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Article

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Capital Markets Union and monetary policy performance: comes financial market variety at a cost?

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Summary: Europe's financial landscape has substantial institutional variety. This reflects different societal responses to (or preferences with regard to) trade-offs. For monetary policy, it implies a challenging environment, particularly in times of financial crises. Using a non-linear VAR-model we document diverging responses to an identical monetary policy impulse, especially between two states of nature (regimes). Crucially, with such heterogeneity between countries in crisis, monetary policy can become, counter-intentionally, de-stabilizing. Thus, a more homogenous financial infrastructure could mitigate such counterproductive policy effects. However, the underlying reasons for the institutional variety are rooted deeply in societal compromises. And convergence must not necessarily be towards a stronger emphasis on capital markets.

Zusammenfassung: Der Europäische Finanzsektor ist durch eine erhebliche institutionelle Vielfalt gekennzeichnet. In dieser kommen unterschiedliche gesellschaftliche Antworten (oder Präferenzen) in Bezug auf Zielkonflikte zum Ausdruck. Die einheitliche Geldpolitik ist damit vor besondere Herausforderungen gestellt, das gilt insbesondere in Krisenfällen. Mit Hilfe eines nicht-linearen vektorautoregressiven Modells dokumentieren wir die unterschiedlichen Reaktionen auf einen identischen monetären Impuls. Die Unterschiede werden insbesondere in zwei Regimen erkennbar. Zentral ist, dass vor dem Hintergrund einer solchen institutionellen Heterogenität die Geldpolitik, entgegen ihrer Absicht, in Krisenländern destabilisierend wirken kann. Von daher könnte eine einheitlichere finanzielle Infrastruktur die kontraproduktiven Politikwirkungen abmildern. Die Gründe für die institutionelle Vielfalt wurzeln allerdings tief in gesellschaftlichen Kompromissen. Und Konvergenz muss nicht notwendigerweise eine stärkere Betonung der Kapitalmarktausrichtung bedeuten.

→ JEL classification: E10, E20, E40, G01, G15
→ Keywords: Keywords: Capital Markets Union, European Monetary Union, European Union, Financial Crisis, Monetary Policy, Convergence, non-linear VAR-model

1 Europe's fragmented financial landscape

European financial markets come in significantly different national guises. At times, this variety is considered as an indicator of richness; at other times, especially now, it is found to be a marker of fragmentation. Here, Fragmentation suggests that prices for financial services, with identical attributes, do show too much dispersion. Under standard priors, this should imply an inefficient allocation of resources (savings) as well as potential financial stability issues.

Prior to the Great Financial Crisis—so-called "normal" times—the situation was accepted as given by all involved parties. However, with the eruption of the peripheral euro area sovereign debt crisis, however, this assessment changed. In essentially all countries hit by the sovereign debt crisis, access to funds became complicated, most importantly for small and medium-sized companies. This rationing was, as some claimed, supply driven, mainly the upshot of capital-constrained banks. Being forced to buttress their equity and liquidity buffers—by regulators as well as by investors (holders of their debt)—, banks deleveraged: They did not roll-over outstanding lines of credit or they shed assets, almost indiscriminately.

Against this background, a major motive for the EU Commission to launch its Capital Markets Union (CMU), as detailed in its September 2015 Action Plan was to ease the access of non-financial firms to funds. Financial constraints, so this diagnosis went, resulted in reduced capital expenditures and, subsequently, reduced growth perspectives.

The U.S. did clearly better. It took significantly less time for it to regain the pre-crisis output level. One obvious difference between the two "economies" is the set-up of their financial markets: Europe relies to a much lesser degree on market-based financing than does the U.S. The EU is (still) essentially bank oriented. Between 2010 and 2015, for example, the capitalization of EU28 equity markets amounted to 65.4 percent of GDP, compared to 130.2 percent in the U.S., 86.2 % in Japan, and 91.0% in China. (At the same time, the number of listed companies in the EU was the highest.) The funding of capital expenditures (non-financial firm investments) by the means of issuing corporate bonds remains comparatively limited, representing only 7.6 percent of total outstanding debt (Musmeci and Thomadakis, 2017).

