Fiscal Policy Stabilisation and the Financial Cycle in the Euro Area

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Abstract

This paper examines the impact of the financial cycle on the capacity of the economy to deal with shocks, with a particular focus on fiscal policy in the euro area member states. It starts by measuring national financial cycles and investigating the synchronisation across them as well as their relationship to the medium-term business cycle. It finds that financial cycles tend to be synchronised but their amplitudes differ significantly across countries. Business cycles tend to be positively correlated with the financial cycle, but they usually are smaller. The paper then examines if and how the financial cycle affects international risk-sharing among euro area member states and finds that economic booms and busts are often associated with phases of financial integration and disintegration at the level of the euro area. Such developments are reflected in the degree of international risk-sharing, which turns out to behave procyclically. Lastly, the capacity of domestic fiscal policy to smooth asymmetric shocks in the euro area declines dramatically during recessionary phases of the domestic financial cycle. The paper concludes that macroprudential policies are an important tool for preventing excessive swings in the financial cycle, but they should be complemented by a central stabilisation mechanism, which can make both capital markets and fiscal policy more resilient to disruption associated with the financial cycle.

CONTENTS

LIST OF TABLES

LIST OF GRAPHS

1. INTRODUCTION

The financial crisis first and then the debt crisis in the euro area later triggered major rethinking in macroeconomics and in the design of the economic and monetary union (EMU).

The dominant pre-crisis paradigms and EMU achievements have come in for severe questioning after 2010. On the one hand, finance, which was usually seen as secondary to macroeconomic fluctuations, turned out to be not marginal at all. Fluctuations in financial variables can be associated with large effects on the real economy and beyond. On the other hand, in the context of EMU, financial integration, which was considered as one of the greatest achievements of the first decade of the euro, turned out to be fragile, easy to reverse and perhaps not as beneficial as previously assumed. Furthermore, the original design of EMU appeared to have assumed an excessively optimistic scenario in terms of frequency and size of shocks as well as in terms of capacity of the system to respond to shocks.

A growing literature on two different strands of research, namely the interaction between the financial cycle and the real economy and the capacity of EMU to deal with shocks, is seeking remedy to such shortcomings. But the link between the two and its consequences for the (re-)design of the EMU integration process have not been investigated, yet. This paper attempts to fill this gap, bearing in mind that from a policy perspective, this question is as complex as it is relevant.

The first stream of literature, which has focussed on seeking a macroeconomic perspective on financial regulation and supervision has resulted in the development of macro-prudential policy tools.[1] Macro-prudential policy has the task of containing instability in specific markets and more broadly financial risk. Both are particularly relevant when the business cycle differs from the financial cycle. This is even more the case in a monetary union, where monetary policy has to respond to average economic and financial conditions, which may significantly differ across member states. In this context, the macroprudential approach has mostly consisted in understanding how to avoid, or at least contain, the build-up of financial imbalances. While this is of critical importance, financial crises are a feature of history and will continue to erupt in the future.

One lesson from the most recent crisis is that there is a close link between the financial system and its developments and public finances and their health. As argued in Borio et al. (2016), this is likely to be a two-way link. In this paper we analyse if, and try to explain how, developments and fluctuations in financial variables, as measured by the financial cycle, affect the capacity of the economy to respond to shocks in the euro area member states. In order to do this, we consider shock absorption capacity through market mechanisms and fiscal policy at national level.

In the euro area, the decision that the stabilisation function of fiscal policy vis-à-vis (asymmetric) shocks had to remain at national level was taken based on the assumptions of the Maastricht framework. These included the presumption that, given that shocks are mostly fiscal in nature, fiscal rules would make them rarer and less relevant. The framework also implicitly assumed that financial integration would naturally occur following the introduction of the single currency and be beneficial for growth. Other than this, financial developments had no place in the original design of EMU. The banking and sovereign debt crisis proved that this framework was insufficient.

Clearly, we are not presuming here fiscal policy responds or should respond to the financial cycle. Rather we attempt to address three interlinked questions: i) the relationship between the financial cycle and the business cycle in the euro area, ii) the link between financial integration in the euro area and the financial cycles in member states and how this could result in weak international risk-sharing and

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[1] See among others ESRB (2016).

ultimately, iii) if and how the financial cycle can affect fiscal policy responsiveness and impact its stabilisation capacity.

Traditionally the stabilisation capacity of fiscal policy is assessed in relation to the business cycle and measured in terms of (counter-) cyclicality of the fiscal stance. As it will be illustrated more in detail later, the findings of this literature are not very robust and overall seem to suggest that discretionary fiscal policy in the euro area is rather independent from the business cycle and offers poor stabilisation.

In reality, two aspects need to be kept in mind. First, assessing the stabilisation capacity of fiscal policy by simply focusing on its discretionary component, regardless of the role of automatic stabilisers, is likely to lead to an important underestimation. Second, we notice, that in the context of a monetary union, the stabilisation capacity of fiscal policy is usually assessed in relation to its responsiveness to asymmetric shocks rather than to fluctuations in the business cycle. Unlike the business cycle, which is defined usually as output deviations from its potential, or its trend, at country level, asymmetric shocks are defined in relative terms, as deviations of GDP from the average of the euro. These two metrics reflect different perspectives, and they do not necessarily deliver the same assessment nor automatically point to the same policy recommendations. But both are very important in the context of the EMU, where national governments are still fully sovereign on fiscal policy.

The emphasis on asymmetric shocks in the context of the monetary union is, to some extent, part of the legacy of the optimum currency area (OCA) discussion[2], but it remains relevant to understand and investigate dynamics that are driven by EMU mechanisms. This is the case in this paper where, ultimately, the policy dimension of the more analytical questions we try to address relate to features of financial integration in the euro area and to the question of whether the euro area needs a common stabilisation mechanism. For this reason, the second part of the paper uses an analytical framework that focuses on fiscal policy stabilisation in response to asymmetric shocks.

In this respect, the literature looking at EMU's capacity to absorb the impact of asymmetric shocks has highlighted three main points.[3] First, in the euro area on average, a large part of the impact of a GDP shock falls on consumption, and it is not absorbed by income or consumption-smoothing mechanisms. Second, domestic fiscal policy, at the level of the member states, seems to be the most important tool for smoothing the impact of shocks on consumption. This finding seems at odds with the claims that fiscal policy has been pro-cyclical (austerity) in many countries after 2010. But, as argued above, the two statements are not necessarily in contradiction. Third, increased financial integration which followed the introduction of the euro did not result in higher international private risk-sharing, which was expected to happen through increased geographical diversification.

Against this background, this paper first focuses on how to measure fluctuations in financial conditions. This boils down to the measurement of the financial cycle. This topic has attracted some attention in recent years and has been the object of research at the Bank for International Settlements (BIS), the International Monetary Fund (IMF) as well as at the European Central Bank (ECB). In this paper we will rely on indicators and methodologies already used in the literature and systematically apply them to the euro area member states. Financial cycles at national level are compared on a cross-country basis and with respect to the relative (medium-term) business cycles. We then assess developments in the euro area wide financial cycle in relation to trends in indicators of financial integration. Here the purpose is to investigate whether the (estimated) benefits of integration, usually attributed to the euro, and the cost of the fragmentation that followed the crisis, are, in fact, driven by developments in the financial cycle. This would help to explain why increased financial integration did not result in higher international private risk sharing. In order to address this question, we use the

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[2] When assessing the costs of not being an OCA and having abandoned monetary policy sovereignty, the exposure to asymmetric shocks is of crucial importance.

[3] Among others see Alcidi and Thirion (2016a, 2017), Furceri and Zdzienicka (2013)

Asdrubali et al. (1996) framework, which measures how the effects of asymmetric shocks are absorbed by different mechanisms or transmitted to consumption.

Hence, we address the question of what this means for national fiscal policy and its stabilisation capacity. We use the same Asdrubali et al. (1996) framework and investigate whether different phases in the financial cycles affect the capacity of fiscal policy to smooth consumption. In the context of the debate over the reform of EMU governance, this question is linked to the design of a common stabilisation mechanism at a centralised level.

The rest of the paper is organised as follows. The next section offers an overview of the different streams of literature relevant to the questions at hand. These include the new literature on the financial cycle, both in terms of main features and the interlinkages with the business cycle, as well as the literature on how the impact of shocks is smoothed in the monetary union. The third section presents the estimates of the financial cycles for euro area countries, their key features and the links with the medium-term business cycle. Section four focuses on international risk sharing and the interaction between financial integration and the financial cycle's dynamics. Section 5 investigates how the capacity of domestic fiscal policy to smooth consumption is affected by developments in the financial cycle. Section 6 attempts to make a link between the findings of the paper and the economic frameworks and theories behind the debate on EMU integration. Section 7 concludes by highlighting some policy implications.

2. RELATED LITERATURE

Soon after the financial crisis, it became clear that while an extensive literature exists on the linkages between inflation and business cycle (which is often used as support for the traditional policy mix debate), the linkages between financial developments and business cycles are still poorly understood. In particular the implications of the financial cycle on the business cycle still require investigation.

While there is no single definition of the financial cycle, the existing literature suggests that the concept should encapsulate joint fluctuations or common movements in a set of selected financial variables or aggregates. In principle, the set of variables is large and can include measures of credit, house prices, equity, other asset price aggregates and banks' balance sheets.

Claessens et al. (2011) are among the first authors to analyse the financial cycle and the interactions with the business cycles. Using an extensive database of 44 countries for the period 1960-2007, they find two main results. First, the linkages between different phases of business and financial cycles are strong, and recessions associated with financial disruption episodes, notably house price busts, tend to be longer and deeper than other recessions. Second, recoveries associated with rapid growth in credit and house prices tend to be stronger.

Drehmann et al. (2012) attempt to characterise empirically the financial cycle investigating seven advanced economies over the period 1960-2011. They come up with three key features of the financial cycle. First, the financial cycle, which runs between 15 and 20 years, is much longer than the traditional 8-year business cycle; hence one financial cycle usual spans over more than one business cycle. Second, peaks in the financial cycle tend to coincide with banking crises or periods of considerable financial stress, which usually happens because households and/or firms are unable to service their debt. As a consequence, business-cycle recessions are much deeper when they coincide with the contraction phase of the financial cycle. In addition to the debt problem, sectoral misallocations, often associated with booms (or bubbles), further aggravate this vicious cycle. Third, financial cycles are often synchronised across countries as some drivers of the financial cycle have an important global component. For instance foreign capital may amplify movements in domestic credit aggregates.

More recent papers have looked at the features of the financial cycle with particular interest in specific countries, among others Runstler and Vekkle (2016). Some of the previous findings highlighted above are confirmed, in particular cycles in credit and house prices are large, long and are highly correlated with a medium-term component in GDP cycles. Compared to the business cycle, the financial cycle usually has longer duration and larger amplitude. Interestingly, they find that Germany is emerging as a special case in which the distinct characteristics of the financial cycle are, if at all, much less visible than in other countries, with comparatively small and short-lived fluctuations.

Most of this literature has focussed on how to measure the financial cycle and its features for the purpose of designing macro-prudential policies. The latter has the fundamental objective of preventing excessively large fluctuations in the financial cycle, and hence reducing the negative impact on the real economy materialising through the interaction between the financial cycle and the business cycle.

