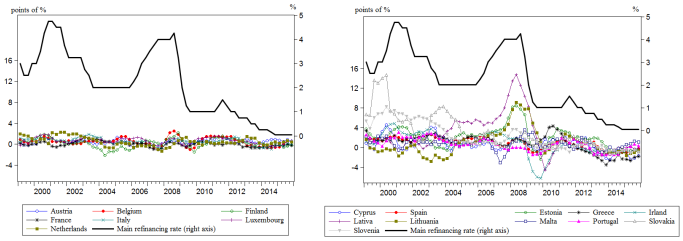
Figure 1 : The inflation rates on average (1999-2015)

17. The Figure 1 consider all countries of the euro area, but we remember that some countries have integer the euro area at the end of 2000'.



(Eurostat)

Figures 2 : Evolution of the main refinancing rate and spread of inflation with Germany (1999-2015)



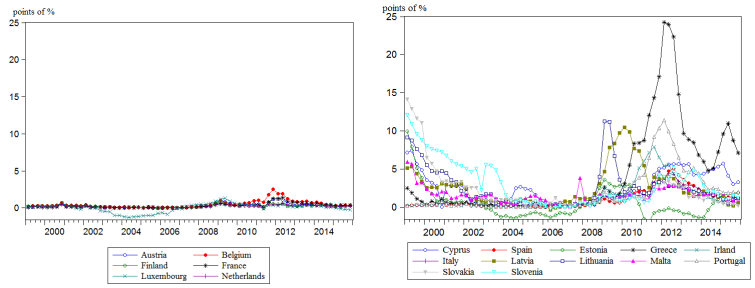
(Eurostat)

In the similar way, the Figures 2 show with the same scale, the inflation spread with Germany. The decomposition choosed shows clearly the opposition between two groups of countries. The countries close of Germany (left) and the countries with a larg gap (right). Moreover, if we add the main refinancing rate of the ECB, we observe that the variations of the interest rate coincides with the pic of heterogeneities. In particular when the main refinancing rate increase.

Then, the Figures 3 represents the spread of the long run interest rates [18] and show the larger heterogeneities than inflation rates. We also find a pic of heterogeneity after 2008 in a context of financial instability. Excepted Italia, we find the same countries in the both groups : the countries close of Germany(left) and the others (right). We observe clearly a break because of the Subprimes and public debt crisis which stop the convergence period.

18. The long run interest rates refer to government bonds maturing in ten years.

Figures 3 : Evolution of the mains refinancing rate and the spread of long run interest rate with Germany (1999-2015)



(Eurostat)

Finally, the european monetary policy considers only the euro area and excludes the national specificities. Despite the single monetary policy, we observe some heterogeneities. Firstly, the heterogeneities of banking and financial structures, productives specializations and functioning of the labor markets. We have shown that this differences could generate some differences in the transmission of the monetary policy. Secondly, the inflation rates and the long run interest rates are not similars between the countries. At the same time, we observe, an acceleration of the inflation rate for some countries and a disinflation for the others. Overall, two groups of countries could be distinguish, with some exceptions. The Figures 1, 2 and 3 show a similar path of the North countries (Austria, Belgium, Finland, France, Germany, Luxembourg and Netherlands) with Italy in some cases, and the South and East countries show divergently path.

3 Heterogeneous reactions following the shocks : a North / South distinction

This section, is in accordance with this literature about the heterogeneous transmission of the monetary policy and the heterogeneities of the member states. We investigate a specific euro area application using recent data to show that the member states react differently after several shocks and especially after a monetary policy shock.

3.1 Methodology of the SVAR model

The aim of the section is to show the how each country react differently after several shocks and especially in the case of a monetary shock. This section confirms the observations of the descriptive analysis section to show that the single monetary policy is not necessarly adapted for all countries given their heterogeneities. For this aim, we developp a SVAR model to simulate several shocks and study the reaction of each country.

3.1.1 Description of the SVAR model

We use the auto-regressive form currently used by the literature. Compared with the standard VAR model, the SVAR model imposes to define the restrictions choosed by the modeller in the impulse propagations structure. The reduced form of the canonical VAR model can be represented as follow :

$$A(L)\Delta Y_t = u_t \tag{1}$$

Or in the same way :

$$\Delta Y_t = A(L)\Delta Y_{t-1} + u_t \tag{2}$$

With ΔY_t the vector of endogeneous variables which representes 6 variables : Δy, $\Delta dette$, Δext, Δoat, $\Delta infl$ and Δr are respectively the domestic product, the public debt, the trade balance, the long-un government bond, the inflation rate and the nominal interest rate. Δ shows that the variables are expressed in first difference between the time t and t-1. We note $A(L)$ the auto-regressive polynomial matrix which includes the parameters of the model ; L is the lag operator. This matrice can be expressed as follow : $A(L) = I_n - A_1L - A_2L^2 - ... - A_pL^P$ where I_n represents the identity matrix with ones on the mais diagonal and zeros elsewhere. $u_t : (u_t^{\Delta y}, u_t^{\Delta dette}, u_t^{\Delta ext}, u_t^{\Delta oat}, u_t^{\Delta infl}, u_t^{\Delta r})$ are the non correlated residual vector. We remember two hypothesis about the residuals : $E(u_t) = 0$ et $E(u_t u_s^T) = \Omega$ when $t = s$, with the exponent T which indicates the transpose of the matrix ans Ω which indicates the symmetric variance-covariance matrix. We can rewrite the VAR(p) model to show the dynamic of the auto-regressif

form :

$$\Delta Y_t = \sum_{i=1}^{p} A_i \Delta Y_{t-i} + u_t \tag{3}$$

Where p is the optimal lag found thanks to several criteria of selection.

From this VAR model, we can developp the speficication of the SVAR model. We introduce a matrix in order to impose the restrictions. We will estimate the coefficients of this matrix and impose some zero coefficients. This matrix multiplies the vector of the endogeneous variables to allow the contemporaneous relations between the variables. In the intermediate step we rewrite the VAR model in a matricial form :

$$P\Delta Y_t = A_i \Delta Y_{t-1} + u_t \tag{4}$$

The model contains 6 endogeneous variables. We can detailed the expression of the matrices as follow :

$$\Delta Y_t = \begin{pmatrix} \Delta y \\ \Delta infl \\ \Delta ext \\ \Delta oat \\ \Delta debt \\ \Delta r \end{pmatrix} ; P = \begin{pmatrix} 1 & p_{12} & p_{13} & p_{32} & p_{15} & p_{16} \\ p_{21} & 1 & p_{23} & p_{24} & p_{25} & p_{26} \\ p_{31} & p_{32} & 1 & p_{34} & p_{35} & p_{36} \\ p_{41} & p_{42} & p_{43} & 1 & p_{44} & p_{46} \\ p_{51} & p_{52} & p_{53} & p_{54} & 1 & p_{56} \\ p_{61} & p_{62} & p_{63} & p_{64} & p_{65} & 1 \end{pmatrix}$$

$$A_i = \begin{pmatrix} a_{11} & a_{12} & a_{13} & a_{32} & a_{15} & a_{16} \\ a_{21} & a_{22} & a_{23} & a_{24} & a_{25} & a_{26} \\ a_{31} & a_{32} & a_{33} & a_{34} & a_{35} & a_{36} \\ a_{41} & a_{42} & a_{43} & a_{44} & a_{44} & a_{46} \\ a_{51} & a_{52} & a_{53} & a_{54} & a_{55} & a_{56} \\ a_{61} & a_{62} & a_{63} & a_{64} & a_{65} & a_{55} \end{pmatrix}$$

At each time t, the error terms represents a linear combination of the structural shocks :

$$Pu_t = e_t \tag{5}$$

The vector of structural shocks associated with each endogeneous variables is :

$e_i = \begin{pmatrix} e_y \\ e_{infl} \\ e_{ext} \\ e_{oat} \\ e_{dette} \\ e_r \end{pmatrix}$ Where each structural shock is respectively, a domestic supply shock ; a public demand shock ; an external shock represented by a variation of the exchange rate ; a financial shock which affects the long-run interest rate ; a price shock and a monetary shock as a money supply shock represented by a nominal interest modification.

We can from of the reduced form to premultiply the both sides of the model by P^{-1}. The estimation of this matrix allows to find the the structural shocks from the estimated shocks : $\hat{e}_t = \hat{P}^{-1}\hat{u}_t$. Then, we premutliply the both sides of the model by P^{-1} to obtain :

$$P^{-1}P\Delta Y_t = P^{-1}A_i\Delta Y_{t-1} + P^{-1}u_t \tag{6}$$

The reduces form of the SVAR model is expressed by :

$$\Delta Y_t = B_i\Delta Y_{t-1} + e_t \tag{7}$$

Avec $B_i = P^{-1}A_i$

3.1.2 Identification of the restrictions

The model contains n^2 parameters of the matrix P to estimate. Consequently, wa can impose $\frac{n(n-1)}{2}$ constraints or restrictions. [19] Indeed, the SVAR models allow to impose some restrictions on the parameters of the matrix P. In our case, we use 6 endogeneous variables, that mean $\frac{6(6-1)}{2} = 15$ restrictions. The literature identifies fluently some restrictions. However, the number of the restrictions greatly increases with the size of the model. Then, the relevant of the restrictions requires the choice of the modeller and induces an abitrary point of view about the responses of the endogeneous variables to the shocks. The Choleski decomposition allows to defines the matrix as a lower triangular matrix but the ranking, that is to say, in order of appearance of the endogeneous variables must should be verify. Like explained by Bruneau and De Bandt (1998) and Sims (1980) for instance, the modeller should rank the variables from the more endogeneous variables to the more exogeneous variables. In accordance with this literature, we impose the kinds of restrictions. The we rank the domestic product and the inflation rate in the first positions while the nominal interest rate is in the last position.