The dominance of bank-intermediated finance might have a particular bearing on Small and Medium-sized Enterprises (SMEs). Banks, in indisputable need of restructuring (downsizing), simply do not have the balance-sheet capacity to accommodate the financing needs of its costumers (ECB 2016). At the same time, for structural reasons (information asymmetries, size of loans), SMEs rarely tap debt markets. For example, given the high fixed costs (and the low flexibility) involved issuing bonds is largely unattractive below a certain size. This comes with further difficulties smaller firms face in accessing external sources of funding in general and market-based sources of finance in particular (ECB 2016). Yet, SMEs play, of course, a decisive role for EU's member states economies; they account for about two-thirds of total employment and they contribute some 57 percent of value added in the whole Union (Airaksinen et al., 2016). Facilitating the access to market-based financing as well as creating alternative sources of funding to bank loans for SMEs could, thus, have a positive impact on the euro areas potential growth.[1] Simultaneously, the argument goes, this stronger market-orientation could also encourage more

1 Alternatives to traditional methods of financing can be defined here as private equity, private placement and crowdfunding.

risk-taking, thereby also buttressing trend output. Finally, institutional heterogeneity complicates the conduct of ECB policy. This impairment of the monetary policy transmission mechanism differed across euro area member states, making the ECB's unconventional monetary policy especially challenging (Cour-Thiman and Winkler 2012).[2]

Apparently, all of this leads to a straightforward conclusion: redesigning Europe's financial markets towards a stronger market-based landscape should support growth while simultaneously increasing the resilience to shocks across the European Union and the Euro Area as well.

However, this is not a foregone conclusion. Quite evidently, there were (and are) other differences between the U.S. and Europe (more specifically, the euro area), confounding variables, which could have had a bearing. For one, fiscal policy in the U.S. is centrally coordinated and responded differently to the shock than did especially euro area fiscal policies (nota bene the plural, the euro area stands for a plurality of economies.) Moreover, the resolution of—or the addressing of—banking problems was notably different, with the U.S. rapidly recapitalizing their systemically important institutions, starting in October 2008, barely 4 weeks after the Lehman default. However, there were exceptions: some euro area counties did not do that badly, most notably, Germany, which is the prime example of a bank-dominated economy (also with a less constrained aggregated demand).

Omitting these potentially significant determinants, thus, might lead to passing incorrect judgments and drawing inappropriate policy conclusions. And a definite judgment on the comparative efficiency of financial systems is still out. Reasonable people, therefore, can hold different views. This is what we document in very brief surveys of the literature on 1) the relationship between size of financial markets (financial deepness) and economic growth as well as 2) on the relationship between capital market liquidity and macro stability. In order to provide a (preliminary) answer for the case of the euro area, we conduct an analysis using a non-linear VAR model. This is what interests us most in this paper: the effect of the structure of the financial system on the effectiveness of monetary policy.

While we do not have strong priors on the comparative efficiency of banks vs. markets, evidence leads us to the conclusion that fragmented and heterogenous financial markets inhibit the capacity of monetary policy to stabilize the cycle. Thus, greater homogeneity, as it holds in the U.S., means a more reliably working through of monetary policy impulses.

In the remainder of this paper we pursue as follows. In Section II, we briefly sketch results from the relevant empirical literature. Section III presents an empirical assessment of the euro area's financial and monetary environment through the lens of a non-linear VAR model. Finally, Section IV draws a few cautious conclusions, mainly highlighting the inevitable tensions within a monetary union between institutional variety and the ease of conducting a single monetary policy (in a heterogeneous environment). These trade-offs call for normative judgments which are legitimate issues of politics.

2 We will provide some evidence on the impairment of monetary transmission mechanism from the perspective of the interest rate channel of monetary policy.

2 Variety in institutional background conditions—as well as in policy assessments

Launching the CMU project has been motivated, to a substantial degree, by trying to make sense of—i. e., a certain reading of—the differences in the post-GFC trajectory between the U.S. and the euro area.