More recently, additional work has been done to understand how developments in the financial cycle can have broader implications for the economy and for traditional macroeconomic policies. For instance Borio et al. (2016) attempt to address the question of how financial cycle's development affects the sustainability of public finances. Their starting point is the empirical evidence that financial crises (busts in the financial cycle) are associated with a large rise in debt, which is usually driven by a number of factors. Among them they cite the bailout of financial institutions, the fact that recovery in growth and employment takes a long time, that losses in output may be permanent with productivity damaged for several years and, not least, expansionary discretionary fiscal policy responses can lead to further deterioration of the fiscal position if they are too prolonged. Taking these factors into account, the paper suggests that an accurate assessment of the fiscal position of a country should be done by adjusting standard measure of the fiscal positions for the financial cycle. This is done by computing a finance-neutral output gap.

Much like Borio et al. (2016), we are interested in investigating the possible effects of financial cycle fluctuations, beyond macro-prudential supervision, on fiscal policy. As mentioned in the introduction, we will take the perspective of the euro area as a whole and investigate how fluctuations in the financial cycle affect the capacity to absorb asymmetric shocks. In order to do this, we use the empirical framework that is used to assess risk sharing (both cross-country and intertemporal) in pools of countries, like federations.

The literature focusing on the performance of federations in terms of absorbing the impact of asymmetric shocks not only considers mechanisms for spatial risk-sharing (income smoothing) but also intertemporal risk-sharing (i.e. consumption smoothing). Cross-country risk-sharing is provided at a private level by the international ownership of assets and international wage transfers, usually called international factor income, as well at fiscal level (if it exists), by cross-country transfers of fiscal resources, for instance from a federal budget. Consumption smoothing, instead, is determined by intertemporal choices in spending and saving of both the private sector (households and corporations) and the (national) government.

The most widely used framework to measure the different channels (i.e. international factor income, transfers and savings) through which the impact of an output shock is absorbed is the one formulated by Asdrubali et al. (1996) and refined in Sorensen and Yosha (1998).

The original Asdrubali et al. (1996) paper analyses US data between 1963 and 1990 and finds that about 40% of the shocks to the per capita gross product of individual states is smoothed on average through transactions on capital markets, about 25% through consumption smoothing, a small part (13%) by the federal tax-transfer and grant system, and another quarter or so is not smoothed at all. In recent years, the same framework has been applied to a large number of studies, several of which focused on the experience of the euro area. Among others, Furceri and Zdzienicka (2013) as well as Alcidi and Thirion (2016) and Alcidi et al. (2017a). A common finding of these papers is that factor income flows do not contribute to smooth income across countries in the euro area and that risk-

sharing mechanisms were particularly ineffective during the financial crisis. Since flows of factor income, which form the most important component of income smoothing, are driven by capital markets integration, the finding seems to suggest that European capital markets are less integrated than US capital markets and this has remained a fact even after the creation of the single currency.[4]

This methodology has a number of limitations. First, as will be illustrated in detail in section 4, it is based on national accounting, which implies that, other than the usual potential measurement issues, financial flows are not captured in total. More specifically, the international factor income, which is a proxy for the role of capital markets, does not take into account capital gains[5] and hence it is likely to underestimate the role of capital markets in providing risk-sharing. However, it should be said that because of a lack of availability, the data that are used to estimate the international factor income are not bilateral data between each country and the other members of the euro area; rather, they measure the international transfers of each country vis-à-vis the rest of the world. This implies that the role of euro area capital markets is actually likely to be overestimated. Indeed, the data capture a much higher degree of geographical diversification than the one available among euro area countries. These two effects may offset each other. The second limitation is that, by construction, the methodology only captures exogenous output shocks but no feedback effect channelled by adjustments in the components of demand is accounted for.[6] That said, the methodology also has a number of advantages. Above all, the framework is simple, the outcome of the estimates is easy to interpret and allows for detailed analysis of the different channels, which is a useful tool from a policy perspective. For these reasons, while acknowledging the limits, we deem the framework a valuable tool to investigate the research questions spelled out above.

3. THE FINANCIAL CYCLE

3.1. THE METHODOLOGY TO IDENTIFY THE FINANCIAL CYCLE

In the context of the literature about the financial cycle, one fundamental question relates to its definition and identification. As already mentioned there is no single definition. For the purpose of this paper, following Borio et al. (2012), we consider credit and house prices and exclude equity prices and aggregate asset prices when trying to identify the financial cycle. Equities feature high short-term volatility and exhibit a low degree of co-movement with credit and house prices. Similarly, we also exclude variables such as credit spreads, risk premia and default rates, which can provide useful complementary information on financial stress, risk perceptions and risk appetite, but for which data are not available for sufficiently long periods of time. Moreover, as shown in Stremmel (2015), besides the constraints imposed by the limited data availability, we also exclude banking sector variables, which do not seem to be useful in the characterisation of the financial cycle as the amplitude of their cycles tend to differ from those of other variables and, above all, turning points do not correspond.

Instead, based on the historical observation that rapid increases in credit, particularly mortgage credit, tend to drive up property prices, which in turn increase collateral values and thus the amount of credit the private sector can obtain, we focus on measures of credit and house prices. It is the mutually reinforcing interaction between financing conditions and perceptions of value and risks that drives the financial cycle and has traditionally caused the most serious macroeconomic disruptions. Given the primary interest of this paper to reflect on the role of the financial cycle in affecting the functioning of

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[4] See, for instance Allard et al. (2013).

[5] Extensions of the Asdrubali et al. (1996) framework account for this aspect; see Balli and Sorensen (2007), Balli et al. (2011) and Balli et al. (2013).

[6] In order to account for this issue, one could run VAR models to identify the nature of the shocks and get a sense of the importance of demand shocks relative to supply shocks; see Asdrubali and Kim (2004).

international risk-sharing mechanisms and fiscal policy, in a medium-term perspective, these appear to be the most relevant variables.

A number of different methodologies have been used to identify common movements in the relevant financial variables. An often-used technique, among others, Claessens et al. (2011), consists of identifying turning points in the individual series and matching them in a defined window, so that the peaks in the different series are part of the financial cycle.

An alternative methodology is based on the principal component analysis, which has the objective to isolate the common component, based on pairwise correlations, of different financial variables. This technique requires that more than two variables are involved; otherwise the principle component would simply reflect the correlation between the two variables and may suffer severe drawbacks as variables characterised by an even limited phase shift would exhibit very low correlation.

Rustler and Vlekke (2016) propose a complex analytical framework based on multivariate unobserved components models to estimate trend and cyclical components in credit volumes and house prices.

Aikman et al. (2015) and Drehmann et al. (2012) use a univariate band-pass filter, which consists of de-trending individual time series and then aggregating them as a simple average in order to get a measure of the financial cycle. This methodology, which has a number of analytical advantages, not least simplicity, leads to results that are in line with the findings of more sophisticated band-based approaches, such as those using spectral methods to search for optimal frequency bands and, more in general, other methodologies.

For these reasons, we follow the same approach and estimate the financial cycle for each euro area member state.

The selection criteria of the specific measures of credit and house prices to use as components of the financial cycle is borrowed by Stremmel (2015). This paper investigates alternative measures of the financial cycle, assesses their features and ranks them according to concordance between the financial cycle measures and their ingredients as well as on the fitting of the financial cycle measures with the outbreak of financial crises. Based on graphical and statistical examination, Stremmel (2015) concludes that the best measure of the financial cycle is the one consisting of the credit-to GDP ratio, credit growth and house prices. Accordingly we chose to use the same ingredients for the measurement of the financial cycle.

Technically the computation of the financial cycle is done by filtering each series using the Christiano-Fitzgerald band-pass filter. In a nutshell this is a two-sided moving average filter isolating certain frequencies in the time series. Following the literature we use a frequency band of 32 to 120 quarters, which implies that financial cycle can last between 8 and 30 years. Then the filtered series are aggregated.

3.2. DATA AND ESTIMATES OF THE FINANCIAL CYCLE

As mostly used in the literature, credit is measured as credit to the private non-financial sector, both volumes and relative to GDP, and house prices are measured in real terms. The time series for credit and house prices are available on a quarterly basis from 1975 until 2016q1. The first is taken from the BIS database, while the house prices index is from the OECD. We also use the real gross domestic product (GDP) on a quarterly basis from the OECD.

Similarly to Drehmann et al. (2012) and Strohsal et al. (2015), all series are measured in logs, deflated with the consumer price index and normalised by their respective value in 1985Q1. This allows to remove the unit of measure and enable the integration in a single indicator. Our dataset includes 11 member states of the euro area (EA-11). We exclude new member states (Baltic States, Slovakia and

Slovenia) for which data are not available for most of the period and Malta, Cyprus and Luxembourg, which are very small and atypical economies.

Graph 3.1 represents the financial cycle based on house prices, credit growth and credit to GDP for selected euro area countries.[7] Three main characteristics emerge at first sight. First, over the 41 years considered in the analysis, we broadly identify two full cycles[8] and a bit more than half at the beginning of the sample. Each cycle lasted about 15 to 17 years, a duration that is line with most literature on the topic. Second, with few exceptions (notably the Netherlands, Germany and Ireland) the most recent cycle matches almost perfectly the existence of the euro: the beginning of the ascending phase coincides with the euro adoption in 1999 and the descending phase ends with a trough around the year 2015/16. Third, countries exhibit very large differences in the amplitude of their financial cycle and this is a feature of the periods both before and after the introduction of the euro. If anything, the illustration of the cycles suggests that swings have been larger before 1999, than after. This is true for the upswing leading to the peak of the bubble in 2007, relative to the peaks in the early 1990s and the late 1970s, as well as the downswing ending in 2016, most patently compared with the one in the mid-1980s. This seems at odds with the perception and widespread assessment that the financial crisis after 2007 was the worst since WWII.

Graph 3.1. **Stylised representation of financial cycles in the euro area, 1975q1- 2016q1**
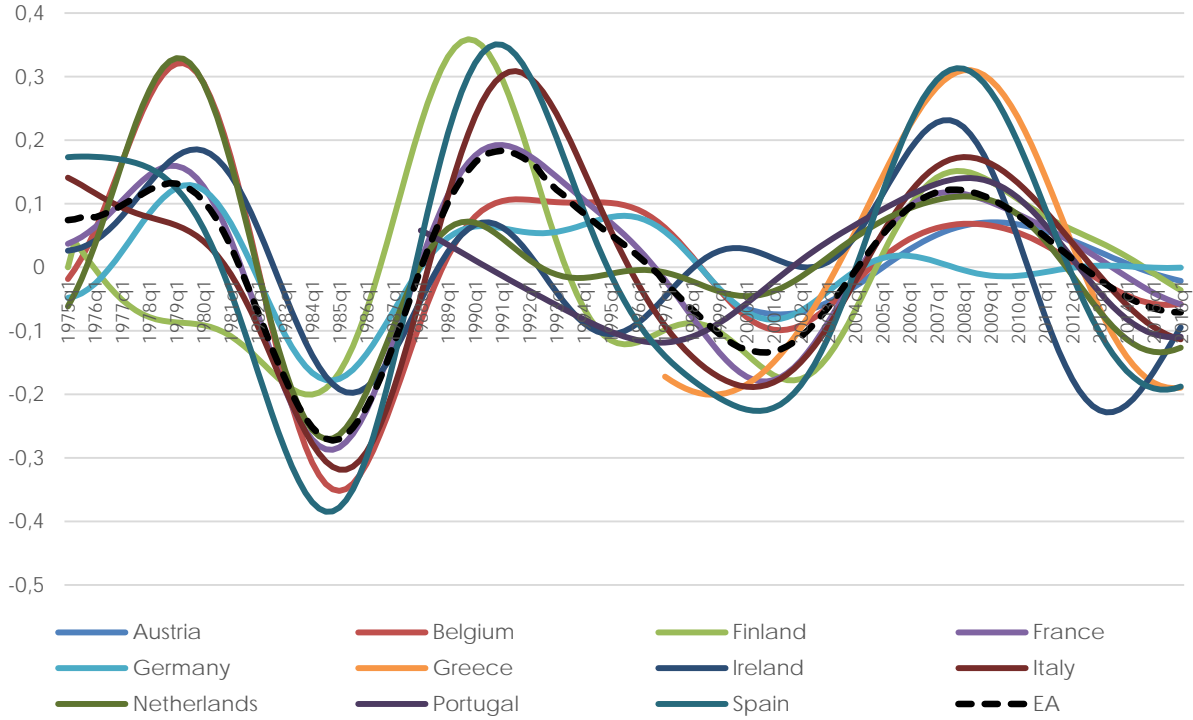
Source: Own estimates, based on OECD and BIS data.