The first restriction fluently imposed is proposed by Gali (1992) and Clarida and Gali (1994). In a ISLM model, they hypothesize that a monetary shock has not impact on real variables at the long run only. In the same spirit, Blanchard and Quah (1989) and Gosse and Guillaumin (2010) impose that, the only supply shocks have an impact on economy at the long run. We follow this literature and maintain a long run impact of supply shock and variables while the demand shock represented by the public demand shock, has not. However, we accept that the demand shock can have a long run impact on the long run interest rate. Indeed, with cumulative effects, the public demand variation impacts the the public debt level which impacts the long run interest rate. Then, we allow that a public demand shock can have an impact on the long run interest rate at the long tun. [20] Likewhise, we follow Gali (1992) and Clarida and Gali (1994) to impose a null effect of a financial shock on the domestic product at the long run only. Our financial shock is represented by the long run interest rate of the financial market. Furthermore, we assume that a price shock impact the nominal interest rate because the monetary policy reacts to the prices. Finally, we assume that a supply shock has an impact on all

19. In fact, there are $\frac{n(n+1)}{2}$ restrictions mais the number of the constraints can be reduce to $\frac{n(n-1)}{2}$ becaure the variance-covariance matrix Ω is symmetric.

20. A high public debt could discourage the investors to invest. To cover the risk of failure, the investors should be incite to lend with an higher interest rate.

variables.

3.1.3 Robustness considerations

The VAR method requires some verifications. Firtsly, we retain the variables in first differences to keep the stationarity of the time series which is integrating with order 1. We check the stationarity of the variables using 3 tests : the Augmented Dickey Fuller test (ADF), the Phillips Perron test (PP) and the Kwiatkowski Phillips Schmidt Shin test (KPSS).The ADF and PP tests test the presence of the unit root. We test the null hypothesis of non-stationarity. The KPSS tests the null hypothesis of the stationarity. We retain a significance threshold at 5%. The detail of the test results is presented in appendix (Tables 1).

Secondly, we check the cointegrating relations and the long run relations between the variables using the Johansen test procedure. We select the optimal lag level to minimize the Akaike information criterion (AIC) and the Schwarz criterion (SC) which consider the parcimony criterion and indicate the quality of the model. [21] Then, we realize the cointegration tests retaining the model which minimize this two criteria. [22] Then the Trace and Max eignvalue allow to find the cointegrating relations.

21. Akaike (1973) and Schwarz (1978).

22. The Eviews software allows to test several models : with a deterministic trend in data (with ou without intercept), with a linear deterministic trend in data (wih ou without intercept) and with a quadratic deterministic trend in data.

Table 2 : Cointegrating relations

Counties	lag	cointegrating relations	
		Trace	Max eignvalue
Euro area	1	6	3
Austria	4	3	3
Belgium	4	2	3
Estonia	1	4	1
Finland	4	2	2
France	2	3	1
Germany	1	6	3
Greece	1	6	6
Irland	1	5	3
Italy	1	5	5
Latvia	1	3	1
Luxembourg	4	2	2
Netherlands	2	6	2
Portugal	2	4	1
Slovakia	4	3	2
Slovenia	1	3	1
Spain	1	4	2

Thirdly, check the stability of the models. Eviews allows to display the values and the graphics of the inverse root associated to the auto-regressive part. A coefficient lower than 1 inside the unit circle shows the stability of the model. The detail of the graphic representations is presented in appendix (Figures 5).

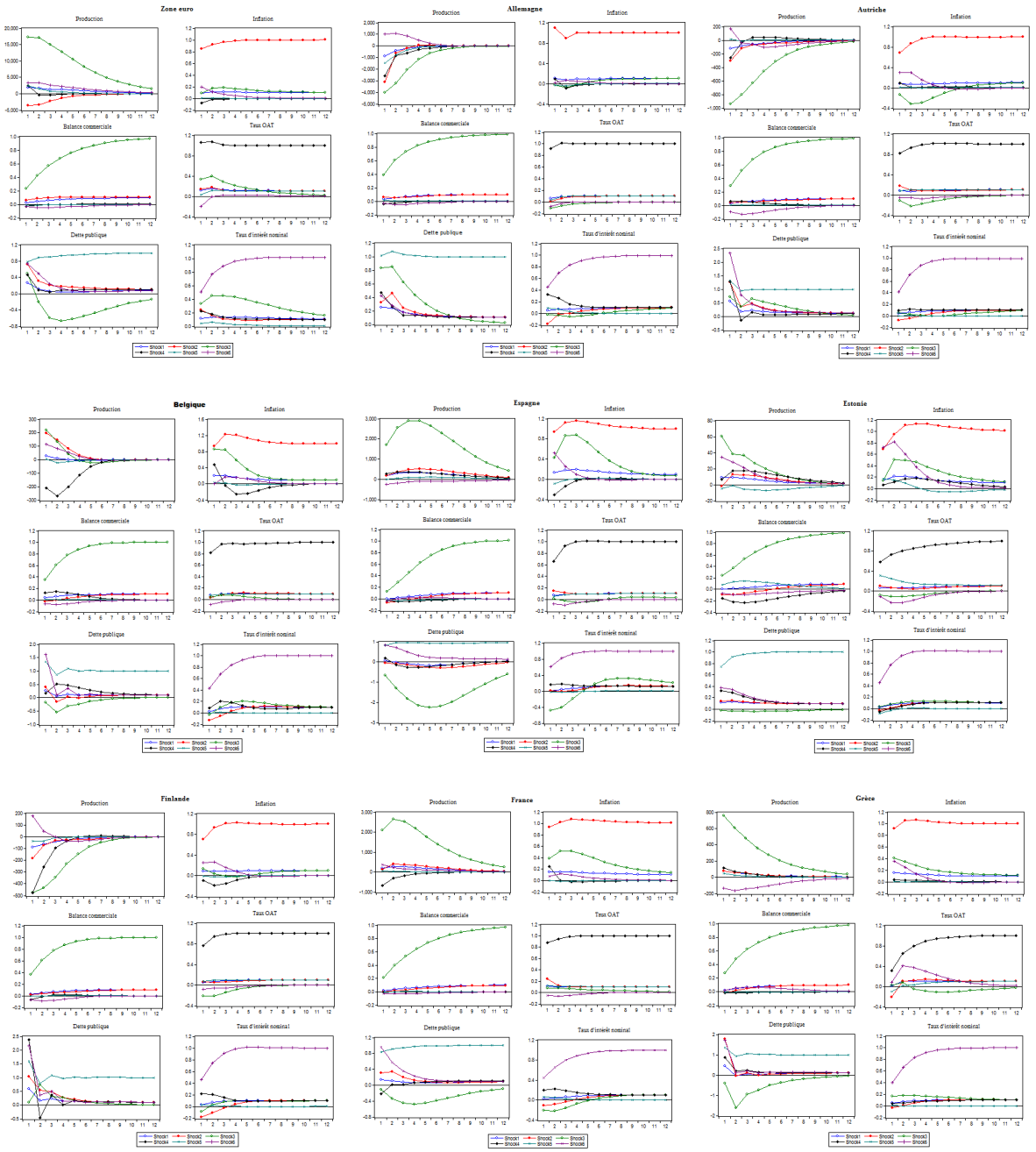
3.2 Results : Résultats : the heterogneneities making the single monetary policy inapropriates

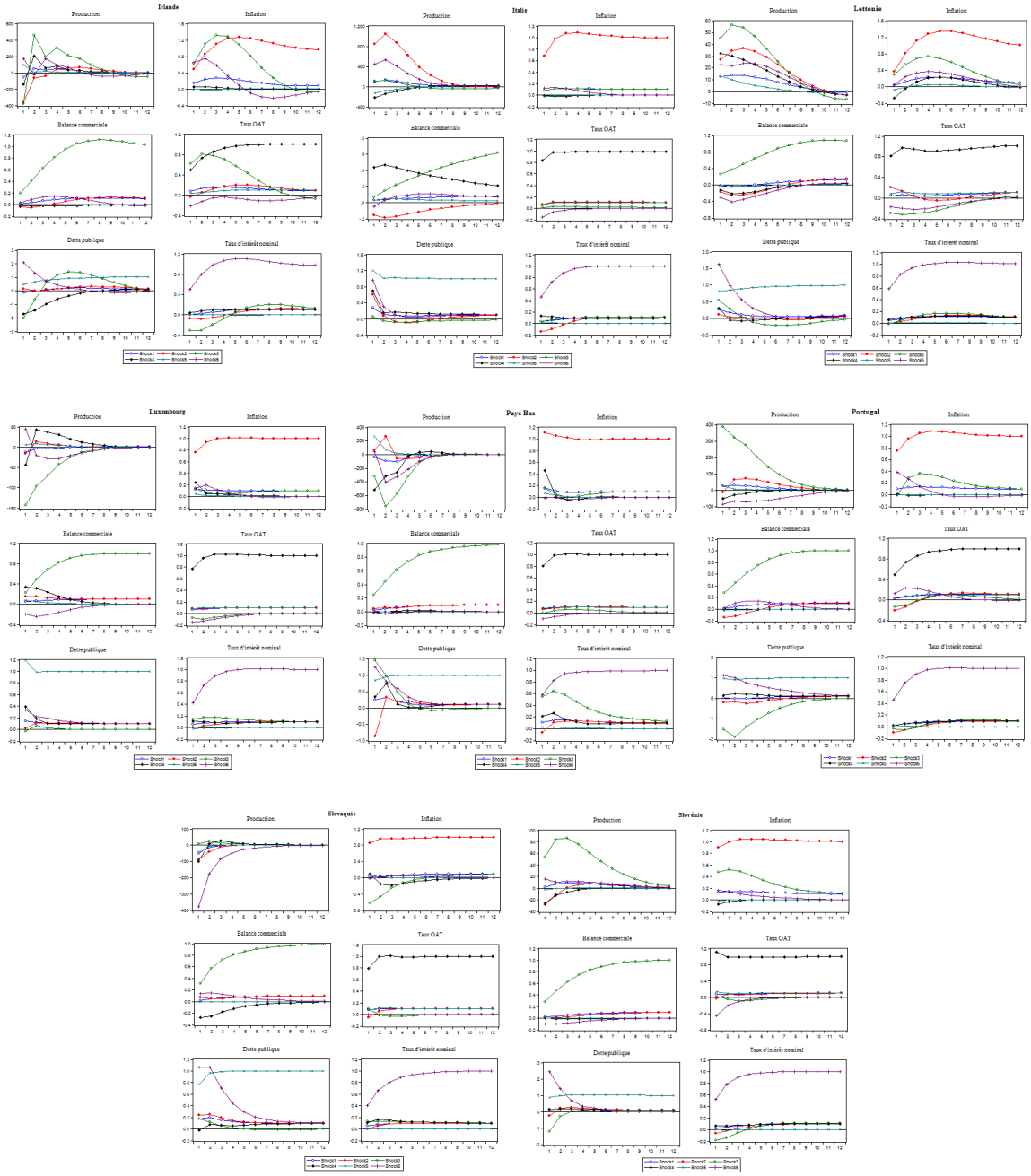
Our estimations concern the periods from 1999 :Q1 to 2015 :Q4. We use quarterly data from several databases. The GDP and public debts series from Eurostat. The trade balance come from OECD database. The long run interest rates, the inflation rates and the nominal interest rates come from ECB database. Our results are based on the accumulated responses of the variables after several shock explained before. [23] We study also the variance decompositions. The detail of the variance decompositions is presented in appendix. [24] We note neither results for Cyprus, Malta and Lithuania because of lack of data.