While the U.S. recovered comparatively swiftly, some euro area economies continued to languish and started bottoming out only more than half a decade into the process. An obvious factor which might have had a bearing was, of course, differences in financial market landscapes. Most remarkably, differences in cost of funds, widening along national lines, as well as obstacles in the access to funds for SMEs, located in particular nation states of the euro area, lent support to the urge for a reassessment of the euro area financial set-up.

2.1 Changes in the euro area's financial background conditions

Europe's financial industry, in particular its banking system, has witnessed substantial change since the mid-1990s (see Schoenmaker 2015). Bank balance sheets grew very rapidly up until the Great Financial Crisis. This held especially true for off-balance sheet exposures (payments services, consulting on as well as enabling mergers and acquisitions, floating debt, selling protection in derivatives markets, trading on own account or earning commissions and fees from structured products etc.).

Concurrently, the share of large institutions in overall activity volume (i. e., concentration ratios) rose, even after the GFC broke out. Leverage, i. e. debt over total assets, increased very significantly, again chiefly for the large institutions. Profiting from the (apparently immovable) gap between return on equity and cost of capital, increasing leverage was supposed to amplify return on equity. However, as we learned (again) in the wake of the GFC, this also amplified these institutions' vulnerability to shocks. The gap can only go so far and it can swiftly disappear.

Whether measured by national income or household wealth, Europe's banking system was large and it grew relative to the size of its underlying economy. As a corollary, Europe's banking system was (and is) also large relative to alternative sources of funds, such as bond or equity markets, at least compared to the U.S. (ESRB 2014).

But, of course, here the euro area average comes with a substantial institutional diversion across the national dimension. To be very brief, the euro area's largest banks come only from a handful of its 19-member states (see Schoenmaker 2013). Few of the large European banks are global (less than 50 percent of assets in the home country), and, amongst these, all except Deutsche Bank, are based outside the euro area, either in the UK or in Switzerland. As concerns the large euro area banks, in their majority they have a domestic focus, unlike the super-regionals in the U.S. which have carved out a nation-wide arena.

Interestingly, the list of the largest banks is dominated by French institutions, where the economy is much closer to a capital-market orientation than, for that matter, in Germany. At the same time, most of the initial (on impact) damage from the GFC hit countries hosting the large institutions—except for Italy and France which both had implemented more restrictive rules with regard to the balance sheet treatment of structured products (conduits and structured investment

vehicles). From this angle, the crisis was mainly about the business model—and not the ownership (governance) structure or the set-up of the financial landscape (Kotz and Schmidt 2017).

Be that as it may, the CMU project found its justification in a reading of the crisis which became dominant, highlighting three dimensions: the relationship between the structure of financial intermediation and growth, finance and macroeconomic stability and the consequences of financial market segmentation (see especially ESRB 2014 and Langfield and Pagano 2016). The main proposition was that a bias towards bank-based intermediation comes with significant societal opportunity costs.

2.2 Financial structure and trend output

Determining the role of financial deepening on economic growth has long been subject to an extensive empirical research. Using a variety of approaches, researchers established a positive relationship between financial development and trend growth. For instance, based on country-level data, it has been found that indicators of economic performance (i. e. growth of per capita GDP, or total factor productivity) are positively associated with the size of the financial sector; King and Levine (1993a, 1993b), Beck, Levine and Loayza (2000b) and Demirgüç-Kunt and Levine (2001). The same type of relation has been established between financial development and economic growth using industry-level data. Rajan and Zingales (1998) conclude that financial development affects economic growth disproportionately in industries dependent on external finance. In a similar vein, Guiso, Sapienza, and Zingales (2004) found at the firm level that financial development in Italy fosters the growth of smaller firms in particular.