Note: The vertical axis measures the amplitude of the financial cycle, which is a synthetic indicator of financial variables normalised to 1 in 1985q1.

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[7] Figure 1 in Annex I shows three alternative measures of the financial cycle based on the three different components, presented in "additive" manner. The graphical inspection suggests that the measure we chose is the one where the cycles exhibit the smallest amplitude. This is explained by a 'mitigation' effect exerted by the GDP, at the denominator of credit, in correspondence with the most extreme swings.

[8] A complete cycle is made of the recession phase, from peak to the following trough, and the expansion phase, from trough to the next peak. In other words, a cycle goes from a peak to the following peak. The first part of the expansion phase is often called recovery phase. See Claessens et al. (2011) for more details.

3.2.1. Correlation in financial cycles across countries and amplitude of cycles

This section focuses on the relative features of the cycles across euro member states. A first question relates to the degree of correlation of the cycles. This is important for two reasons. First, the literature on financial cycles has emphasised that financial cycles are often synchronised across countries, as they are driven by global factors (Drehmann et al. (2012)), and we expect this to be the case in the euro area. Second, in the framework of the euro area dynamics a lot of attention has been devoted in recent research in understanding the synchronisation of the business cycles and the role of the euro. There is certain agreement that since the introduction of the euro the synchronisation of business cycles has increased (see De Grauwe and Yi (2016) and Belke et al. (2016)), but this did not necessarily make monetary policy setting easier as the amplitude of the cycles is very different across countries.

Here we are interested in understanding if a similar conclusion also applies to financial cycles and how this is linked to the features of the business cycle, which will be addressed in the next section. As a starting point, we compute simple pairwise correlation coefficients. At this stage we assume that the cycles between two countries are synchronised if both are positively correlated with each other. In order to analyse and account for the potential effect of the euro on the synchronisation of financial cycles, we have divided our data into two non-overlapping time periods and calculate the correlation coefficient for each time period separately: the first period starts in 1975Q1 and lasts until 1998Q4, corresponding to the pre-EMU period and the rest. We present our results in the Tables 3.1 and 3.2.

Table 3.1. **Financial cycles: Pairwise correlation coefficients, pre-EMU (1975q1-1998q4)**

1975q1-1998q4	EA	Belgium	Finland	France	Germany	Ireland	Italy	Netherlands	Spain
EA	1.00								
Belgium	0.88	1.00							
Finland	0.62	**0.19**	1.00						
France	0.99	0.84	0.66	1.00					
Germany	0.83	0.96	**0.19**	0.80	1.00				
Ireland	0.63	0.75	**0.10**	0.53	0.70	1.00			
Italy	0.95	0.73	0.72	0.96	0.63	0.43	1.00		
Netherlands	0.78	0.90	**0.20**	0.72	0.91	0.90	0.56	1.00	
Spain	0.94	0.67	0.80	0.93	0.59	0.55	0.95	0.63	1.00

Observations: 91

Source: Own elaboration based on financial cycle estimates.

Table 3.2. **Financial cycles: Pairwise correlation coefficients since EMU (1999q1-2016q1)**

1999q1-2016q1	EA11	Austria	Belgium	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Portugal	Spain
EA	1											
Austria	0.88	1.00										
Belgium	0.96	0.88	1.00									
Finland	0.85	0.97	0.80	1.00								
France	0.93	0.95	0.84	0.97	1.00							
Germany	**0.55**	**0.23**	**0.35**	**0.29**	**0.51**	1.00						
Greece	0.98	0.80	0.97	0.73	0.83	**0.51**	1.00					
Ireland	0.73	0.45	0.80	**0.39**	0.45	**0.28**	0.82	1.00				
Italy	0.99	0.95	0.96	0.91	0.96	**0.46**	0.95	0.65	1.00			
Netherlands	0.78	**0.47**	0.81	**0.35**	0.50	**0.52**	0.89	0.87	0.70	1.00		
Portugal	0.75	**0.44**	0.78	**0.31**	0.46	**0.49**	0.87	0.82	0.67	0.99	1.00	
Spain	0.98	0.82	0.97	0.78	0.85	**0.50**	0.99	0.83	0.96	0.85	0.82	1

Source: Own elaboration based on financial cycle estimates.

The main message from the two tables is that synchronisation in the financial cycles across euro area countries is high, in most cases above 70%, and only few coefficients below 50%, over the 40 years considered. The most striking observation emerging from the comparison of the two tables is the 'negative' euro effect on Germany. Financial cycle correlation in Germany is low vis-á-vis any other country and lower than before 1999. This is not a surprise, given that the German financial cycle is almost flat after 1999 (see Graph 3.1), and in line with the findings of Rustler and Vlekke (2016).

As mentioned above when analysing the synchronisation, besides correlation, the amplitude of the cycle is of crucial importance. Correlation alone is insufficient to signal 'homogeneous' conditions. It can happen that the correlation coefficient is close to 1, but conditions could be very different if in one country the amplitude is very large, signalling for instance the peak of a bubble, while close to zero in another.

In order to take the issue of differences in the amplitudes into account we measure them relative to the average euro area cycle. This amounts to measuring the asymmetry in the amplitudes of the financial cycles relative to the euro area. For this purpose we regress each country's domestic financial cycle on the euro area common cyclical component, as done in De Grauwe and Ji (2016) and Belke et al. (2016) for the business cycles. Hence we estimate the simple regression, where β is the measure of convergence in the cycle towards the average:

$$\ln(fc_{i,t}) = \alpha + \beta \ln(fc_{EA,t}) + \varepsilon_t$$

with fc_{it} being the financial cycle for each country i and fc_{EA} for the EA-11 average, respectively. Results are reported in Table 3.3 below for the full sample and in Table 3.4 only for the EMU years to see whether there is a euro effect.

Table 3.3. **Size of the financial cycle relative to the euro area average, full sample, 1975-2016**

1975q1-2016q3	Belgium	Finland	Germany	France	Netherlands	Italy	Greece	Spain	Portugal	Ireland
EA11	1.06***	0.93***	0.38***	1.10***	0.87***	1.46***	2.27***	1.73***	0.31***	0.67***
Constant	0.003	-0.004	0.0002	-0.0004	0.0077*	-0.0039	0.03***	-0.0008	-0.013*	0.004
Observations	161	161	161	161	161	161	77	161	113	161
R-squared	0.682	0.475	0.570	0.951	0.604	0.921	0.936	0.866	0.069	0.382

Note: quarterly data 1975Q1- 2016Q3. The dependent variable is the CF-filtered financial cycle of the respective country. HAC (heteroscedasticity- and autocorrelation-) consistent standard errors.

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

Table 3.4. **Size of the financial cycle relative to the euro area average since the EMU, 1999-2016**

1999q1-2016q3	Austria	Belgium	Finland	Germany	France	Netherlands	Italy	Greece	Spain	Portugal	Ireland
EA11	0.51***	0.44***	1.22***	0.15***	0.99***	0.68***	1.51***	2.16***	2.43***	0.82***	1.05***
Constant	0.005**	-0.01***	-0.004	-0.01***	-0.01**	0.01**	-0.003*	0.03***	0.01**	0.03***	0.012
Observations	65	69	69	69	69	69	69	69	69	69	69
R-squared	0.774	0.879	0.752	0.355	0.876	0.615	0.976	0.957	0.970	0.601	0.461

Note: Quarterly data 1999Q1- 2016Q3. The dependent variable is the CF-filtered financial cycle of the respective country. HAC (heteroscedasticity- and autocorrelation-) consistent standard errors.