23. We remember that the variables are expressed in first difference.

24. We present only the variance decompositions for the most useful variables for our investigation. The rest can be available on request by the authors.

Figures 4 : Accumulated impulses responses





Firstly, we estimate a first model for the specific case of the all euro area to have a general point of view. The domestic product reacts negatively to a positive price shock. Inversely, the external and public demand shock tend to increase the variation of the production. However, the variance decomposition shows that price and public demand shocks are small to explain the variation of the production. By opposition, the variation of the nominal interest rate are more significants to explain the fluctuations of the domestic product. We could observe that the demand shock has a null impact after 12 quarters. We could explain that because of the restrictions imposed about the null effect of the demand shock at the long run. Our

restrictions could also explain that the demand shock has almost null effect on the variation of the inflation. In the same time, a supply shock has a more powerful and more persistant effect on the inflation. There is no restrictions about the impact of the public debt on the long run interest rate at the long run. However, a demand shock increases slightly only the long run interest rate. Anyway, the variance decomposition shows that the public debt variations have a limited impact on the long run interest rate. The long run interest is more impacted by a financial shock. Even if a public demand shock affects not much the inflation rate and the long run interest rate(probably because of our restrictions), this both shocks affect the public debt. Indeed, the financial and price shocks are the most important perturbations on the public debt. In a detail, the price shock is more persistent than the financial shock. Likewise, the variance decomposition of the public debt shows that the fluctuations of the inflation and the long run interest rates explain respectively more than 20% and 10% of the public debt fluctuations. We also note the interest rate channel to explain the variations of the public debt. Indeed, the nominal interest rate explains more than 5% of the public debt fluctuations. It seem that the positive impacts of the price and interest rate generates a deterrent effect to create a new public debt. Our estimations show that the ECB is not very much subjected to the fluctuations of the production. Indeed, only 2% of the nominal interest modifications is explained by the production fluctuation while we estimate the level at 12% for the inflation impact. We remember here the main mission of the ECB concerning the inflation rate control rather than the reduction of the output gap. The long run interest rate explains also more than 8% of the nominal interest rate variance. About this point, we couls assume that the ECB is concerned by the stronger increase of the long run interest rates for some countries after 2008.

Secondly, after having show the general case of the euro area, we can observe several heterogeneities between each country. Indeed, the impulse responses and the variance decompositions show that our results are significantly heterogeneous between all countries, especially for the domestic product responses. The variance of the domestic product for France, Greece, Portugal and Spain are non significantly explained by the variations of the inflation rates. While, we observe an inverse process fot Austria, Belgium, Germany and Irland. For this first group of countries, a price variations explain less than 4.50% of the production fluctuations while we find at the minimum 10% for the second group. Then, we find a likely first evidence concerning the distinction between Northern and Southern countries. In this way, the impulses responses

show that the domestic products of several Northern countries (Austria, Finland, Germany and Netherlands after 3 quarters only) react negatively to a price shock while the domestic products of several Southern and Eastern countries (France, Greece, Slovakia or Slovenia) react positively to a price shock. It seems that the countries having traditionally a monetary policy more restrictive before the begining of the euro area, react negatively to a price shock. Inversely, for the East or latin tradition countries, an increase of the domestic product is accompanied by an increase of the prices. In a similar way, we observe the distinction when we analyze the impact of the nominal interest rate on the domestic product. A monetary policy which becomes more restrictive generates a negative responses of the production for Greece, Portugal, Spain and some Eastern countries like Slovakia while the effect is positive for each period for Germany and the all euro area. Despite this heterogeneities, we could note some common characteristics for a great majority of countries. A public demand shock explains sparsely the domestic product fluctuations.[25] We could explain that because of the restriction about the null effect of the demand shock on real variables at the long run.

Thirdly, we can note several common characteristics about the inflation rate analysis. The fluctuations of the public debt have not much impact on the inflation rates fluctuations. We find a similar results for the supply shocks which not explain the inflation fluctuations. Likewise, for all countries, we retain a high degree of auto-regressivity of the inflation because the impulses responses show that the inflation rate reacts especially to his own previous values. Moreover, an external shock could generates an inflationary pressure because this shock increase the inflation responses for all countries (excepted Austria and Slovakia). With the variance decompositons, we still find the North / South distinction when we analyze the link between the external shock and the inflation rate. For several countries (Finland, Germany, Luxembourg and Netherlands), an exertnal shock has not much impacts on the inflation rate fluctuations while, for other South and East countries (Spain, Greece, Portugal, Latvia and Slovakia for instance), an external shock has a more important impacts on the inflation rate fluctuations. Then, the inflation rate of the South and East countries seems to be more sensitive to the international trade fluctuations. More precisely, a positive external shock could generates an inflationary pressure. However, we note that Italy has a Northern country comportment because an external shock explains less than 2% of the inflation rate fluctuations.

25. We note two exceptions : Latvia and Netherlands.

Fourthly, we find that the nominal interest, which is the baseline fot the real interest rates, has not much impacts on the long run interest rate for all countries excepted Greece. Indeed, the nominal interest rate fluctuations contributes to more than 20% of the long run interest rate fluctuations of Greece. That, we could explain the particular situation of Greece after the Subprimes and debt crisis because of the public funding difficulties.

Finally, the impulse responses and variance decompositions show that the public debt has a positive response to a price shock for a majority of countries. That, could be explained by the interest to borrow during a period with a high inflation rate. Indeed, with a higher inflation rate, the repayment is reduced. In an other words, more the inflation rate is high, more the countries have interest to increase the public debt because the increase of the prices will erase a part of the debt. Despite this positive responses of the public debt, we could note some heterogneities. The variance decompositions show that the inflation has a important role to explain the public debt fluctuations for some contries while we find a null effect for the others. For instance, respectively more than 36% and more than 26% of the public debt fluctuations for Greece and Netherlands are explained by this mechanism explained before. Inversely, the effect is null for Spain and Irland. In the same way, we find the heterogeneities North / South when we study the impact of the financial shock on public debt. Indeed, the fluctuations of the long run interest rate explain respectively around 20%, 50% and 20% of the public debt fluctuations for Austria, Finland and Irland. This countries seem benefit from long run interest rate fluctuations to adjust their indebtedness levels. Inversely, for several South countries like Spain, Greece, Portugal and even France, the long run interest rate variations explain not much the public debt fluctuations (less than 7% for each country).

4 Conclusion

To conclude, this paper shows the heterogenenities of euro area countries. The literature has showed that the difference of the banking and financial structures, productive specializations and functioning of the labor market could generate different economic responses following the same monetary shock. Moreover, we have showed a strong heterogeneities about the inflation and long run interest rates. This heterogeneities induce that a single monetary

policy could not be adapted for all countries. Indeed, the ECB considers the euro area like an average without national specificities.

We contribute to this literature by providing an estimation of the SVAR model over the 1999-2015 period to show two main results. Firstly, we study the impulses responses and variance decompositions of the countries following several shocks. Our results show the different economic reactions, sometimes inverse reactions according to the domestic supply shock, public demand shock, external shock, financial and price shock. Secondly, we have measure the impact of the monetary policy shock. Our results show also, an heterogeneities of the reactions functions.

We have find some similar economic reactions according to group of countries. A price shock affects more stronger Northern countries than Southern countries. The domestic products of the North react negatively to a shock price while the South reacts positively. Similarly, a monetary tightening represented by an increase of the nominal interest rate, induces a negative responses for the South and a positive responses for the some countries of the North. We again find the North / South distinction when we study the impact of the external shock. An external shock has no impact on the inflation rate variance of the North while, the South inflation rates are more explained by an external shock. In the same way, we find some heterogeneities about the reaction function of the countries following a financial shock on the public debt variations. Indeed, the North seem adapted their public debt variation according to the long run interest rate variations. It is not the case for the South.

Then, we find overall a distinction North / South. Given the reaction functions of the East countries, we consider the East countries with the South group. Despite this results, we could note that the position of some countries is ambiguous. For instance, Italy has a North comportment if we consider the inflation reaction after the shocks. We find a similar case for France. In the second section we have shown that France was clearly in the North group but, the impulses responses and variance decomposition show an economic reactions like the South countries.

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5 Appendix

5.1 Stationarity verifications

Table 1 : Stationarity test.