More recent research, to be more precise, post-GFC research, however, shows that, at the margin, the positive association between financial deepening and growth does not always hold true, at least not beyond a certain threshold of financial assets relative to GDP. Using both country- and industry-level data, Arcand, Berkes and Panizza (2012), for example, demonstrate that over time the positive correlation between finance and growth has weakened. They uncover a significantly negative relationship between private credit to GDP and GDP growth when the credit-to-GDP ratio exceeds 100 percent of GDP. The same type of hump-shaped, non-linear relationship between financial deepening and economic growth has been found by Cecchetti and Kharroubi (2012), Barajas, Beck, Dabla-Norris, and Yousefi (2013) and Law and Singh (2014).

Most of the research cited above highlights not finance as such, but rather its structure—i.e, the relative share of bank intermediation. This begs an obvious question: Why, beyond a certain threshold, does the size of the banking sector (as opposed to the overall level of outstanding financial assets) negatively impact economic growth?

A number of possible reasons have been offered (ERSB 2014): At the margin, an overbanked system might misallocate both human and financial capital toward less productive projects. In addition, large volumes of bank credit come with a commensurately higher risk of borrowers defaulting. In cyclical downturns, this translates into non-performing loans. Past a certain threshold, they are systemic. That is when banking crises erupt. Such crises typically force the hand of the sovereign. Bailing-out seems inevitable. Often, saving institutions of a substantial size from bankruptcy is tantamount to significant increases in sovereign debt. Obviously, this weakens the credit standing of sovereigns. Even without default, the vulnerability of public credit is associated

with deeper and longer-lasting recessions (Reinhart and Rogoff 2011). Historically, recoveries also were slower when a recession was induced by a financial crisis (Reinhart and Rogoff 2009).

Recent euro area experience seems to confirm such an assessment: Dependent on capital-constrained banks, firms lacking liquidity at times could not even fund their working capital. This impeded investment, widening the gap between potential and actual output.[3] But, again, this does not hold true for the euro area average. It is, however, a defining characteristic of euro area economies with a private and/or sovereign debt crisis.

2.3 Financial structure and financial (in-)stability

One of the structural changes in euro area banking, and most specifically amongst the large institutions, was a stronger reliance on wholesale funding through interbank markets. This was equivalent with a lengthening of the chain of intermediation and it showed, inter alia, on banks' asset side: Claims against monetary financial institutions rose and, again in particular for the large banks, lending to the euro area "real" economy decreased. Overall, lending to households and non-financial firms represented less than a third of the aggregate balance sheet of euro area banks (ERSB 2014). Moreover, moving away from traditional interest-income generating margin-business towards fee-generating business or proprietary trading, the large European "universal banks" exposed themselves to more risky prospects[4] on both sides of their balance sheets.

This came with potential consequences for monetary policy, impacting on (changing) the transmission of its interest rate impulses, which lost traction, becoming less predictable.

According to the currently prevailing view amongst researchers and policy makers in Europe, therefore, banks may potentially impose greater social costs than specialized intermediaries. Over the period of 2000-12, large universal banks in the EU were exposed to larger systemic risk than smaller and more focused banks. In line with the above arguments, several theoretical and empirical studies have concentrated on the banking sector as a source for business cycle dynamics, see Stiglitz and Greenwald (2003), Adrian and Shin (2009), Geanakoplos and Farmer (2009), Adrian et al. (2010), Gorton (2010), Geanakoplos (2011), Mittnik and Semmler (2013), Brunnermeier and Sannikov (2014), Schleer and Semmler (2015), and Semmler and Proaño (2015).

In the deepening of domestic capital markets (as opposed to banks), others see a way to improve the economy's financial stability as well as its capacity to absorb shocks and manage financial risks (Ionescu and Vilag 2013). Financial markets, diversified over a spectrum of assets (debt and equity) offer investors claims on a range of payments streams. Thus, a highly developed capital market—implicitly meaning less reliance on the banking sector for the mobilization and allocation of savings—can contribute to a more efficient allocation of resources. However, the authors also stress a caveat: functioning capital markets can only be obtained through a long-term process, requiring proper planning and commitment as well as appropriate prioritization.

3 There are, evidently, a number of different candidates for explaining the low level of capital expenditures – aggregate demand, for example.

4 This was also suggested by bank strategists, in response to a new competitive environment (deregulation and non-bank bank competitors, increasing importance of information technology).