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

The estimated slope coefficients reveal the extent to which the domestic cycles are smaller or larger in amplitude than the average EA11 cycle. Differences in the coefficients are large. Germany is the country with lowest beta and this even declined after 1999. Conversely, Spain, Greece and Italy have slope coefficients significantly higher than 1 suggesting larger cycles than the euro area one. France seems completely aligned on the euro area financial cycle.
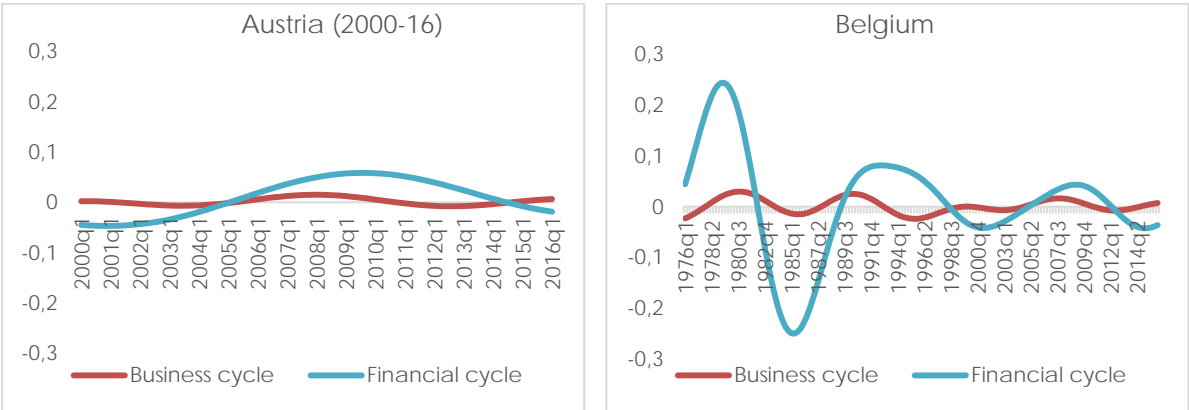
Overall, Germany emerges as a clear outlier when it comes to financial conditions, as summarised by the financial cycle, relative to the other countries of the euro area, both in terms of correlation and amplitude of the cycle. Greece and Spain, which exhibit high correlation coefficients but very large beta coefficient differentials, though not outlies, are quite extreme cases. To the extent that the financial cycle has an impact on macroeconomic conditions and on the transmission mechanisms of policy, such features are clearly a problem. In the next section we investigate the relation between medium-term macro conditions, as summarised by the business cycle, and the financial cycle.
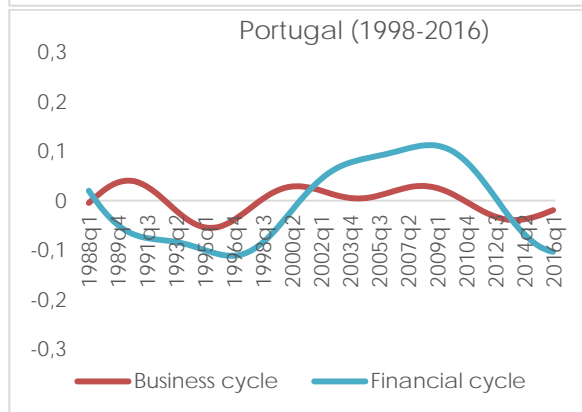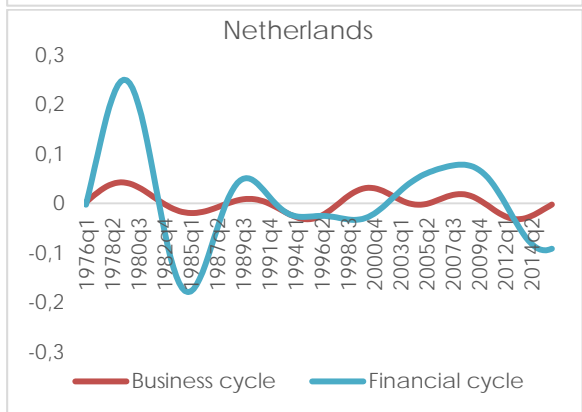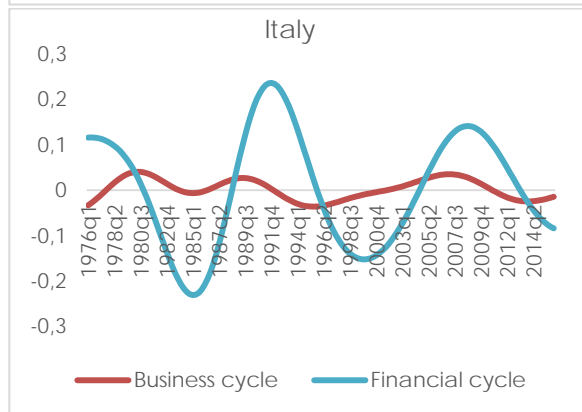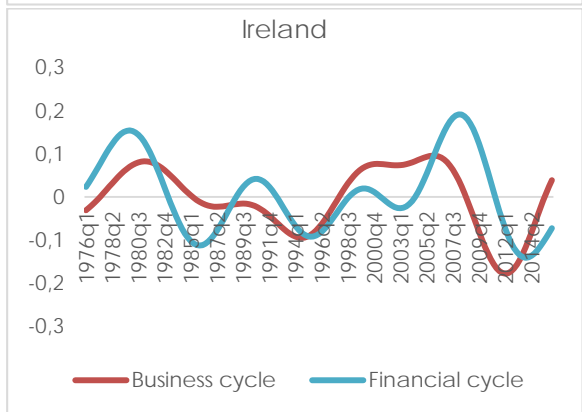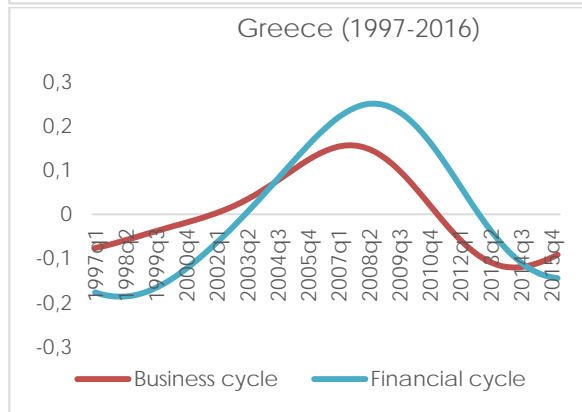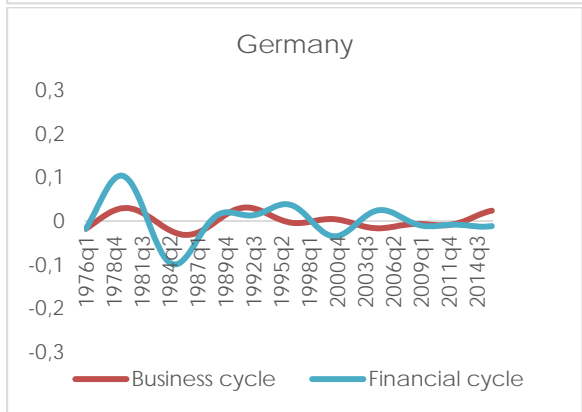
3.3. MEDIUM-TERM BUSINESS CYCLES AND THE FINANCIAL CYCLES

We estimate the medium-term business or GDP cycle using the same approach as for the financial cycle. This means that instead of the usual Hodrick-Prescott filter, we use the Christiano-Fitzgerald filter calibrated so that the medium-term cycle length varies between 32 and 120 quarters; significantly longer than the usual two to eight years of traditional business cycles. The reason for this is that we want to eliminate noise in the cycle, driven by small fluctuations, to be able to isolate only the largest swings and investigate a possible correlation between the financial cycle and the business cycle. As shown in Runstler (2016) credit and house price cycles show little correlation with the standard business cycles. This is because house price cycles are usually longer than eight years and tend to be independent of standard business cycles, while credit cycles show some correlation with standard business cycles with the major peaks and troughs of GDP cycles are aligned with those of house price cycles, but additional business cycle fluctuations arise. Extending the window of the filter to capture the GDP cycle allows for a meaningful analysis of the correlation.

The visual analysis based on Graph 3.2 suggests that important differences in the length of the cycle exist despite the new calibration of the filter and above all in the amplitude of the cycles. As found in the literature, financial cycles tend to be longer and larger than medium-term GDP cycles. One exception to this is Germany. After the reunification, there is no clear financial cycle and the amplitude of the fluctuations is almost as small as that of the business cycle. Only Austria has a similar feature. In all other countries, swings in the financial cycle are much larger than in the business cycle. Spain and Greece stand out as the two countries with the largest amplitude of the cycle (change from peak to the next trough), at least since the adoption of the euro.

Graph 3.2. **Comparison (medium-term) Business and financial cycles (1976-2015)**

France

Finland

Germany

Greece (1997-2016)

Ireland

Italy

Netherlands

Portugal (1998-2016)
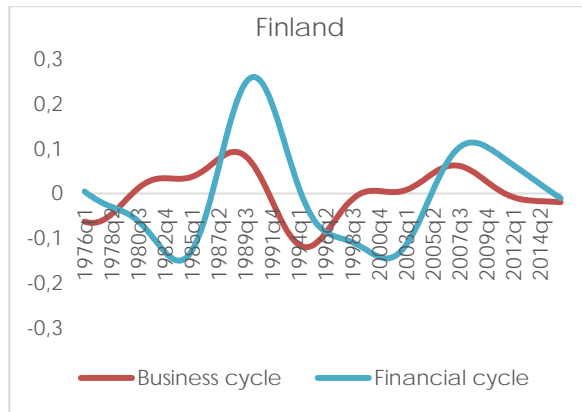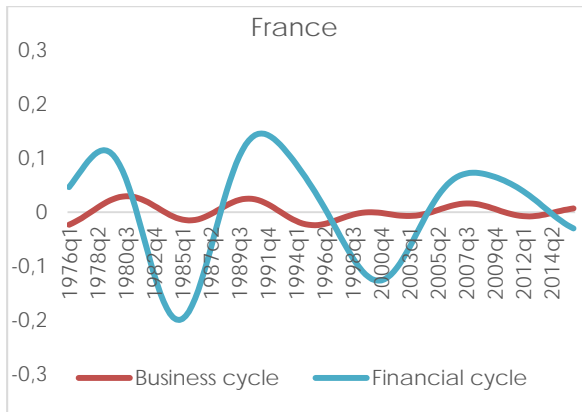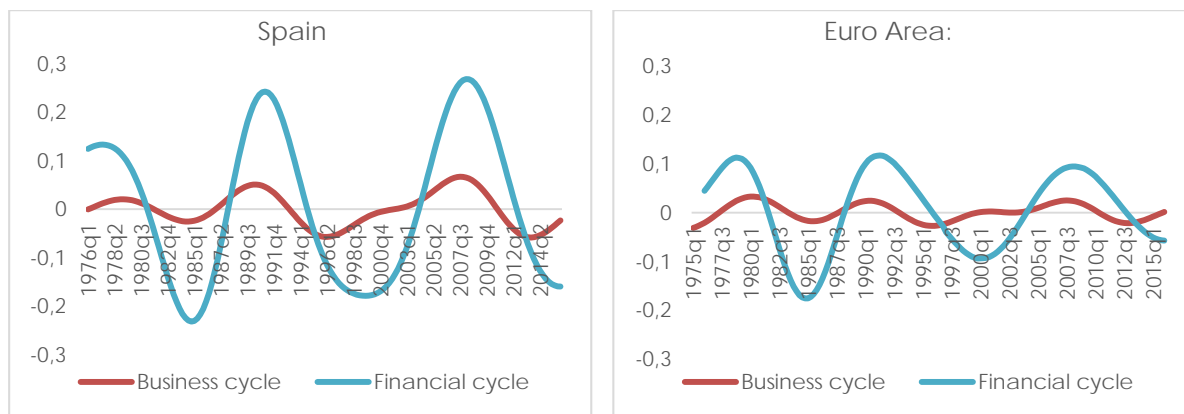
Source: Own elaboration based on financial cycle and business cycle estimates.

Note: Blue lines are the CF-filtered financial cycles, red lines are the CF-filtered business cycles. Data on the components of the financial cycle for Greece are only available from 1997, for Austria from 2000 and for Portugal from 1987.

In order to investigate the interaction between the business cycle and the financial cycle, Table 3.5 illustrates correlations between cycles and measures of the amplitudes, of both business and financial cycles, distinguishing the periods before and after the adoption of the euro. It is clear that we are not inferring conclusion on the direction of the causality. Yet, from an economic point of view, there is a strong presumption that certain features of the financial cycle can have a strong impact on the business cycle. For instance, as documented in Claessens et al. (2011), recessions accompanied by house price busts tend to be longer and deeper and the following recoveries are often weak. This can be explained by the fact that in the expansionary phase of the financial cycle, because of cheap credit, house prices tend to increases and the construction sector to expand. Given the increase in the collateral value, households borrow more, tax revenues increase and the economy expands. By contrast, in the downturn phase of the financial crisis, credit becomes less available and more expensive, a fall in house prices reduces the value of collateral and tax revenues. A contraction in the construction sector can result in increasing unemployment and falling consumption. All these elements point to positive correlation between the financial and business cycles and the financial cycle driving fluctuations in the GDP.

The results in Table 3.5 confirm the positive correlation, in both periods, with only one exception: Germany after 1999, which exhibits high and negative correlation.