Euro area :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-4.499909	-2.905519	-4.485106	-2.905519	0.297999	0.463000
	trend and intercept	-4.678554	-4.681965	-3.478305	-3.478305	0.058813	0.146000
	none	-3.950547	-1.945745	-3.886995	-1.945745		
$\Delta infl$	intercept	-5.899408	-2.908420	-5.854287	-2.906210	0.102828	0.463000
	trend and intercept	-5.963812	-3.482763	-5.884894	-3.479367	0.028898	0.146000
	none	-0.894817	-5.926082	-5.896134	-1.945823		
Δext	intercept	-2.874501	-2.905519	-3.048509	-2.905519	0.382729	0.463000
	trend and intercept	-3.091607	-3.478305	-3.309949	-3.478305	0.085959	0.146000
	none	-2.721894	-1.945745	-2.900831	-1.945745		
ΔOAT	intercept	-8.091184	-2.905519	-8.091007	-2.905519	0.223976	0.463000
	trend and intercept	-8.238661	-3.478305	-8.238661	-3.478305	0.048922	0.146000
	none	-8.084136	-1.945745	-8.084117	-1.945745		
$\Delta debt$	intercept	-2.339054	-2.908420	-5.272901	-2.905519	0.271779	0.463000
	trend and intercept	-2.311467	-3.482763	-5.378695	-3.478305	0.129051	0.146000
	none	-2.165204	-1.946072	-5.053606	-1.945745		
Δr	intercept	-4.360347	-2.905519	-4.432384	-2.905519	0.085745	0.463000
	trend and intercept	-4.359790	-3.478305	-4.435196	-3.478305	0.042883	0.146000
	none	-4.343433	-1.945745	-4.412249	-1.945745		

Austria :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-6.300830	-2.905519	-6.129823	-2.905519	0.121695	0.463000
	trend and intercept	-6.247479	-3.478305	-6.389764	-3.478305	0.052508	0.146000
	none	-5.256011	-1.945745	-5.444271	-1.945745		
$\Delta infl$	intercept	-5.088468	-2.905519	-5.114468	-2.905519	0.080679	0.463000
	trend and intercept	-5.125848	-3.478305	-5.179913	-3.478305	0.030506	0.146000
	none	-5.126728	-1.945745	-5.152446	-1.945745		
Δext	intercept	-2.088879	-2.908420	-3.466799	-2.905519	0.210271	0.463000
	trend and intercept	-4.889445	-3.482763	-3.438289	-3.478305	0.159037	0.146000
	none	-1.944309	-1.946072	-3.275817	-1.945745		
ΔOAT	intercept	-5.654200	-2.906210	-6.223933	-2.905519	0.328813	0.463000
	trend and intercept	-5.893338	-3.479367	-6.349967	-3.478305	0.072242	0.146000
	none	-4.512126	-1.945903	-6.250177	-1.945745		
$\Delta debt$	intercept	-3.762423	-2.907660	-17.55687	-2.905519	0.232004	0.463000
	trend and intercept	-3.843100	-3.842595	-25.52882	-3.478305	0.188004	0.146000
	none	-3.637068	-1.945987	-10.82783	-1.945745		

Belgium :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-3.670355	-2.905519	-3.556321	-2.905519	0.154277	0.463000
	trend and intercept	-3.495202	-3.478305	-3.362893	-3.478305	0.059520	0.146000
	none	-2.781182	-1.945745	-2.623657	-1.945745		
$\Delta infl$	intercept	-6.899426	-2.907660	-5.400535	-2.905519	0.056225	0.463000
	trend and intercept	-6.946320	-3.481595	-5.377989	-3.478305	0.024852	0.146000
	none	-6.949904	-1.945987	-5.440610	-1.945745		
Δext	intercept	-1.821153	-2.911730	-3.763079	-2.905519	0.101977	0.463000
	trend and intercept	-1.737894	-3.487845	-3.755867	-3.478305	0.100116	0.146000
	none	-1.838831	-1.946447	-3.775022	-1.945745		
ΔOAT	intercept	-6.033091	-2.905519	-6.033091	-2.905519	0.299403	0.463000
	trend and intercept	-6.176529	-3.478305	-6.176529	-3.478305	0.062330	0.146000
	none	-5.955627	-1.945745	-5.941410	-1.945745		
$\Delta debt$	intercept	-2.682029	-2.908420	-1038433	-2.905519	0.471864	0.463000
	trend and intercept	-3.049970	-3.482763	-11.63757	-3.478305	0.205990	0.146000
	none	-2.792125	-1.946072	-10.32860	-1.945745		

Estonia :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-2.184021	-2.905519	-2.110855	-2.905519	0.212482	0.463000
	trend and intercept	-1.939503	-3.478305	-1.820820	-3.478305	0.150007	0.146000
	none	-1.698999	-1.945745	-1.505796	-1.945745		
$\Delta infl$	intercept	-6.648702	-2.907660	-4.830810	-2.905519	0.042848	0.463000
	trend and intercept	-6.623340	-3.481595	-4.807247	-3.478305	0.036127	0.146000
	none	-6.648150	-1.945987	-4.866971	-1.945745		
Δext	intercept	-2.986826	-2.905519	-3.119408	-2.905519	0.096145	0.463000
	trend and intercept	-3.031605	-3.478305	-3.160086	-3.478305	0.078785	0.146000
	none	-3.008545	-1.945745	-3.132007	-1.945745		
ΔOAT	intercept	-4.349796	-2.905519	-4.206108	-2.905519	0.395859	0.463000
	trend and intercept	-4.480702	-3.478305	-4.318473	-3.478305	0.146133	0.146000
$\Delta debt$	intercept	-5.421516	-2.905519	-5.397412	-2.905519	0.414154	0.463000
	trend and intercept	-5.780540	-3.478305	-5.760852	-3.478305	0.042013	0.146000
	none	-5.410747	-1.945745	-5.385287	-1.945745		

Finland :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-5.893506	-2.905519	-6.117598	-2.905519	0.199017	0.463000
	trend and intercept	-5.929737	-3.478305	-6.139407	-3.478305	0.056135	0.146000
	none	-5.551875	-1.945745	-5.816042	-1.945745		
$\Delta infl$	intercept	-5.889692	-2.907660	-4.971014	-2.905519	0.0666067	0.463000
	trend and intercept	-5.820230	-3.481595	-4.967254	-3.478305	0.039518	0.146000
	none	-5.934394	-1.945987	-5.010421	-1.945745		
Δext	intercept	-3.868832	-2.905519	-3.860931	-2.905519	0.167388	0.463000
	trend and intercept	-3.969897	-3.478305	-3.922335	-3.478305	0.133169	0.146000
	none	-3.370832	-1.946072	-3.321658	-1.945745		
ΔOAT	intercept	-5.187425	-2.906210	-6.007369	-2.905519	0.300733	0.463000
	trend and intercept	-5.318986	-3.479367	-6.037447	-3.478305	0.072015	0.146000
	none	-5.999470	-1.945745	-6.012653	-1.945745		
$\Delta debt$	intercept	-9.618132	-2.905519	-9.522775	-2.905519	0.862889	0.463000
	trend and intercept	-11.3716	-3.478305	-11.24598	-3.478305	0.049568	0.146000
	none	-9.568268	-1.945745	-9.495104	-1.945745		

France :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-4.571220	-2.905519	-4.619882	-2.905519	0.305274	0.463000
	trend and intercept	-4.728596	-3.478305	-4.919956	-3.478305	0.089605	0.146000
	none	-3.831292	-1.945745	-3.774987	-1.945745		
$\Delta infl$	intercept	-6.578788	-2.907660	-6.082335	-2.905519	0.133635	0.463000
	trend and intercept	-4.536508	-3.486509	-6.142052	-3.478305	0.036063	0.146000
	none	-6.627588	-1.945987	-6.128660	-1.945745		
Δext	intercept	-2.722636	-2.905519	-2.828141	-2.905519	0.526065	0.463000
	trend and intercept	-3.359173	-3.478305	-3.559613	-3.478305	0.113349	0.146000
	none	-2.680193	-1.945745	-2.61885	-1.945745		
ΔOAT	intercept	-5.596539	-2.906210	-6.511199	-2.905519	0.348200	0.463000
	ctrend and intercept	-5.819895	-3.479367	-6.656987	-3.478305	0.081416	0.146000
	none	-6.498278	-1.945745	-6.439004	-1.945745		
$\Delta debt$	intercept	-2.921734	-2.908420	-3.691375	-2.905519	0.395943	0.463000
	trend and intercept	-3.037471	-3.482763	-6.067456	-3.478305	0.103822	0.146000
	none	-2.095349	-1.946072	-5.102717	-1.945745		

Germany :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-5.143362	-2.905519	-5.132800	-2.905519	0.041856	0.463000
	trend and intercept	-5.100667	-3.478305	-5.089664	-3.478305	0.041148	0.146000
	none	-4.800818	-1.945745	-4.763162	-1.945745		
$\Delta infl$	intercept	-4.929680	-2.907660	-7.526462	-2.905519	0.120698	0.463000
	trend and intercept	-4.973996	-3.481595	-7.616770	-3.478305	0.032885	0.146000
	none	-4.968292	-1.945987	-7.580536	-1.945745		
Δext	intercept	-3.138073	-2.908420	-3.910539	-2.905519	0.117596	0.463000
	trend and intercept	-3.273460	-3.482763	-3.893557	-3.478305	0.106519	0.146000
	none	-2.309441	-1.946072	-3.337668	-1.945745		
ΔOAT	intercept	-6.017873	-2.906210	-6.715082	-2.905519	0.296420	0.463000
	trend and intercept	-6.127966	-3.479367	-6.950122	-3.478305	0.066582	0.146000
	none	-8.084136	-5.866084	-6.475637	-1.945745		
$\Delta debt$	intercept	-7.007188	-2.905519	-7.094360	-2.905519	0.166313	0.463000
	trend and intercept	-6.995588	-3.478305	-7.080825	-3.478305	0.146326	0.146000
	none	-6.943992	-1.945745	-7.040068	-1.945745		