2.4 The euro area's financial variety

European financial markets—as measured by price dispersion or response and absorption of news—have been integrating since at least the early 1990s (ECB 2016). This process was supported by the introduction of the Euro. Integration, however, happened differentially. It was strongest in wholesale markets, in particular in uncollateralized interbank markets. Capital also flowed into the euro area's periphery, "downhill" as one metaphor went. (This was mirrored by concurrent current account balances. Gross flows were substantially higher.)

Up until the crisis. Then, a massive disintegration ensued. The national dimension became the pertinent reference point. These substantial flows—from the perspective of borrowers to meet their commitments—came, by necessity, with increasing net liability positions. In the fall of 2009, suddenly, expenditures financed with these flows were assessed very much differently. This happened not in the immediate wake of the crisis but when, following upon Greece's existential troubles, the no bail-out option gained plausibility. Flows did not abruptly stop, as they would have in a typical capital account crisis. This was prevented by the TARGET2 system (Cour-Thiman 2014). Nonetheless, the EU financial system witnessed a sharp segmentation along national (jurisdictional) lines. This reflected the deleveraging process operated by large euro area banks (Al-Eyd and Berkmen 2013). Cross-border exposures of these banks, both within the euro area and from other EU countries, sharply decreased in favor of domestic exposures, indicating the emergence of a strong process of re-nationalization of the banking system (Caruana and Van Rixtel 2012). Further, this was most in evidence in (uncollateralized) interbank money markets.

Without going into details (see for example Kotz 2017), this retraction of large euro area banks from markets in peripheral euro area member states was chiefly the upshot of a difference in risk assessment (bailing-in becoming more plausible) as well as requests from regulators (capital and liquidity requirements, stress tests, living wills) and debtholders.

2.5 Consequences for ECB monetary policy implementation?

A changing financial structure inevitably comes with a changing mediation process of monetary policy impulses. The conventional interest rate channel, with very substantially widening (and volatile) spreads, became close to inoperative in highly indebted (be it private or public) peripheral countries. Concurrently, banking stress disrupted the bank lending channels (Holton and d'Acri 2015), translating into credit constraints different across euro area member countries. The same monetary impulse was transmitted into essentially different lending conditions. Against intentions, ECB monetary policy became pro-cyclical in some member states. Despite the gradual reduction of the policy rate, lending rates in banking systems under stress went up, and monetary impulses were differentially transmitted to the real economy (Enoch et al., 2013). The disruption of the transmission mechanism mostly affected SMEs which rely almost exclusively on bank lending. However, this was again mainly the fact in peripheral euro area member states, and there bindingly so.

3 Estimation

To estimate the potential degree of impairment of the monetary transmission mechanism in the euro area before and after the sovereign crisis, we employ a non-linear VAR model; namely the VSTAR, which enables us to capture the varying dynamics of the variables under study in different regimes, for details of such an approach, see Schleer and Semmler (2015). The details of the model are described in the Box.

As laid down in the Treaty on the Functioning of the European Union, the main role of the ECB is to maintain price stability as well as (in lexicographic ordering) foster a balanced econo-

Box

The VSTAR model is assumed to fit the behavior of variables in different regimes; transitioning from one regime to the other in a smooth and continuous way. The main point of the non-linear model, our regime change model, is that impairments may be more effective in one regime as compared to another. In our model, the regime change is triggered by a mechanism that is represented by a smooth and a monotonic (continuous) function that allows autoregressive coefficients to change smoothly along with the lagged values of y_t.