Table 3.5. **Financial and (medium-term) business cycles: Correlations and dispersion**

Country	Correlation financial & business cycles pre-EMU	Correlation financial & business cycles EMU	Amplitude financial cycle pre-EMU	Amplitude financial cycle EMU	Amplitude business cycle pre-EMU	Amplitude business cycle EMU
Austria		0.44		0.04		0.01
Belgium	**0.36**	**0.63**	0.14	0.03	0.02	0.01
France	**0.36**	**0.53**	0.11	0.07	0.02	0.01
Finland	**0.26**	**0.38**	0.12	0.09	0.06	0.03
Germany	**0.78**	**-0.64**	0.05	0.02	0.02	0.01
Greece		0.82		**0.14**		**0.09**
Ireland	0.66	0.39	**0.08**	**0.10**	**0.05**	**0.10**
Italy	**0.05**	**0.58**	0.14	0.10	0.02	0.02

16

Netherlands	0.85	0.36	0.11	0.06	0.02	0.02
Portugal	0.60	0.59	**0.03**	**0.07**	0.04	0.02
Spain	0.77	0.77	**0.15**	**0.16**	**0.03**	**0.04**
Euro Area	0.54	0.52	0.09	0.07	0.02	0.01

Source: Own elaboration based on financial cycle estimates (see above) and business cycle.

Note: Amplitude is measured here as standard deviation of the cycles.

We also notice that with the adoption of the euro in some countries the correlation between financial and business cycles increased (Italy, Belgium and France), while in few it fell drastically (the Netherlands and Ireland). The case of Ireland is quite special. The country has the highest variation not only in the size of the financial cycle but also of the business cycle, yet the correlation among the two is positive but relatively low. This can be explained by the visual inspection of the chart of Ireland in Graph 3.2. Ireland seems to have one small extra financial cycle in the late 1990s and, above all, when it comes to the expansionary phase of the most recent financial cycle it seems that there is phase shift. The peak of the financial cycle follows the peak of the business cycle with about one year of delay. This seems to go against the idea that the business cycle follow the financial cycle. Moreover this is a feature, also of other countries, like Italy, Greece and Finland, although less patent. One possible explanation is that in those countries credit remained on a growing pattern (some of the countries received emergency financial support through programmes) even though the GDP was sinking. The combination means that the credit-to-GDP-ratio, which is one of the components of the financial cycle, is inflated.[9]

Last but not least, Ireland, Spain and Greece, which all have experienced housing bubbles, exhibit the highest volatility both in the financial and the business cycle and, correcting for the phase shift of Ireland, the highest correlation between the two.

4. THE FINANCIAL CYCLE AND IMPACT OF SHOCKS IN THE EMU

4.1. THEORETICAL FRAMEWORK: INTERNATIONAL RISK SHARING AND CONSUMPTION SMOOTHING

In this section we briefly present the analytical framework used to estimate the mechanisms through which the impact of (asymmetric) shocks can be smoothed in the context of a monetary union. In the next sections we will focus specifically only on two of them: the role of international capital markets in providing international risk-sharing and the role of fiscal policy in providing consumption smoothing. Here we provide an overview of all of them.

As anticipated earlier we use the approach proposed by Asdrubali et al. (1996) and relate it to the recent contributions by Alcidi and Thirion (2016) and Alcidi et al. (2017a, b). Following Asdrubali et al. (1996), we undertake a variance decomposition of shocks to GDP. For this purpose we disaggregate GDP into the following national accounts aggregates: Gross National Income (GNI), National Income (NI), Net National Disposable Income (NNDI) and total consumption (C+G). From these aggregates, we identify the following channels through which GDP shocks are smoothed

GDP-GNI =international income transfers (factor income flows)

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[9] Indeed, as shown in Annex I, in the countries mentioned above the measure of the cycle that includes also credit-to-GDP exhibit a phase shift compared to the others.

GNI-NI = capital depreciation

NI-NNDI = net international taxes and transfers

NNDI-(C+G) = total (private and public) net (of investment) savings, where C+G is total consumption

We then consider the following identity:

$$GDP_i = \frac{GDP_i}{GNI_i}\frac{GNI_i}{Ni_i}\frac{Ni_i}{NNDI}\frac{NNDI_i}{CONS_i} * CONS_i$$

We take the first difference and apply a log-transform to the equality to obtain the following five equations below, which correspond to a simple variance decomposition of GDP into five factors and estimate each of them separately in a panel setting: [10]

$International\ factor: \Delta \log GDP_{i,t} - \Delta \log GNI_{i,t} = a_t^f + \beta^{if}\Delta \log GDP_{i,t} + \varepsilon_{i,t}^f$ \quad (1)

$Capital\ depreciation: \Delta \log GNI_{i,t} - \Delta \log NI_{i,t} = a_t^d + \beta^d\Delta \log GDP_{i,t} + \varepsilon_{i,t}^d$ \quad (2)

$International\ transfers: \Delta \log NI_{i,t} - \Delta \log NNDI_{i,t} = a_t^t + \beta^t\Delta \log GDP_{i,t} + \varepsilon_{i,t}^t$ \quad (3)

$Total\ net\ savings: \Delta \log NNDI_{i,t} - \Delta \log CONS_{i,t} = a_t^s + \beta^s\Delta \log GDP_{i,t} + \varepsilon_{i,t}^s$ \quad (4)

$Total\ consumption: \Delta \log CONS_{i,t} = a_t^c + \beta^c\Delta \log GDP_{i,t} + \varepsilon_{i,t}^c$ \quad (5)

a_t denotes the time-fixed effects, the β_s capture the percentage of smoothing achieved by the different smoothing channels and $\varepsilon_{i,t}$ is the error term. The β coefficients are the OLS estimates of the slope in the cross-sectional regressions and each of them aims to capture separate portions of how GDP shocks propagate through the economy. The sum of all βs, for a certain time, equals one by construction. In particular, if $\beta^c = 1$ (the coefficient for consumption), the impact of a shock to GDP is falling fully on consumption, implying no risk sharing. From a welfare point of view this is not a desirable scenario. Conversely, if $\beta^c = 0$ risk-sharing mechanisms provide full stabilisation to a shock, with no impact on consumption. This is a more desirable scenario.

As no constraint is imposed on the sign of the βs, both positive and negative estimates are possible. A positive coefficient measures the smoothing effect of a given channel while a negative coefficient indicates that the channel has an amplification effect. Variables are in real terms and per capita, on annual basis. By introducing time fixed effect in the regression, we control for shocks on aggregate GDP (symmetric shocks) and the β coefficients are the weighted average of the yearly cross-sectional regressions. This makes it possible to remove the common component of shocks and measure the effect of asymmetric shocks only.

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[10] See Furceri and Zdzienicka (2013) for a detailed derivation.

Estimates of the variance decomposition - smoothing effects of 1% shock to GDP (1995-2014)
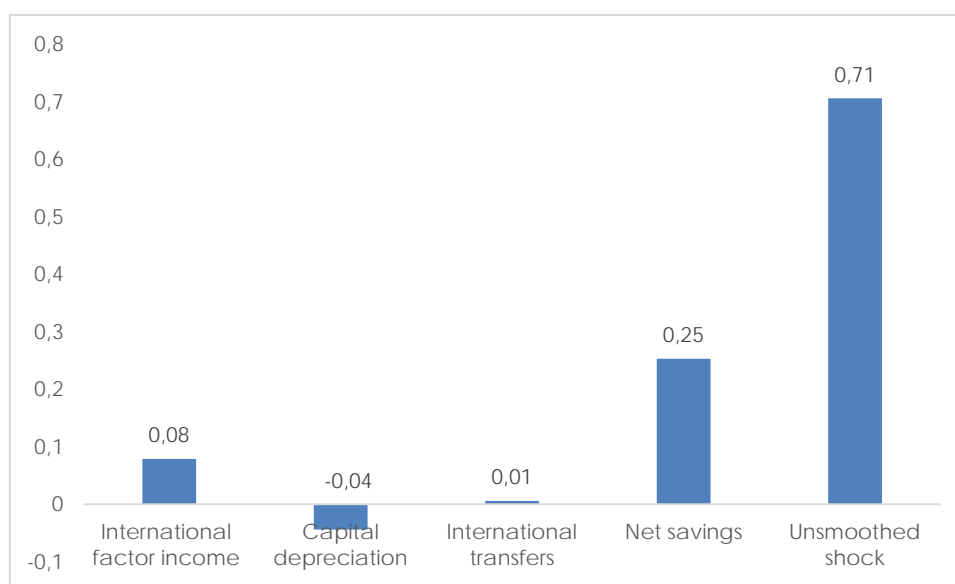
Source: Own estimates based on OECD data, EA11

Note: Each bar illustrates the βs of the equations above, from 1 to 5. They are all significant at least at 5%, except international transfers, which is not statistically different from zero. Standard error follows an AR (1) process.

Graph 4.1 confirms the findings from previous studies that international capital markets, as measured by the international factor income, absorb only a very small part of the shock. Net savings, which include both private (i.e. households and corporate) savings as well as government net savings (i.e. budgetary policy), is the most important channel in smoothing the impact of shocks – one quarter of the total effect on average over 20 years. A very large part of the shock remains unsmoothed, which means that negative shocks are associated with large falls in consumption.[11]

In the following section we use this framework to investigate if developments in the financial cycle, as described in the previous section, affect the functioning of the capital markets channel, through international factor income, and of fiscal policy.

4.2. FINANCIAL CYCLE, FINANCIAL INTEGRATION AND INTERNATIONAL RISK SHARING

In the context of the euro area, a number of studies have examined whether cross-country risk sharing among euro area member states has increased since the adoption of the euro as result of the process of financial integration. Theoretically, a given country benefits from international risk sharing if the rates of return on its foreign assets (i.e. debt, equity and FDI) are highly correlated with the growth rates of other countries and the return on its foreign liabilities is highly correlated with its output growth. Under such conditions, returns on foreign liabilities are high when domestic output growth is high and income from foreign assets is high when domestic output growth is low. This implies that a negative shock on domestic GDP is not fully transferred to the income, thanks to returns generated abroad.

In order to examine the relationship between financial market integration and cross-border capital income smoothing, Sorensen et al. (2007) extend the framework of Asdrubali et al. (1996) interacting the variable measuring output shocks with total foreign asset/liability holdings, which proxies financial integration. They find that larger holdings of foreign assets are associated with increased risk sharing in the EU, while foreign liabilities tend not to yield any significant risk sharing.

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[11] Alcidi et al. (2017a) make the comparison with the US, where the unsmoothed part is much smaller.

Following a comparable approach but focusing on the role of portfolio investment's composition, Demyanyk et al. (2008) investigate whether income risk sharing between EU and EMU countries has increased since the adoption of the euro as a result of portfolio investment diversification. Their general finding is that financial integration in the EMU, and financial globalisation in general, has facilitated the smoothing of income. In particular, empirical results point to an increase in income risk sharing in the five years after the adoption of the euro for EMU countries, compared to the previous five years and to EU countries, which is interpreted as the additional effect of monetary integration. The authors are, however, careful in the interpretation of these results due to the short time period studied. Kalemli-Ozcan et al. (2008) focus on banking integration only and find evidence that increased cross-border banking integration, associated with the euro and the harmonisation of policies, has fostered risk sharing.

One limit, common to these studies, is that they consider a narrow time period and a very special phase of the euro integration. More recent works have assessed developments in the incidence of the different channels of risk-sharing by distinguishing sub-periods of time, which have been characterised by different degrees of (dis)integration. Kalemli-Ozcan et al. (2013) find that during the crisis, international factor income did not provide any risk sharing; on the contrary, it acted as a shock amplifier. This result is also confirmed by Alcidi et al. (2017a).