Greece :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-1.911695	-2.906923	-6.45111	-2.905519	0.484556	0.463000
	trend and intercept	-1.991949	-3.480463	-7.221860	-3.478305	0.138291	0.146000
	none	-1.923457	-1.945903	-6.475030	-1.945745		
$\Delta infl$	intercept	-5.870853	-2.907660	-6.325255	-2.905519	0.073133	0.463000
	trend and intercept	-5.986462	-3.481595	-6.357316	-3.478305	0.048500	0.146000
	none	-5.771242	-1.945987	-6.331846	-1.945745		
Δext	intercept	-2.993167	-2.905519	-3.065017	-2.905519	0.538765	0.463000
	trend and intercept	-3.797753	-3.478305	-4.017766	-3.478305	0.061397	0.146000
	none	-2.757140	-1.945745	-2.819796	-1.945745		
ΔOAT	intercept	-4.545640	-2.905519	-4.396763	-2.905519	0.069679	0.463000
	trend and intercept	-4.508704	-3.478305	-4.357670	-3.478305	0.070312	0.146000
	none	-4.582501	-1.945745	-4.435954	-1.945745		
$\Delta debt$	intercept	-9.488074	-2.905519	-9.402697	-2.905519	0.294976	0.463000
	trend and intercept	-9.626839	-3.478305	-9.545679	-3.478305	0.105184	0.146000
	none	-9.381328	-1.945745	-9.293897	-1.945745		

Irland

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-1.217648	-2.908420	-10.66458	-2.905519	0.299274	0.463000
	trend and intercept	-0.773825	-3.480463	-10.66790	-3.478305	0.185141	0.146000
	none	-0.826806	-1.946072	-9.598233	-1.945745		
$\Delta infl$	intercept	-4.217500	-2.906210	-3.928202	-2.905519	0.044311	0.463000
	trend and intercept	-4.200989	-3.479367	-3.921480	-3.478305	0.037438	0.146000
	none	-4.249843	-1.945823	-3.956431	-1.945745		
Δext	intercept	-2.903135	-2.905519	-2.978277	-2.905519	0.511345	0.463000
	trend and intercept	-3.115448	-3.478305	-3.273561	-3.478305	0.066379	0.146000
	none	-2.879250	-1.945745	-2.961697	-1.945745		
ΔOAT	intercept	-4.269996	-2.905519	-4.348838	-2.905519	0.175335	0.463000
	trend and intercept	-4.295220	-3.478305	-4.388840	-3.478305	0.074539	0.146000
	none	-4.279393	-1.945745	-4.360202	-1.945745		
$\Delta debt$	intercept	-2.447609	-2.906210	-5.327908	-2.905519	0.253817	0.463000
	trend and intercept	-2.463166	-3.479367	-5.511991	-3.478305	0.143435	0.146000
	none	-2.417576	-1.945823	-5.236292	-1.945745		

Italy

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-3.534201	-2.905519	-3.661803	-2.905519	0.372211	0.463000
	trend and intercept	-3.596560	-3.478305	-3.767266	-3.478305	0.071258	0.146000
	none	-3.553629	-1.945745	-3.676442	-1.945745		
$\Delta infl$	intercept	-3.489674	-2.908420	-4.773221	-2.905519	0.081701	0.463000
	trend and intercept	-6.094065	-3.481595	-4.815565	-3.478305	0.030578	0.146000
	none	-3.483043	-1.946072	-4.806661	-1.945745		
Δext	intercept	-1.203530	-2.905519	-1.187541	-2.905519	0.463527	0.463000
	ctrend and intercept	-2.079798	-3.478305	-2.086418	-3.478305	0.145231	0.146000
	none	-0.930700	-1.945745	-0.901131	-1.945745		
ΔOAT	intercept	-6.547309	-2.905519	-6.596482	-2.905519	0.256797	0.463000
	ctrend and intercept	-6.737022	-3.478305	-6.785853	-3.478305	0.083321	0.146000
	none	-6.539737	-1.945745	-6.608190	-1.945745		
$\Delta debt$	intercept	-3.188787	-2.907660	-6.873155	-2.905519	0.992396	0.463000
	trend and intercept	-3.556232	-3.483970	-8.152510	-3.478305	0.139008	0.146000
	none	-2.861431	-1.945987	-6.779227	-1.945745		

Latvia

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-1.187393	-2.905519	-0.945842	-2.905519	0.180213	0.463000
	ctrend and intercept	-0.944572	-3.478305	-0.642260	-3.478305	0.150800	0.146000
	none	-0.762635	-1.945745	-0.762635	-1.945745		
$\Delta infl$	intercept	-4.796623	-2.909206	-3.727356	-2.905519	0.068174	0.463000
	trend and intercept	-4.874905	-3.483970	-3.722863	-3.478305	0.038515	0.146000
	none	-4.838803	-1.946161	-3.749624	-1.945745		
Δext	intercept	-2.929694	-2.905519	-3.038701	-2.905519	0.145696	0.463000
	trend and intercept	-2.992285	-3.478305	-3.101060	-3.478305	0.078927	0.146000
	none	-2.929258	-1.945745	-3.031270	-1.945745		
ΔOAT	intercept	-4.523016	-2.908420	-5.231895	-2.905519	0.100675	0.463000
	trend and intercept	-4.524463	-3.482763	-5.199906	-3.478305	0.089282	0.146000
	none	-5.072361	-1.945745	-5.201565	-1.945745		
$\Delta debt$	intercept	-1.977117	-2.906923	-6.255194	-2.905519	0.100629	0.463000
	trend and intercept	-1.938556	-3.480463	-6.226875	-3.478305	0.088744	0.146000
	none	-1.955011	-1.945903	-6.165503	-1.945745		

Luxemburg :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-4.814579	-2.905519	-4.814579	-2.905519	0.302229	0.463000
	trend and intercept	-4.909007	-3.478305	-4.909007	-3.478305	0.155476	0.146000
	none	-3.966382	-1.945745	-3.770863	-1.945745		
$\Delta infl$	intercept	-6.568277	-2.907660	-6.387189	-2.905519	0.103812	0.463000
	trend and intercept	-6.568269	-3.481595	-6.456962	-3.478305	0.033607	0.146000
	none	-6.611990	-1.945987	-6.428087	-1.945745		
Δext	intercept	-3.139297	-2.905519	-3.389053	-2.905519	0.121994	0.463000
	ctrend and intercept	-3.266008	-3.478305	-3.493636	-3.478305	0.070532	0.146000
	none	-2.836786	-1.945745	-3.052526	-1.945745		
ΔOAT	intercept	-6.060448	-2.905519	-6.056415	-2.905519	0.229267	0.463000
	trend and intercept	-6.127136	-3.478305	-6.131852	-3.478305	0.073845	0.146000
	none	-5.967887	-1.945745	-5.909773	-1.945745		
$\Delta debt$	intercept	-9.386720	-2.905519	-9.409460	-2.905519	0.193322	0.463000
	trend and intercept	-9.352251	-3.478305	-9.412136	-3.478305	0.143366	0.146000
	none	-9.204498	-1.945745	-9.204498	-1.945745		

Netherlands

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-5.015763	-2.905519	-4.952293	-2.905519	0.212892	0.463000
	trend and intercept	-5.028410	-3.478305	-4.974020	-3.478305	0.064509	0.146000
	none	-4.727818	-1.945745	-4.303791	-1.945745		
$\Delta infl$	intercept	-8.474894	-2.905519	-8.468281	-2.905519	0.067205	0.463000
	trend and intercept	-8.434508	-3.478305	-8.433169	-3.478305	0.047207	0.146000
	none	-8.523269	-1.945745	-8.514770	-1.945745		
Δext	intercept	-3.642781	-2.905519	-3.951702	-2.905519	0.078931	0.463000
	trend and intercept	-3.684556	-3.478305	-4.004657	-3.478305	0.072591	0.146000
	none	-3.162360	-1.945745	-3.465802	-1.945745		
ΔOAT	intercept	-5.509847	-2.906210	-6.066775	-2.905519	0.327354	0.463000
	trend and intercept	-5.703456	-3.479367	-6.183245	-3.478305	0.086190	0.146000
	none	-6.110237	-1.945745	-5.996794	-1.945745		
$\Delta debt$	intercept	-6.106970	-2.905519	-6.207502	-2.905519	0.503510	0.463000
	trend and intercept	-6.631784	-3.478305	-6.654634	-3.478305	0.128934	0.146000
	none	-6.153687	-1.945745	-6.251415	-1.945745		

Portugal

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-4.703437	-2.905519	-5.016840	-2.905519	0.196193	0.463000
	trend and intercept	-4.100935	-3.478305	-4.782200	-3.478305	0.113546	0.146000
	none	-4.573668	-1.945745	-4.867243	-1.945745		
$\Delta infl$	intercept	-5.388726	-2.905519	-5.396321	-2.905519	0.034919	0.463000
	trend and intercept	-353146	-3.478305	-5.355888	-3.478305	0.032253	0.146000
	none	-5.421057	-1.945745	-5.428052	-1.945745		
Δext	intercept	-3.642781	-2.905519	-3.359870	-2.905519	0.179318	0.463000
	trend and intercept	-3.078523	-3.478305	-342391	-3.478305	0.072660	0.146000
	aucun	-2.804215	-1.945745	-3.031761	-1.945745		
$\Delta none$	intercept	-4.049351	-2.905519	-4.078800	-2.905519	0.120998	0.463000
	trend and intercept	-4.042165	-3.478305	-4.081110	-3.478305	0.074948	0.146000
	none	-4.075546	-1.945745	-4.105741	-1.945745		
$\Delta debt$	intercept	-5.849695	-2.905519	-6.218005	-2.905519	0.407621	0.463000
	trend and intercept	-6.222837	-3.478305	-6.647478	-3.478305	0.145991	0.146000
	none	-1.826938	-1.945745	-5.778627	-1.945745		