A VSTAR model can take the following representation:

$$\boldsymbol{y}_t = \boldsymbol{F}_t' x_t + \varepsilon_t = \left\{ \sum_{i=1}^{m} \left(B_t^{i-1} - B_t^i \right) F_i' \right\} x_t + \varepsilon_t, \qquad (1)$$

where F is a $(dp+q)\times p$ matrix containing the coefficients elements $(A'_1, \ldots, A'_d, \Phi)$; each A_i is a $p\times p$ matrix and Φ is a $q\times p$ matrix containing the coefficients of the elements of c_t. x_t is a $(dp+q)\times 1$ vector containing the endogenous variables and the deterministic components as well $(y'_{t-1}, \ldots, y'_{t-d}, c'_t)$; z_t is a stochastic $p\times 1$ column vector of endogenous components; and c_t is a $q\times 1$ vector consisting of deterministic components such as intercepts, trends and seasonal dummies, and exogenous variables. B_t^i is a diagonal matrix of transition functions:

$$\boldsymbol{B}_t^i = diag\left\{ b\left(s_{1it} \mid \gamma_{i1}, w_{i1} \right), \ldots, b\left(s_{pit} \mid \gamma_{ip}, w_{ip} \right) \right\} \qquad (2)$$

For $i = 1, \ldots, m-1$ and $B_t^0 = I_p, \quad B_t^m = 0.$

A smooth transition model can be represented by two types of functions; the logistic smooth transition function and the exponential smooth function, the latter has the form of a probability density function.* Given the shape of the logistic function, which is a special case of the more general sigmoid function, one can easily represent business cycle fluctuations through this functional form. Thus, logistic models may have a nice economic interpretation (Camacho 2004). For instance, when the logistic transition function B is close to zero, the model can be interpreted as the linear path displaying extreme recessionary periods, whereas when the function B is close to one, it can be seen as the linear model associated with great expansions.

The logistic transition function B can be expressed as a monotonically increasing function:

$$b\left(s_{jt} \mid \gamma_{ij}, w_{ij} \right) = \left(1 + \exp\left\{ -\gamma_{ij} D_{ti} \right\} \right)^{-1} = \left(1 + \exp\left\{ \frac{-\gamma_i}{\acute{o}_{z_{ti}}} D_{ti} \right\} \right)^{-1} \qquad (3)$$

For i = 1, ..., m – 1 and j = 1, ..., p,

Box continuing

where γ_i, a non-negative parameter, determines the speed of the smooth transition and D_{ti} is a switching expression, which in turn can be presented in two different forms. D_{ti} may be expressed as the difference between the transition variable z_{ti} and an estimated threshold w_i**: $\boldsymbol{D}_{ti} = \mathbf{y}_{ti} - w_i$. We can add to the transition function B the constant $\sigma_{z_{ti}}$, the standard deviation of the transition variable z_{ti}, which will allow the smoothness parameter γ to be scale free.***

Our regime change mechanism is related to the interest rate pass-through before and during the financial fragmentation, which defines the existence of possibly two different regimes. Therefore, we consider the more specific case of m = 2 as we are building our LVSTAR model.

Equation [3] can be reformulated more specifically as

$$y_t = \left\{\left(I_p - B_t^1\right)F_1^{'} + B_t^1 F_2^{'}\right\} x_t + \varepsilon_t, \qquad (4)$$

implying a single parameter shift.

The location parameter w_{ij} in the transition function represents the inflection point in which the values of parameters change from one regime to the other. In the two-regime case (m = 2), the transition function has value of 1/2 at the point of inflection.

For a better specification, estimation, and evaluation of the LVSTAR model, equation [4] can be reparameterized as follows (see Terasvirta and Yang 2013):

$$y_t = \sum_{j=1}^{k} G_{1j}^{'} y_{t-j} + \mu_1 + B_t\left(\sum_{j=1}^{k} G_{2j}^{'} y_{t-j} + \mu_2\right) + \varepsilon_t, \qquad (5)$$

where $\mathbf{G}_1 = \mathbf{F}_1$, $\mathbf{G}_2 = \mathbf{F}_2 - \mathbf{F}_1$, and μ_1 and μ_2 are intercept vectors.

The set of parameters to be estimated is $\theta = \{\mathbf{G}, \boldsymbol{\Omega}, \Gamma, \boldsymbol{W}\}$, where $\Gamma = [\gamma_{ij}]$ and $\boldsymbol{W} = [w_{ij}]$ are respectively the vector of the smoothness parameter and the vector of the threshold parameter.