From a theoretical point of view, financial integration, simply intended as growing cross-country holdings of assets, does not necessarily lead to higher risk-sharing. It is the negative correlation among returns generated by assets in a portfolio geographically diversified that makes international risk-sharing happening. And different asset classes have different risk-sharing properties. For instance cross-border bank lending has little risk-sharing potential, by definition, and it also the form of international exposure that increased the most in the first years of the euro. Graph 4.2 illustrates a dramatic increase in the claims of EU banks vis-à-vis Greece, Ireland and Spain.[12] These countries have experienced the largest house price bubbles and the largest swings in their financial cycles (see Figure 3.2).

Graph 4.2. **EU banks' foreign claims vis-à-vis selected countries (1999-2010), USD million**
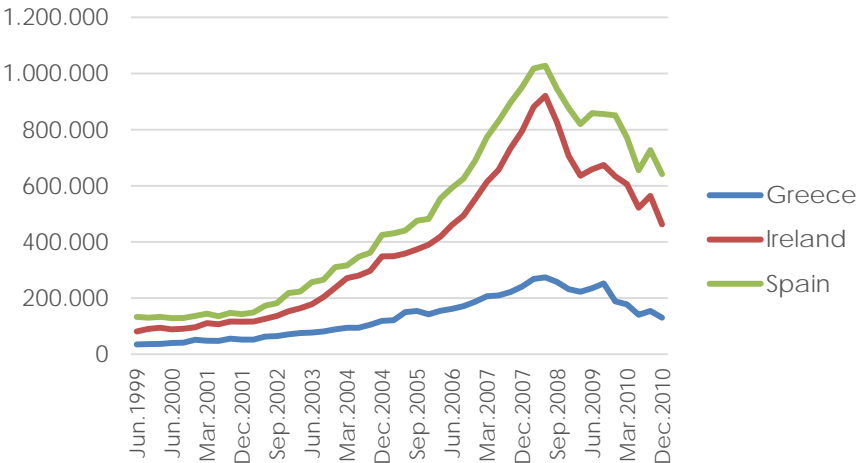
Source: BIS. Table 9B: Consolidated foreign claims of reporting banks - immediate borrower basis

Note: These data were extracted on 28 April 2011, these series are not available anymore on the BIS website.

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[12] Accounts of the growth in cross-border banking in Europe are provided among other by Allen et al (2011)

In this respect, Lane and McQuade (2013) argues that cross-country bank lending facilitated the increase in domestic credit. This implies that while the financial cycle has a strong domestic dimension and captures the existence of national boom and busts, it is unlikely to be independent from financial integration (at least the way it is usually measured). This idea is consistent with the global dimension of the financial cycles also highlighted in Claessens et al. (2011).

Financial integration, enhanced by the introduction of the euro, through increased cross-border bank lending fuelled the expansionary phase of the financial cycle and/or exacerbated developments in the financial cycle at national level. When house prices started to fall, the bubbles busted and the recessionary phase of the financial cycle started; banks cut their international exposures and financial dis-integration materialised.

Against this reasoning, this section attempts to investigate how the financial cycle, as measured in the previous section, relates to financial integration and to cross-country risk sharing in the euro area.

Graph 4.3 shows the two FINTEC indicators of financial integration, quantity- and price-based, and the average euro area financial cycle. Co-movements in the variables are visually evident. In particular, over the period between the introduction of the euro and the collapse of Lehmann, the correspondence between growing integration and the expansionary phase of the average financial cycle is striking. The average correlation between the financial cycle and the quantity-based indicator is 0.97. After 2008, financial integration (both price and quantity) declines, as does the financial cycle, to reach a trough in 2012. The recovery is still ongoing in 2016, when the FINTEC indicator is back to the level of 2003, based on quantity, and of 1999, based on prices. As far as the financial cycle is concerned, it looks like the descending phase of the average euro area cycle is bottoming down in the very last part of the sample (2016q1) and the trough appears less deep than in 1999. As noted earlier, the complete financial cycle – the distance from trough to trough - seems to correspond exactly to the life of the euro. It is impossible to infer any implications about causality from this chart, but as argued earlier, expanding financial cycles in certain member states have gone hand in hand with cross-country flows and hence financial integration.

Graph 4.3. **Quantity- and price-based indicators of financial integration in the euro area and Euro area (average) financial cycle**
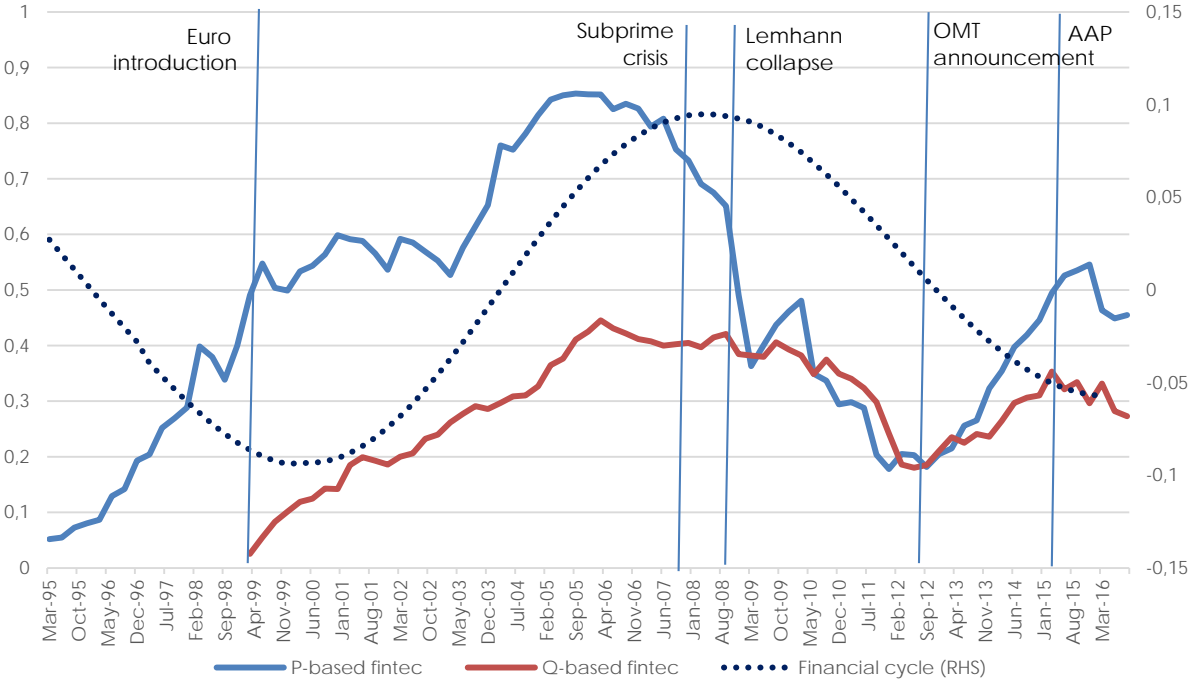
Source: ECB Statistics, FINTEC composite indicators and financial cycle based on own elaboration, see section 3.

One consequence of the high correlation between financial cycle and financial integration is that during the expansionary phase of the cycle it will appear that cross-border holdings, i.e. financial integration, deliver a high degree of risk sharing, while risk-sharing falls during periods of declining financial integration, (possibly driven by the recessionary phases of the financial cycle). This cyclical behaviour of international risk-sharing is at odd with the idea that capital markets provide ex-ante insurance that is "resilient' to different shocks, and even if they are persistent.

In order to assess whether it is financial cycle developments that alter risk sharing mechanisms, we take equation (1) from the previous section and re-estimate it by interacting the independent variable with the synthetic measure of the financial cycle we estimated in section 3.2, as below:

$$\Delta \log GDP_{i,t} - \Delta \log GNI_{i,t} = a_t^f + \beta_h^f D^h \Delta \log GDP_{i,t} + \beta_l^f D^l \Delta \log GDP_{i,t} + \varepsilon_{t,i}^f \ (6)$$

Given that the financial cycle is a non-linear variable, the interaction we consider here is limited to a dummy variable which captures the two phases, expansionary and recessionary, of the financial cycle. In particular we define a dummy, D^h:

$$D^h = 1 \ if \ \left(fc_{i,t} - fc_{i,t-1}\right) \geq 0 \ and \ 0 \ otherwise \qquad (7)$$

And a dummy D^l:

$$D^l = 1 \ if \ \left(fc_{i,t} - fc_{i,t-1}\right) \leq 0 \ and \ 0 \ otherwise \qquad (8)$$

Table 4.1 below reports estimates based on the same approach as described above and confirms our hypothesis. The first value (0.08) in the table recalls the general estimate of the international factor income reported in Graph 3.1, as a term of comparison, the other two numbers are the β coefficients accounting for the phase of the financial cycle. In line with our expectations, when the financial cycle is in a growing phase, risk sharing accounts for about 10% of the absorption of asymmetric shocks, higher than the average coefficient. When the financial cycle is in the recessionary phase, the coefficient is not statistically different from zero, suggesting that international factor income does not contribute to the absorption of shocks.[13]

Table 4.1. **International factor income: Risk-sharing and the phase of the financial cycle**

	Total	Expansionary phase (H)	Recessionary phase (L)
1995-2014	0.08**	0.10**	0.03
Observations		202	
Adjusted R-squared		0.144	
Number of countries		11	

Source: Own estimates.

Note: OLS estimates based on based on OECD national accounts data (2015).

One important consequence of this analysis is that financial markets let alone do not necessarily deliver risk-sharing. At least this did not occurred in the euro area until now. But it seemed to have happened in the US. There are a number of possible explanations for such dissimilarity. One relates to

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[13] It should be noted that this exercise is different from having a dummy variable before and after 2008, as here national cycles are considered in the panel analysis

a crucial difference in the structure of the two financial systems: the euro area financial system is strongly bank-centric, while in the US is much more market-based. According to Valiante (2016) banks account to 80% of the financial system in the euro area and 40% in the US. In a system dominated by banks, financial integration have increased the international dimension of banks and the size of their balance sheets but failed to create a more market based system. In the future the banking union will play an important role in avoiding excessive imbalances on the side of banks but an increase in international risk-sharing would require a profound change in the financial system in the direction of a diminished role of banks relative to capital markets.

A second possible explanation relates to the existence, in the US, of a common fiscal insurance mechanism. As contended in Alcidi and Thirion (2016), if fiscal insurance operates ex-ante, fiscal and market channels are not independent.[14] This is because in the presence of a government that certainly provides a minimum level of insurance, panics can be avoided, and investors might be more willing to provide more insurance through market-based mechanisms. Under such a hypothesis, fiscal risk sharing acts as a catalyst towards the provision of higher market risk sharing. This implies that minimum fiscal insurance at a centralised level could help deliver what financial integration has not until now. The fact that federations like the US and Germany, which exhibit a high fiscal risk-sharing at central level, also have a higher degree of market risk-sharing, may not just be a consequence of specific features of financial markets.