Slovakia

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-2.621768	-2.908420	-8.677385	-2.905519	0.121082	0.463000
	ctrend and intercept	-2.509606	-3.482763	-8.498821	-3.478305	0.096043	0.146000
	none	-1.146025	-1.946072	-9.438416	-1.945745		
$\Delta infl$	intercept	-7.025590	-2.905519	-7.015475	-2.905519	0.042832	0.463000
	trend and intercept	-6.978338	-3.478305	-6.968172	-3.478305	0.036185	0.146000
	none	-7.050301	-1.945745	-7.075630	-1.945745		
Δext	intercept	-2.333061	-2.911730	-4.001277	-2.905519	0.049826	0.463000
	trend and intercept	-2.206100	-3.487845	-3.963955	-3.478305	0.050481	0.146000
	none	-1.946048	-1.946447	-4.042566	-1.945745		
ΔOAT	intercept	-6.429398	-2.905519	-6.644912	-2.905519	0.435719	0.463000
	trend and intercept	-6.864692	-3.478305	-7.022370	-3.478305	0.188763	0.146000
	none	-5.874152	-1.945745	-6.134032	-1.945745		
$\Delta debt$	intercept	-6.505184	-2.905519	-6.607776	-2.905519	0.457601	0.463000
	trend and intercept	-6.920159	-3.478305	-6.957874	-3.478305	0.132984	0.146000
	none	-6.553046	-1.945745	-6.653087	-1.945745		

Slovenia

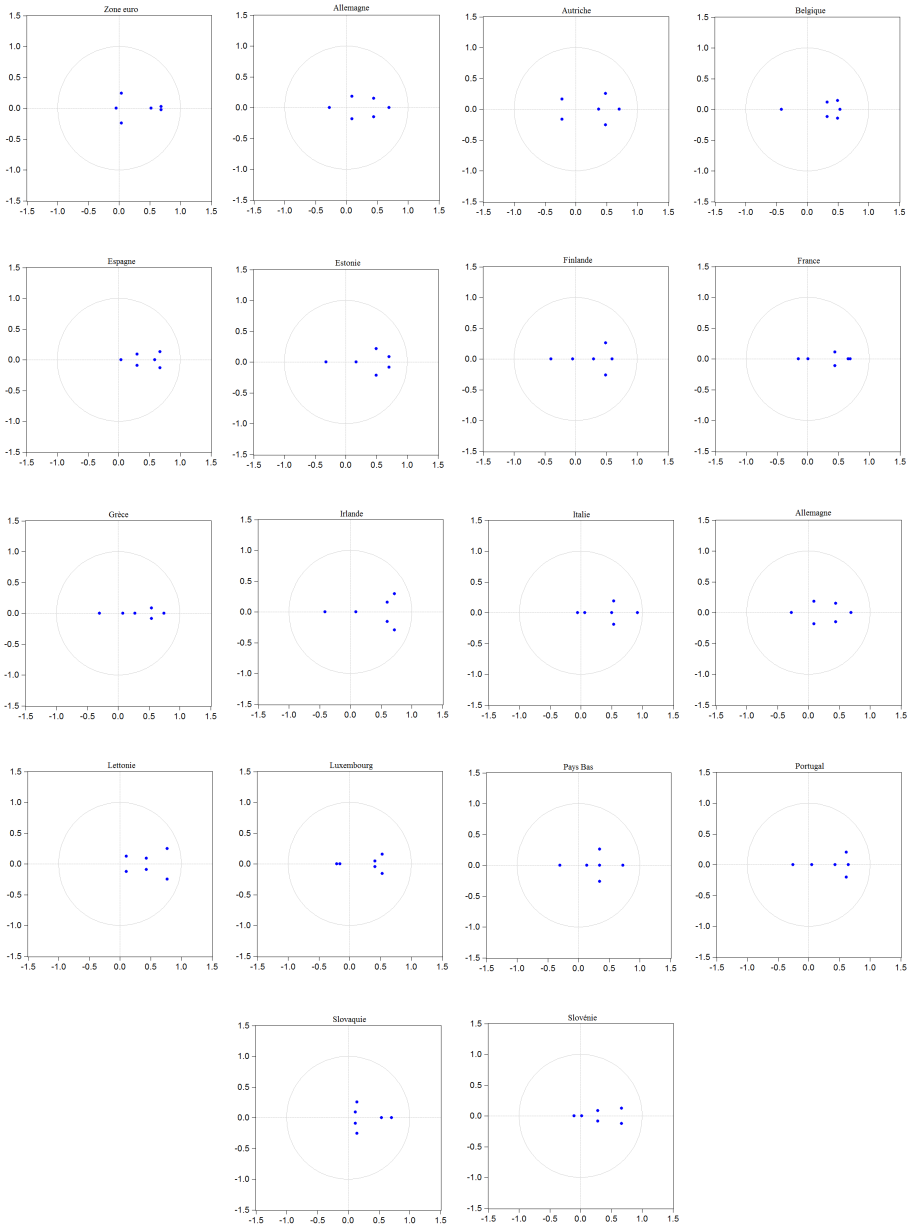
		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-1.681563	-2.905519	-1.572493	-2.905519	0.144851	0.463000
	trend and intercept	-3.362201	-3.478305	-1.157310	-3.478305	0.141505	0.146000
	none	-1.216212	-1.945745	-0.988563	-1.945745		
$\Delta infl$	intercept	-5.755939	-2.970660	-6.487048	-2.905519	0.046117	0.463000
	trend and intercept	-5.648761	-3.481595	-6.468320	-3.478305	0.042050	0.146000
	none	-5.495143	-1.945987	-6.417326	-1.945745		
Δext	intercept	-3.942915	-2.905519	-4.132837	-2.905519	0.272683	0.463000
	trend and intercept	-3.919421	-3.478305	-4.139435	-3.478305	0.090920	0.146000
	none	-3.171525	-1.945745	-3.335005	-1.945745		
ΔOAT	intercept	-8.608230	-2.905519	-8.610348	-2.905519	0.387529	0.463000
	ctrend and intercept	-8.831059	-3.478305	-8.831059	-3.478305	0.124433	0.146000
	none	-8.044742	-1.945745	-8.059310	-1.945745		
$\Delta debt$	intercept	-3.743337	-2.906210	-7.004780	-2.905519	0.645312	0.463000
	trend and intercept	-7.870396	-3.478305	-7.869512	-3.478305	0.167582	0.146000
	none	-3.316135	-1.945823	-6.544875	-1.945745		

Spain :

		ADF		PP		KPSS	
Variables	models	statistic	critical value	statistic	critical value	statistic	critical value
Δy	intercept	-1.752157	-2.905519	-2.083434	-2.905519	0.458675	0.463000
	trend and intercept	-1.638197	-3.478305	-2.119354	-3.478305	0.108126	0.146000
	none	-1.565640	-1.945745	-1.829727	-1.945745		
$\Delta infl$	intercept	-6.199838	-2.907660	-5.857737	-2.905519	0.098955	0.463000
	trend and intercept	-6.289128	-3.481595	-5.848619	-3.478305	0.031447	0.146000
	none	-6.213146	-1.945987	-5.895919	-1.945745		
Δext	intercept	-2.726767	-2.905519	-2.894346	-2.905519	0.331845	0.463000
	trend and intercept	-2.692067	-3.478305	-2.904510	-3.478305	0.110605	0.146000
	none	-2.653373	-1.945745	-2.823518	-1.945745		
ΔOAT	intercept	-5.942910	-2.905519	-5.905882	-2.905519	0.246221	0.463000
	trend and intercept	-6.072437	-3.478305	-6.014483	-3.478305	0.094172	0.146000
	none	-5.937629	-1.945745	-5.912566	-1.945745		
$\Delta debt$	intercept	-3.083300	-2.905519	-2.810463	-2.905519	0.646252	0.463000
	trend and intercept	-3.735986	-3.478305	-3.608645	-3.478305	0.118548	0.146000
	none	-2.928112	-1.945745	-2.635549	-1.945745		

5.2 Stability of the SVAR models

Figures 5 : Graph of the inverse roots of the auto-regressive characteristic polynomial. The inverse root inside the unit disq indicates the stationarity of the tested model



5.3 Variance decompositions

Tables 3 : Variance decompositions

Variance decomposition of the domestic product following to respectively, a domestic price shock, a public demand shock and a monetary policy shock.

periods	EUR	AUS	BEL	EST	FIN	FRA	GER	GRE	IRL	ITA	LAT	LUX	NT	POR	SLOVA	SLOVE	SPA
$\Delta infl$																	
1	1.05	8.35	26.72	0.09	6.53	0.32	26.39	0.89	39.29	71.15	15.77	0.99	0.95	0.09	4.51	13.48	0.86
2	1.04	9.94	25.56	3.78	7.71	1.68	33.71	0.92	16.97	71.11	16.27	2.88	4.63	3.38	4.24	13.45	1.65
3	1.04	9.88	25.43	3.74	7.47	1.68	32.78	0.90	15.48	70.51	16.24	2.90	13.42	3.35	4.47	15.32	1.89
4	1.02	9.49	24.84	3.65	7.28	1.68	32.17	0.93	15.70	70.52	16.05	2.87	11.95	3.28	4.47	15.34	1.93
8	1.01	9.37	24.39	3.78	7.13	1.71	31.84	0.93	15.45	71.34	16.56	2.84	11.39	3.48	4.46	13.87	1.97
12	1.01	9.36	24.38	3.81	7.13	1.72	31.83	0.93	15.45	71.36	16.96	2.84	11.39	3.49	4.46	13.69	2.01
Deltadebt																	
1	1.70	0.01	0.01	0.54	0.29	0.12	5.81	0.34	2.70	1.67	43.94	0.15	15.36	0.34	1.59	0.10	0.00
2	1.88	0.06	0.40	0.75	0.25	0.13	5.45	0.44	1.39	1.80	44.67	0.11	10.68	0.53	2.02	0.14	0.04
3	2.00	0.09	0.38	1.06	0.35	0.14	5.64	0.42	1.29	1.80	44.47	0.13	9.50	0.52	1.98	0.14	0.08
4	1.96	0.09	0.37	1.05	0.34	0.14	5.60	0.42	1.29	1.70	44.89	0.13	8.48	0.51	1.97	0.14	0.09
8	1.91	0.08	0.38	1.07	0.34	0.13	5.56	0.41	1.27	1.57	46.10	0.14	8.02	0.49	1.96	0.12	0.09
12	1.89	0.08	0.38	1.11	0.34	0.12	5.56	0.41	1.27	1.57	45.87	0.14	8.02	0.49	1.96	0.12	0.09
Deltar																	
1	3.25	2.47	9.11	23.21	5.85	2.53	2.93	2.93	8.61	20.20	10.90	7.81	0.43	4.57	86.66	5.47	2.23
2	3.16	5.52	8.87	20.30	7.87	2.63	2.27	2.97	5.14	19.77	10.48	15.45	21.05	4.49	82.57	4.70	1.92
3	3.29	5.40	8.36	20.95	7.70	2.68	2.30	2.98	7.39	20.28	10.51	15.27	18.81	4.43	82.60	4.57	1.93
4	3.29	5.39	8.37	21.36	7.72	2.64	2.51	2.97	7.69	20.50	10.32	17.98	17.93	4.30	82.64	4.45	1.94
8	3.25	5.30	8.26	24.29	7.58	2.45	2.65	3.13	7.92	20.12	10.28	14.96	18.06	4.29	82.65	4.13	1.7 1
12	3.25	5.32	8.26	21.23	7.59	2.42	2.65	3.17	7.92	20.16	10.50	14.99	18.06	4.37	82.65	4.13	1.61