Interestingly this idea goes against the conclusion that Jones (2016) draws from the analysis of the functioning of the US system. He argues that a fiscal federal arrangement would not serve the purpose unless it could safeguard cross-border investor confidence, which is what the ECB did. While his diagnosis of the recent crisis is correct, the banking union (and the introduction of a safe asset), which are the proposed solutions, are important but unlikely to be satisfactory. The European financial system is very bank-centric and will remain so for years. This remains a key difference relative to the US. Lessons about the US overall stabilisation capacity cannot be drawn based only on the functioning of the federal system of taxes and transfers, they should also consider what markets can deliver, and this goes beyond banking union.

5. FISCAL POLICY STABILISATION AND THE FINANCIAL CYCLE

5.1. FISCAL POLICY STABILISATION IN THE EURO AREA

In this section we focus on fiscal policy and, similarly to what we did for the international factor income, ask whether the capacity of fiscal policy to absorb shocks in the euro area is affected by developments in the financial cycle. Before doing so we need to clarify what responsiveness of fiscal policy we are measuring and why.

5.1.1. Fiscal policy stabilisation from a country perspective

The debate about the role of fiscal policy is an old one, but has returned at the centre of the attention since the beginning of the crisis. Stabilisation of the economy is usually one of the key functions of fiscal policy and it has been often investigated in the economic literature. In order to make international comparisons, the analysis has almost exclusively focused on the discretionary component of fiscal policy. Indeed the economic literature concerned with the stabilisation capacity of fiscal policy has typically investigated the reaction of discretionary fiscal policy to cyclical fluctuations in

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[14] See Farhi and Werning (2012) for detailed explanation of the theoretical argument.

economic activity. In other words, the degree of stabilisation is proxied by the degree of counter-cyclicality of fiscal policy.

An overview of such literature suggests that the evidence that fiscal policy is used as tool for stabilisation purposes is rather weak. Studies that have focused on EMU countries over the pre-2008 period indicate that, overall, the reaction of discretionary fiscal policy to changes in the output gap tends to be either weak or pro-cyclical. The European Commission (2004) and Gali & Perrotti (2003) show that while there is evidence of pro-cyclical bias in the fiscal stance in the run-up to the Maastricht Treaty, discretionary fiscal policy in EMU countries became a-cyclical afterwards. A number of studies looked at whether the cyclicality of discretionary fiscal policy is asymmetric over the cycle by distinguishing periods of positive and negative output gap. Among others, Debrun et al. (2004) and European Commission (2004) find that discretionary changes in the fiscal stance tend to present some degree of asymmetry over the business cycle, and report a pro-cyclical bias during good times, while during recessions there is no evidence of pro-cyclicality. Turrini (2008) finds that the fiscal policy stance is on average a-cyclical, but with a pro-cyclical bias in good times, driven by expenditure. By contrast Huart (2013), who considers a different measure of the cyclical conditions, namely negative and positive changes in the output gaps rather than the levels, finds that fiscal policy has become more counter-cyclical during bad times (negative changes in output gaps) over the period 1999-2005, but no evidence is found of counter-cyclicality during good times.

In the mid-2000s part of the literature has put forward the idea that the lack of robust results may be driven by the information gap policy makers are exposed to: at the time policy-makers take a decision, information is more limited than what is contained in ex-post data used for the estimates. Hence some authors considered real-time data and focused on the analysis of the fiscal plans in reaction to the current information about the cycle. Based on this idea, Cimadomo's (2008) analysis finds strong counter-cyclicality in fiscal policy in the euro area. Pina (2009) compares real-time with ex-post data findings and finds that ex-post revisions generally lead to a weakening in the counter-cyclicality of fiscal policy, in particular on the government expenditure side.

Overall, these findings appear to suggest that prior to the sovereign debt crisis, euro area policy-makers intended to pursue counter-cyclical fiscal policy, but these intentions somehow failed to be reflected in an actual counter-cyclical policy stance, especially in good times. Alcidi and Thirion (2016b) update both real time and ex-post data and estimate the reaction function for the euro countries to cover the crisis years, but do not find any evidence of a clear pattern in the cyclicality of fiscal policy over the 20 years considered. Carnot and De Castro (2015) investigate the cyclicality of fiscal policy by developing a new measure of the fiscal stance. Their results suggest that, with exceptions, fiscal policy has been conducted in a more stop and go and pro-cyclical fashion over the past decade than is suggested by traditional indicators.

So it seems very difficult to conclude anything about the capacity of fiscal policy to stabilise the economy.

One problem common to all the papers considered is that the discretionary component of fiscal policy is not necessarily the most important part in terms of size and even less in terms of the stabilisation of the economy. Automatic stabilisers, which are excluded from most analyses, are of crucial importance. However, reaction functions are not an appropriate tool to investigate the overall stabilisation capacity of fiscal policy. In addition, as mentioned in the introduction, in the context of the euro area, stabilisation has a different 'meaning' than from the perspective of individual member states. From a country perspective, it is the cyclical conditions, usually measured as deviations from potential (or trend) output, that matter. From a union-wide perspective, it is the asymmetry in the economic conditions across countries, namely deviations relative to the euro area average, that matter. This second perspective is the one we consider in the analysis that follows. It will allow us to account also for the role of stabilisers and to investigate euro area dynamics in relation to shocks.

5.1.2. Fiscal policy stabilisation from a monetary union perspective

The Asdrubali et al. (1996) framework used above is also the tool we use here to capture the stabilisation capacity of fiscal policy (both discretionary and automatic stabilisers) in response to asymmetric shocks. Arreaza et al. (1999) are the first one to extend the original approach and split the so-called savings channel, which contain government, corporate and households' savings, by sector. At the time the result was that national governments' budgets in EU countries smooth about 20% of output shocks. More recent studies, which use longer samples, like Afonso and Furceri (2009) and Kalemli-Ozcan et al. (2014), using the same methodology, broadly confirm these features, even for the years following the introduction of the euro.

Here we repeat the exercise to get benchmark estimates for the capacity of fiscal policy to smooth consumption and then we extend the methodology further to account for the dynamics in the financial cycle estimated in section 3.2.

As in Alcidi and Thirion (2017), the national account decomposition shown above is further extended and the total net savings are broken down into private and public savings. Here we focus only on net public savings, which is nothing more than the lending and borrowing of governments at national level or the national budgets. Accordingly we estimate the following equation, with same methodology explained above:

$$Government\ savings: \Delta \log NNDI_{i,t} - \Delta \log(NNDI_{i,t} - Gov\ Savings_{i,t}) = a_t^s + \beta^s \Delta \log GDP_{i,t} + \varepsilon_{i,t} \quad (9)$$

The coefficient β^s measures the fraction of shocks to GDP absorbed by domestic fiscal policy. The estimates are reported in Table 5.1, first column.

Following the same reasoning as in section 4.2, we modify the equation above by adding dummies (as defined in equations 7 and 8), which proxy the different phase of the financial cycle and we estimate:

$$\Delta \log NNDI_{i,t} - \Delta \log(NNDI_{i,t} - Gov\ Savings_{i,t}) = a_t^s + \beta_h^G D^h \Delta \log GDP_{i,t} + \beta_l^G D^l \Delta \log GDP_{i,t} + \varepsilon_{i,t} \quad (10)$$

Table 5.1 reports the estimates for the all the βs and suggest that the consumption smoothing capacity of fiscal policy depends on the phase of the cycle. During expansionary phases, fiscal policy absorbs on average 17% of the asymmetric shock, higher than the average for the full period, while in the recessionary phases the coefficient is not statistically different from zero.

Table 5.1. **Fiscal policy consumption smoothing and the interaction with the financial cycle (1995-2014)**

	Total (β^s)	Expansionary phase (β_l^G)	Recessionary phase (β_l^G)
1995-2014	0.14**	0.17**	0.09
Observations	208	195	
Adjusted R-squared	0.62	0.64	
Number of countries	11	11	

This suggests a quite clear-cut picture in which the responsiveness of fiscal policy to asymmetric shocks is driven by developments in the financial cycle. Alcidi et al. (2017b) investigate the performance of fiscal policy breaking down the sample into sub-periods, before 2008 and after 2010, to try to find a pattern linked to recessionary and expansionary phases of the business cycle (as we know ex-post), but in that case results are mixed.

A consequence of the empirical finding of this section, combined with the analysis in section 4, is that in the euro area the impact of asymmetric shocks on consumption is likely to stay high, if the capacity to absorb and respond to shocks remains low and pro-cyclical relative to the financial cycle.

As shown in Table 4.1 domestic fiscal policy is by far the most important tool to respond to shocks. In the context of the euro area, the capacity of governments to counter asymmetric shocks has often be limited by the need to intervene to bail out banks. Macroprudential policy and the banking union will limit, though not prevent, the occurrence of such events in the future, but this is not the only reason for low fiscal response. When shocks to the real economy are persistent, which is more likely to be the case when they are associated with financial disruptions, fiscal policy resilience is limited, even in the case of disciplined governments. For such cases, a minimum centralised fiscal insurance could help stopping negative feedback loops into the economy.

6. THE ROLE OF FINANCIAL INTEGRATION AND FINANCIAL CYCLE IN THE OCA AND INTERNATIONAL RISK SHARING THEORY

In this section we aim at making the link between the Optimum Currency Area (OCA) theory and the international risk-sharing theory, both in terms of intellectual setting and in terms of policy considerations.

Developments in the OCA theory after the seminal work of Mundell (1961) converged towards the idea that even if the euro area is not an OCA, it can become so, through trade and financial integration, which would foster synchronisation of cycles across countries.[15] Although the OCA theory never really determined the design of the EMU (as the Maastricht approach prevailed), fostering financial integration remained and still is a crucial objective of the EMU, and broadly of the EU project.

Financial integration is also a key pillar of the theory of international risk sharing. The latter has not played any role in the original thinking of the EMU project, at least until the crisis, but it developed and gained in importance in the framework of the process of financial liberalisation and innovation started in the 1990s, whereby geographical and portfolio diversification is beneficial.

Overall, despite for different reasons, both theories point to the benefits of higher financial integration. Table 6.1 offers a very schematic summary of the key features of the two theories to understand the different starting point, the thinking framework and the different objectives they aim to achieve. On the one hand, the main point about financial integration is that it is a necessary condition for increasing completeness of markets, and hence for international risk-sharing; on the other hand, financial integration is useful for increasing the synchronisation of business cycles, as the OCA theory posits.

In reality, international risk-sharing and synchronisation of business cycles are conflicting objectives and financial integration is not a sufficient condition for any of them. As shown in Alcidi et al. (2017a), stylised facts and empirical evidence seem to suggest that, in the first 17 years of EMU, the benefits of a higher degree of completeness of markets did not materialise and those of increased synchronisation of cycles have not occurred yet (see Belke et al, 2016).

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[15] Frankel and Rose (1997, 1998)

Table 6.1. **Comparing theories: OCA vs. international risk sharing**

Theory	OCA	International risk-sharing theory
Objective	Stabilisation of output	Stabilisation of consumption: disconnect consumption from domestic income
Shock	Concern about asymmetric shock which makes costly giving up monetary policy sovereignty	Asymmetric shocks only. Based on principle of diversification and does not work for symmetric shocks
Context	(imperfect) Monetary unions	Broad international context – open economy Existence of a monetary union likely to affect risk sharing because of: • Correlation of shocks across country • Functioning and effectiveness of monetary policy • Degree of financial integration
Economic thought	New Keynesian with price rigidities and market frictions	Hypotheses: • (quasi) Complete markets • Financial openness • Flexible prices
Dimension	Cross state and over time	Spatial/Cross States
Policy tools	Policy instruments to address market failures • Labour mobility • Domestic fiscal policy • Reduce rigidities through structural reforms In later versions of the theory: • Common fiscal policy • Financial integration	• Financial innovation (market completeness) • Financial integration • Anything that spreads geographically the impact of shocks at 1 point in time to increase linternational private income transfers (K & L) and transfers from supranational entities

Source: Own elaboration.