Variance decomposition of the inflation following to respectively, a domestic supply shock, an external shock, a public demand shock and a monetary policy shock.

periods	EUR	AUS	BEL	EST	FIN	FRA	GER	GRE	IRL	ITA	LAT	LUX	NT	POR	SLOVA	SLOVE	SPA
Δy																	
1	1.11	1.05	2.23	1.87	1.20	1.94	0.88	1.96	2.13	1.19	0.35	1.92	1.67	1.28	0.10	1.52	1.16
2	1.11	0.93	1.89	1.95	1.07	1.80	0.92	1.90	2.06	1.16	1.68	1.73	1.62	1.21	0.09	1.52	1.12
3	1.10	0.89	1.86	1.84	1.04	1.79	0.94	1.89	1.93	1.15	1.90	1.70	1.63	1.17	0.11	1.52	1.09
4	1.10	0.87	1.85	1.79	1.02	1.79	0.93	1.89	1.84	1.15	1.91	1.70	1.62	1.16	0.13	1.51	1.09
8	1.10	0.85	1.83	1.80	1.01	1.78	0.93	1.89	1.75	1.15	1.94	1.70	1.62	1.17	0.14	1.51	1.1
12	1.10	0.85	1.83	1.80	1.01	1.78	0.93	1.89	1.73	1.15	1.99	1.70	1.62	1.17	0.14	1.51	1.1
Deltaext																	
1	1.11	3.45	39.39	1.89	2.71	13.55	0.09	14.11	36.09	1.34	28.51	3.02	1.52	0.01	33.97	21.29	12.50
2	1.86	8.05	32.91	11.66	3.67	13.96	0.21	13.99	42.27	1.28	22.45	3.97	1.83	10.28	33.06	21.15	20.83
3	1.86	7.83	34.22	11.02	3.95	13.92	0.48	14.15	41.41	1.26	20.78	3.92	2.00	10.48	35.30	21.18	20.41
4	1.88	8.79	35.52	10.65	3.88	14.13	0.63	14.31	39.41	1.26	20.03	3.90	2.02	10.40	36.01	21.54	21.35
8	1.96	10.99	35.84	11.38	4.20	15.12	0.73	14.43	44.89	1.26	22.82	3.95	2.12	11.28	36.34	22.56	24.79
12	1.97	11.02	35.84	11.47	4.22	15.28	0.73	14.44	45.78	1.26	24.13	3.95	2.12	11.37	36.36	22.66	24.93
Deltadebt																	
1	0.00	0.002	0.07	2.90	0.04	0.00	0.08	0.01	0.02	0.04	1.86	0.31	0.40	0.00	0.46	0.04	0.49
2	0.00	0.003	0.08	2.46	0.04	0.01	0.08	0.01	0.01	0.02	1.50	0.41	0.46	0.01	0.66	0.7	0.63
3	0.00	0.009	0.13	2.53	0.04	0.01	0.12	0.01	0.01	0.02	1.47	0.41	0.50	0.01	0.67	0.07	0.69
4	0.00	0.01	0.13	2.85	0.06	0.01	0.13	0.01	0.01	0.02	1.43	0.41	0.50	0.01	0.66	0.07	0.68
8	0.00	0.01	0.13	2.94	0.06	0.01	0.13	0.01	0.02	0.03	1.38	0.41	0.50	0.01	0.66	0.07	0.65
12	0.00	0.01	0.13	2.95	0.06	0.01	0.13	0.01	0.02	0.03	1.32	0.41	0.50	0.01	0.66	0.07	0.65
Deltar																	
1	4.58	15.43	0.00	49.12	11.04	0.56	0.03	11.16	40.21	2.88	0.98	2.76	0.00	20.95	0.01	2.50	18.63
2	5.20	13.68	1.29	41.44	9.86	0.65	0.19	11.88	30.13	2.49	6.34	2.90	0.02	19.05	0.10	2.50	19.24
3	5.36	16.10	1.23	42.50	11.13	0.70	0.23	12.78	29.39	2.58	6.17	3.69	0.14	20.07	0.13	2.65	20.16
4	5.45	17.03	1.26	44.28	12.00	0.76	0.24	13.18	31.84	2.80	5.95	4.11	0.14	20.77	0.13	2.71	20.10
8	5.50	17.07	1.41	45.03	12.33	0.81	0.26	13.28	30.81	3.03	5.94	4.31	0.16	20.83	0.15	2.73	19.19
12	5.50	17.07	1.41	44.92	12.34	0.81	0.26	13.28	30.27	3.03	7.14	4.31	0.16	20.83	0.15	2.74	19.15

Variance decomposition of the trade balance following to respectively, a domestic supply shock, a price shock, and a monetary policy shock.

periods	EUR	AUS	BEL	EST	FIN	FRA	GER	GRE	IRL	ITA	LAT	LUX	NT	POR	SLOVA	SLOVE	SPA
Δy																	
1	0.73	0.80	0.92	0.003	0.38	0.60	0.82	0.74	0.49	0.34	0.28	1.27	1.00	0.17	0.24	0.39	0.01
2	0.86	0.74	0.85	0.06	0.64	0.76	0.78	0.95	0.76	0.40	0.31	1.06	0.94	0.56	0.39	0.50	0.55
3	0.90	0.76	0.96	0.21	0.72	0.82	0.81	0.99	0.93	0.41	0.39	0.95	0.94	0.75	0.47	0.59	0.84
4	0.91	0.78	0.95	0.32	0.74	0.85	0.83	1	1.00	0.42	0.59	0.89	0.98	0.82	0.49	0.65	0.96
8	0.92	0.80	0.93	0.49	0.76	0.89	0.84	0.99	1.00	0.42	1.07	0.85	0.98	0.83	0.51	0.72	1.04
12	0.92	0.80	0.93	0.51	0.76	0.89	0.84	0.99	1.00	0.41	1.09	0.85	0.98	0.83	0.51	0.73	1.05
$\Delta infl$																	
1	6.52	1.96	0.23	8.14	0.21	0.02	2.31	0.20	4.80	10.84	14.37	9.43	3.13	20.75	2.25	0.00	17.82
2	4.52	1.27	0.26	6.58	0.42	0.35	1.83	1.14	2.27	10.55	14.78	7.35	2.23	15.23	1.81	0.05	8.79
3	3.80	1.08	0.58	5.66	0.42	0.53	1.72	1.42	1.92	10.24	13.70	6.49	1.76	14.14	1.64	0.17	6.39
4	3.47	1.03	0.83	5.65	0.45	0.66	1.70	1.53	2.32	10.31	13.19	5.91	1.67	14.00	1.64	0.31	5.68
8	3.14	1.08	1.05	6.02	0.54	0.86	1.71	1.56	3.45	10.52	14.92	5.79	1.67	14.05	1.65	0.58	5.32
12	3.12	1.09	1.05	6.09	0.55	0.89	1.72	1.56	3.43	10.41	15.25	5.79	1.66	14.02	1.65	0.61	5.32
Deltadebt																	
1	0.00	0.05	0.11	5.76	0.05	0.00	0.15	0.07	0.06	0.49	0.01	2.53	0.11	0.05	0.01	0.00	4.51
2	0.00	0.03	0.08	6.79	0.06	0.01	0.14	0.04	0.03	0.57	0.44	2.29	0.26	0.04	0.02	0.00	4.18
3	0.00	0.03	0.07	5.75	0.06	0.01	0.13	0.04	0.02	0.56	0.41	2.05	0.20	0.03	0.02	0.00	2.77
4	0.00	0.02	0.07	5.24	0.05	0.00	0.12	0.03	0.02	0.55	0.39	1.94	0.18	0.03	0.02	0.00	2.10
8	0.00	0.02	0.07	5.28	0.05	0.00	0.12	0.03	0.02	0.53	0.37	1.85	0.17	0.03	0.02	0.00	1.63
12	0.00	0.02	0.08	5.37	0.05	0.00	0.12	0.03	0.02	0.53	0.36	1.85	0.17	0.03	0.02	0.00	1.63

Variance decomposition of the long run interest rate following to respectively, public demand shock and a monetary policy shock.