In this paper we advance the hypothesis that this is mostly due to dynamics induced by the financial cycle: financial integration in the euro area has been associated with large swings accompanying (very) expansionary and (very) recessionary phases of the financial cycle. This is very different from increased completeness of markets.

In addition, as shown above, financial cycles in the euro area are highly correlated (with the exception of Germany) across countries but the amplitudes of the fluctuations are very different. The countries which experienced the highest amplitude (Greece, Ireland and Spain) in the financial cycle are the same who exhibit the highest amplitude also in the business cycle. This suggests that the desired synchronisation in business cycles through financial integration, in fact, materialised as a process of amplification of domestic financial cycle (and business cycle), at least in certain countries.

An important element of the OCA theory relates to the policy implications and the nature of shocks to be concerned about. Temporary, limited shocks associated with typical business cycle fluctuations are of limited, if any, relevance in the context of monetary unions. Indeed, the theory does not offer solutions. By contrast, persistent asymmetric shocks are much more relevant; they are what makes costly abandoning monetary sovereignty. As emphasised in De Grauwe and Ji (2016), it is accounting for this concern that the OCA theory prescribes structural reforms which aim at making the economies more flexible so that adjustment in prices and wages and mobility of factors of production, can absorb the shocks. Similarly to De Grauwe and Ji (2016), we argue that business cycle should be stabilised but unlike them we argue that the financial cycle is the main source of persistent shocks and synchronisation of cycles, at least medium term business cycles. This implies that macroprudential policies and the banking union, which should reduce the probability of large swings in financial cycles are of crucial importance. However, crises cannot be avoided and fiscal policy has still a role to play;

the option for a common budget has to be considered in this context. This is not very different from what further reviews of the OCA also pointed to, although the focus was on sectoral shocks in the real economy.[16] Against persistent asymmetric shocks, national fiscal policy has only limited power, certain adjustments, as sectoral reallocation of resources, cannot be avoided, but it should still make sure the costs associated with such adjustments are temporary and socially acceptable. To unsure this, a minimum centralised fiscal mechanism to ensure transfers of resources is necessary.

7. CONCLUDING REMARKS

This paper examines the role of the financial cycle on the capacity of the euro area to deal with asymmetric shocks and focuses on the role of international capital markets and fiscal policy at the level of member states. It starts by identifying the financial cycles and investigating the synchronisation across them and their relation to the medium term business cycle.

Financial cycles tend to be highly synchronised, with the only exception of Germany, but the amplitudes differ largely across countries. National medium-term business cycle dynamics tend to be associated with the financial cycle and to be larger when the amplitude of the financial cycle is also large. In addition to this, booms and bust developments in member states have been associated with financial integration and disintegration trends at the euro area level, possibly leading to mutually reinforcing dynamics.

The paper then examines how the financial cycle can affect the capacity of the economy to deal with shocks. We find that the phases of the financial cycle seem to affect the degree of international risk-sharing, leading to a pro-cyclicality of the latter. This implies that increased cross-country flows, and hence higher financial integration, can be bad predictor of international risk-sharing. This is important to note as most empirical works rely on the opposite assumption.

Lastly the paper looks into whether financial booms and busts also affect the capacity of domestic fiscal policy to smooth asymmetric shocks in the euro area. The ability of fiscal policy to smooth shocks seem driven by the phase of the cycle, with relatively high risk absorption in the expansionary phase of the cycle and no shock absorption at all during the declining phase. This is in line with economic reasoning about how the financial cycle is likely to affect fiscal positions of governments.

The first conclusion of these findings is that if higher financial integration means an expansionary financial cycle, financial integration is more a problem than a solution for the functioning of the euro area. This contrasts with the predicament both of the OCA and international risk-sharing theories (as well as the current EMU framework), whereby increasing financial integration is beneficial in general.

Of course this does not mean that we should aim at financial disintegration, but higher integration is not necessarily always beneficial from a macroeconomic point of view. The real question is how to disconnect financial integration developments from developments in financial cycles in member states. For the purpose of this paper, this relates to the broader question of how to disconnect the capacity of an economy to deal with asymmetric shocks from the financial cycle.

Here two complementary solutions should be considered. First, developing further macro-prudential policies is likely to be important. But this is unlikely to be sufficient. The temptation to fuel bubbles will always be very strong when the economy is weak, and the incentives to prick bubbles will be always feeble when the economy expands. Spain, Greece and Ireland were good examples in the past; the future will not necessarily be different. It is important to acknowledge that not all cross-country financial flows (i.e. asset classes) lead to the same effects. But short-term cross boarder banking flows are likely to be the best candidates to fuel expansionary financial cycles.

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[16] See Kenen (1969)

The second solution is to create mechanisms that reduce the pro-cyclicality – relative to the financial cycle - of the main channel of shock absorption. A fiscal insurance mechanism at central level can work in this direction for two reasons.

A well designed, common fiscal stabiliser could reduce drawbacks related to the ineffectiveness of fiscal policy, which in the euro area is the most important channel to absorb the impact of shocks, when the financial cycle is endangering governments' fiscal positions or in the face of large symmetric shocks. A reinsurance system (of national stabiliser mechanisms) can do the job. As shown by Alcidi and Thirion (2017) and Vandenbroucke and Luigjes (2016), an accurate understanding of the US system offers interesting insights; and not necessarily in the direction of replicating that system. The assessment that the euro area needs a common fiscal mechanism is far from being shared. Several authors have pointed to the need to focus only on market mechanisms and financial regulation: macroprudential policies, banking union and a safe asset.

Here we argue that a limited central fiscal insurance mechanism is an important tool to assure the stabilisation of the economy when fiscal policy at national level is ineffective. This is the case in the face of large shocks, either real, as argued by the OCA theory, or financial, as emphasised in this paper. Moreover, a limited central fiscal insurance mechanism can have effects also on international risk-sharing provided by the markets. While both a central fiscal stabilisation mechanism and policy coordination are both justified by the existence of externalities in a monetary union, the crucial distinction between them is that fiscal insurance operates ex-ante, while coordination does it ex-post. This is important if fiscal and market channels are not independent.[17] This implies that minimum fiscal insurance at a centralised level could help deliver what financial integration has not until now. The fact that federations like the US and Germany, which exhibit a high fiscal risk-sharing, also have a higher degree of market risk-sharing, may not just be a consequence of specific features of financial markets.

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[17] This aspect is not captured by the estimates presented above. Indeed in the Asdrubali et al. (1996) framework, each channel is assumed to be independent from the others.

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ANNEX I. MEASURING THE FINANCIAL CYCLE

Figure 1. **Alternative measures of financial cycles in euro area countries**
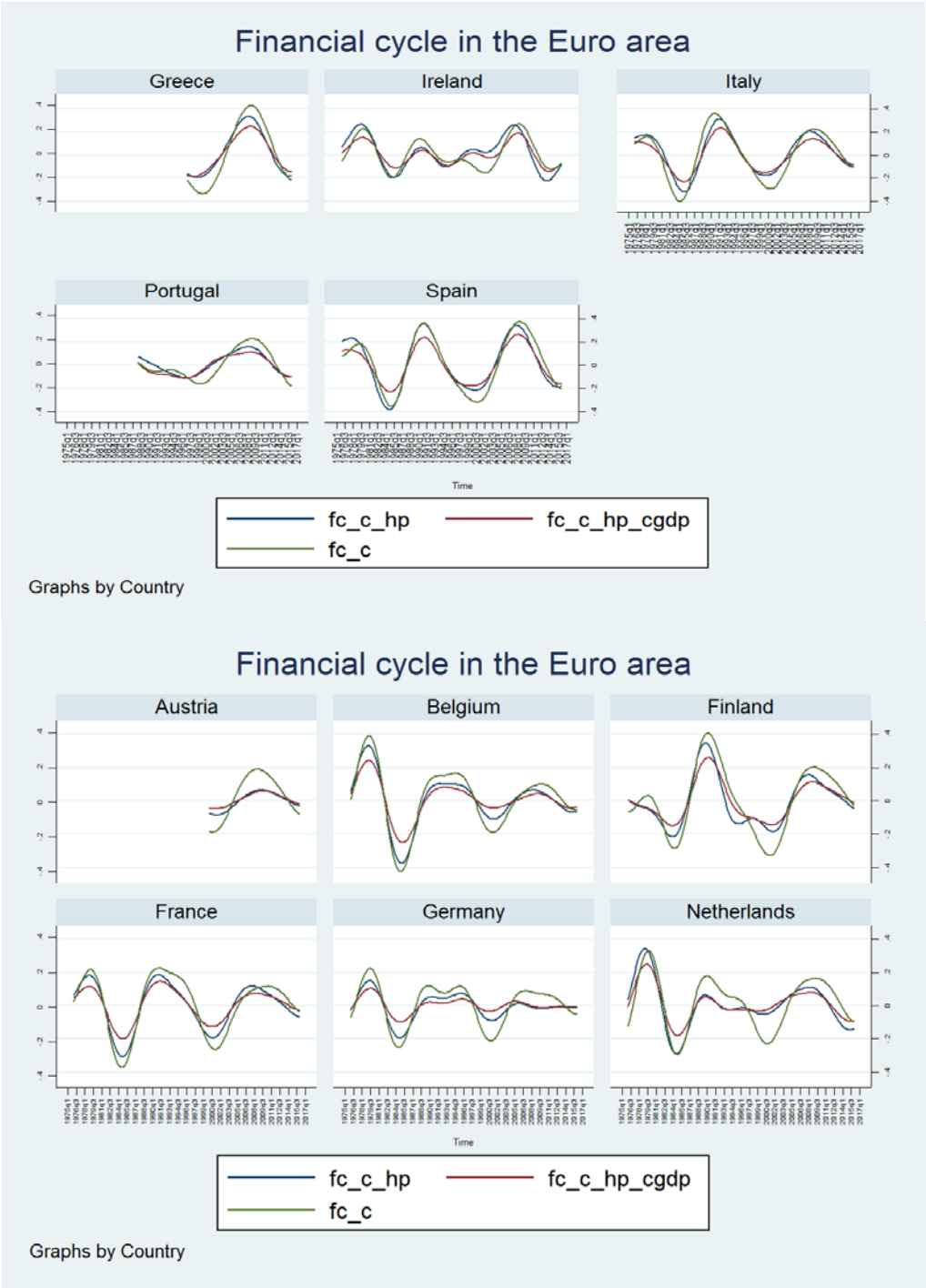
Source: BIS, Credit to GDP and house prices.

Note: FC stands for financial cycle and for each country we compute 3 alternative measures of it, based on an increasing number of components.

Fc_c: credit growth

Fc_c_hp: credit growth and house prices

Fc_c_hp_cgdp: credit growth, house prices and credit –to-GDP

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