periods	EUR	AUS	BEL	EST	FIN	FRA	GER	GRE	IRL	ITA	LAT	LUX	NT	POR	SLOVA	SLOVE	SPA
Deltadebt																	
1	0.09	0.82	0.87	20.20	0.78	1.60	0.10	5.89	0.18	0.43	0.86	1.13	1.16	0.57	0.93	1.43	0.54
2	0.54	0.86	0.90	19.34	0.83	1.56	0.53	4.37	0.21	0.63	0.93	1.10	1.12	0.62	0.96	1.49	0.71
3	0.53	0.85	0.90	19.67	0.83	1.56	0.54	4.12	0.26	0.63	0.94	1.09	1.12	0.62	0.95	1.48	0.71
4	0.53	0.85	0.89	19.59	0.82	1.56	0.54	4.15	0.27	0.63	0.95	1.08	1.12	0.60	0.95	1.48	0.71
8	0.53	0.84	0.89	19.19	0.82	1.56	0.54	4.06	0.25	0.63	0.94	1.09	1.12	0.59	0.95	1.48	0.71
12	0.53	0.84	0.89	19.17	0.82	1.56	0.54	4.05	0.25	0.63	0.93	1.09	1.12	0.59	0.95	1.48	0.71
Deltar																	
1	3.17	0.43	1.03	2.88	1.13	0.31	0.80	4.38	6.21	3.30	3.84	3.65	1.40	5.11	0.00	13.88	1.16
2	5.79	0.41	1.22	5.43	1.14	0.31	1.20	21.92	6.35	4.26	3.76	3.58	1.46	6.66	0.02	16.67	1.07
3	5.75	0.48	1.31	5.33	1.14	0.33	1.22	20.64	6.85	4.42	3.75	3.67	164	6.12	0.02	17.54	1.25
4	5.73	0.52	1.35	5.79	1.19	0.36	1.22	20.73	6.74	4.45	3.75	3.82	1.69	6.42	0.02	17.66	1.41
8	5.71	0.60	1.35	6.92	1.23	0.40	1.22	22.53	6.30	4.46	4.21	3.96	1.69	7.91	0.03	17.68	1.47
12	5.70	0.60	1.35	6.94	1.23	0.40	1.22	22.63	6.33	4.46	4.36	3.96	1.69	7.93	0.03	17.68	1.47

Variance decomposition of the public debt following to respectively, a price shock, a financial shock and a monetary policy shock.

periods	EUR	AUS	BEL	EST	FIN	FRA	GER	GRE	IRL	ITA	LAT	LUX	NT	POR	SLOVA	SLOVE	SPA
$\Delta infl$																	
1	23.41	14.46	3.20	2.36	7.33	5.28	4.65	35.18	0.14	11.08	0.37	0.02	14.53	0.88	3.20	0.81	0.08
2	22.07	14.58	5.57	2.28	4.69	4.63	5.20	37.67	0.17	14.91	0.46	0.53	29.98	0.89	3.12	2.81	0.14
3	20.93	14.40	5.77	2.27	4.55	5.33	6.77	36.71	0.24	15.15	0.43	0.53	27.36	0.99	3.07	2.66	0.21
4	20.81	14.52	5.72	2.28	4.65	5.49	6.80	36.64	0.26	15.16	0.43	0.53	26.59	1.03	3.07	2.65	0.48
8	20.69	14.53	5.74	2.29	4.67	5.52	6.76	36.44	0.27	15.25	0.45	0.53	26.48	1.24	3.06	2.68	0.60
12	20.57	14.53	5.74	2.29	4.67	5.51	6.76	36.43	0.28	15.27	0.49	0.53	26.48	1.26	3.06	2.68	0.82
$DeltaOAT$																	
1	9.82	14.49	0.58	12.50	39.58	2.70	9.68	8.24	24.76	14.84	2.32	8.96	2.25	0.37	0.02	0.21	2.23
2	11.57	21.46	1.84	12.18	50.67	5.02	11.17	6.98	20.48	17.88	4.69	10.78	3.87	0.62	0.52	0.18	6.42
3	10.83	21.58	1.83	12.50	51.28	4.84	11.21	6.80	19.26	17.63	4.46	11.08	8.79	0.64	0.50	0.17	6.19
4	10.80	21.53	1.87	12.68	51.12	4.85	11.02	6.83	19.34	17.61	4.39	11.07	8.61	0.64	0.48	0.17	5.89
8	10.71	21.47	2.08	12.81	51.11	4.83	10.87	6.79	19.63	17.59	4.37	11.06	8.60	0.62	0.49	0.17	5.78
12	10.66	21.47	2.09	12.81	51.11	4.82	10.86	6.79	19.40	17.59	4.39	11.06	8.60	0.62	0.49	0.17	5.36
$Deltar$																	
1	3.17	48.37	55.57	17.21	32.70	51.22	7.91	32.23	37.74	27.85	69.51	6.80	29.04	27.41	61.30	71.89	36.29
2	5.79	46.44	62.73	16.79	29.08	51.88	8.58	31.87	35.01	30.63	69.96	7.19	23.66	26.89	59.63	67.24	28.17
3	5.75	46.29	61.91	17.31	28.13	52.12	8.52	31.02	32.80	31.11	69.17	7.17	22.00	26.31	61.88	68.08	26.59
4	5.73	46.21	62.06	17.64	28.28	52.32	8.43	30.96	32.19	31.16	69.24	7.28	22.31	25.88	62.99	38.38	26.24
8	5.71	46.14	61.76	17.82	28.23	52.12	8.31	30.78	31.89	31.12	69.31	7.33	22.41	25.25	63.50	68.39	25.09
12	5.70	46.12	61.76	17.82	28.23	51.93	8.31	30.78	31.51	31.12	69.19	7.33	22.40	25.29	63.51	68.39	22.80

Variance decomposition of the nominal interest rate following to respectively, a domestic supply shock, a price shock, a financial shock and a public demand shock.

periods	EUR	AUS	BEL	EST	FIN	FRA	GER	GRE	IRL	ITA	LAT	LUX	NT	POR	SLOVA	SLOVE	SPA
Δy																	
1	2.55	0.69	0.29	0.23	0.29	0.20	0.63	1.07	0.01	0.55	0.61	1.23	1.64	0.30	1.32	0.13	0.24
2	2.20	0.68	0.88	0.61	0.53	0.27	0.66	0.99	0.01	0.61	0.72	1.09	1.70	0.39	1.27	0.2	0.10
3	2.13	0.67	0.97	0.73	0.57	0.32	0.61	1.00	0.3	0.65	0.76	1.06	1.64	0.49	1.22	0.39	0.20
4	3.11	0.68	0.95	0.76	0.57	0.35	0.61	1	0.4	0.67	0.78	1.05	1.63	0.54	1.20	0.42	0.27
8	2.09	0.69	0.93	0.77	0.57	0.39	0.62	0.99	0.4	0.68	0.79	1.04	1.61	0.56	1.19	0.44	0.32
12	2.09	0.69	0.93	0.77	0.57	0.39	0.62	0.99	0.4	0.68	0.80	1.04	1.61	0.56	1.19	0.44	0.32
$\Delta infl$																	
1	12.45	2.73	7.48	0.45	10.77	4.49	10.07	0.69	1.40	7.70	0.01	0.00	0.57	3.81	0.00	1.52	0.01
2	11.47	2.08	6.82	0.84	9.44	4.11	15.06	1.07	1.15	6.34	0.19	0.12	3.97	3.25	1.09	1.79	0.08
3	11.55	2.57	8.26	1.25	10.22	4.41	14.03	1.78	1.20	7.60	0.45	0.37	3.89	3.47	1.30	2.10	0.18
4	11.49	2.52	8.69	1.45	10.78	4.83	14.06	1.95	1.51	8.54	0.68	0.50	3.82	3.90	1.31	2.28	0.40
8	11.33	3.27	8.68	1.54	11.07	5.15	14.06	2.01	2.28	9.01	0.87	0.57	3.75	4.32	1.30	2.41	0.65
12	11.28	3.27	8.68	1.54	11.07	5.16	14.05	2.01	2.29	9.01	0.91	0.57	3.74	4.32	1.30	2.42	0.66
DeltaOAT																	
1	10.12	4.85	3.79	1.38	15.73	12.37	29.61	0.88	0.40	6.95	1.25	5.35	6.79	0.15	6.82	1.20	3.99
2	8.88	3.42	6.73	1.79	11.97	10.98	24.14	0.67	0.70	5.34	1.21	3.80	6.61	0.41	5.69	0.97	3.70
3	8.92	3.11	6.03	2.24	11.43	10.56	24.87	0.69	0.72	4.96	1.20	3.53	7.47	0.43	5.29	0.95	3.48
4	8.88	3.04	6.63	2.45	11.66	10.37	24.66	0.71	0.68	4.84	1.22	3.48	7.58	0.46	5.56	0.94	3.29
8	8.76	3.01	6.94	2.56	11.66	10.19	24.41	0.74	0.64	4.80	1.24	3.47	7.49	0.49	5.56	0.95	3.14
12	8.72	3.00	6.96	2.56	11.66	10.19	24.38	0.74	0.64	4.80	1.26	3.48	7.48	0.49	5.26	0.95	3.13
Deltadebt																	
1	0.41	0.004	0.01	3.25	0.22	1.53	2.36	0.04	0.02	0.14	0.00	0.13	0.16	0.25	0.00	0.00	0.05
2	0.36	0.004	0.02	2.83	0.20	1.48	1.95	0.07	0.02	0.13	0.02	0.12	0.15	0.27	0.03	0.00	0.05
3	0.39	0.004	0.02	2.87	0.19	1.44	2.15	0.06	0.02	0.13	0.02	0.11	0.15	0.25	0.03	0.00	0.05
4	0.41	0.004	0.03	2.85	0.20	1.41	2.19	0.06	0.02	0.13	0.02	0.11	0.15	0.24	0.03	0.00	0.05
8	0.43	0.004	0.03	2.85	0.20	1.37	2.17	0.06	0.02	0.13	0.02	0.11	0.15	0.24	0.03	0.00	0.06
12	0.43	0.004	0.03	2.85	0.20	1.37	2.17	0.06	0.02	0.13	0.02	0.11	0.15	0.24	0.03	0.00	0.06