* Maddala (1977) proposes such a generalization.
** The parameter wi is a location parameter determining the point of inflection of the function and so is the threshold around which the dynamics of the model change.
*** If σ is set to be equal to the standard deviation of the process z_t, this normalizes γ such that an interpretation in terms of the precision of z_t can be given. In case of a Bayesian estimation, this standardization helps define a prior for γ. Gamma is estimated by conducting a grid evaluation for B.

mic growth (ECB 2014). In practice, underwriting financial stability, after the almost financial meltdown of the years 2008–9, became a second objective (for some also in terms of priority).

Based on the process through which monetary policy decisions affect stability and growth of the economy, in general, and the price level in particular, we are interested in looking at specific variables; namely, the growth rate of output, consumer price inflation (as measured with the

HICP), the lending rate to non-financial firms, with a particular focus on SMEs, and the overnight interbank lending (EONIA) rate, used as a measure of short-term rates while also proxying the policy-controlled rate. Our model is based on monthly observations; hence, the growth rate of output is approximated by the change in the industrial production index (IPI). A rough indicator of the effectiveness of the interest rate channel is the lending spread, i. e. the difference between lending rates and policy rates. Yet, while an increase in the lending spread vis-à-vis the policy rate might capture business cycle effects, it does not necessarily imply that this is also the result of financial fragmentation.

Heterogeneity among member countries, more specifically between core and peripheral economies, can be captured through both structural and cyclical factors. Structural factors affecting lending rates include the fact that financial market landscapes differ across countries. Lending rates tend to be lower in economies where bank competition is stronger and alternative, market-based sources of finance, are available through more developed financial sectors. Country-specific institutional factors, such as fiscal and regulatory frameworks, enforcement procedures and collateral practices can also contribute to the heterogeneity among countries with respect to lending rates. Given these structural differences in their respective financial market, there is a fundamental or 'default' spread between lending rates in core economies and lending rates in peripheral countries.

Other factors affecting divergence in lending rates might reflect the amplifying effects of increasing credit risk and bank risk aversion in an environment of weak economic growth, potential capital constraints on the part of banks, and the impact of bank funding fragmentation (ECB 2013). Such factors are shown in the sudden increase of the spread above the already established default 'structural' spread. The increase in spread above a (to be defined) normal level might indicate the existence of financial fragmentation. One can consider the standard deviation of the average of squared differences of lending rates between member countries as a metric capturing this variable.[5]

The data for our regressions is compiled from Eurostat and the ECB's Statistical Data Warehouse. Based on the availability of observations with regards to lending rates, we have two datasets. Lending rates for non-financial firms are available since January 2000. We look at loans other than revolving loans and overdrafts, convenience and extended credit card debt, up to and including 1 million euros, all maturities, for the period of January 2000 to December 2014. This bracket is supposed to represent loans usually asked by SMEs.

3.1 Some preliminary results

Looking at the impulse responses for the first LVSTAR model (the one including inflation) we notice some differences between the core countries and the peripheral countries with respect to the movement of inflation and unemployment. We also detect differences within those two groups. For instance, in Spain when we shock the EONIA downwards (i. e., our proxy for the po-

5 $S = \sqrt{\frac{1}{N}\Sigma_{i=1}^{N}\left(r_i - r_y\right)^2}$,

r_y represents the average lending rate of all euro area member countries. r_i is the bank lending rate for each respective economy we are analyzing. S represents our observable transition variable in the LVSTAR model. The ECB uses the more conventional coefficient of variation for MFI interest rates (i. e. the standard deviation divided by the euro area interest rate) to capture this phenomenon.

Figure 1

Generalized impulse response functions of LVSTAR model (Inflation) in Spain as a result of a downward shock of EONIA (policy rate proxy)

Low Financial Fragmentation Regime

High Financial Fragmentation Regime

Figure 2

Generalized impulse response functions of LVSTAR model (Inflation) in France as a result of a downward shock of EONIA (policy rate proxy)

Low Financial Fragmentation Regime

High Financial Fragmentation Regime

Figure 3

Generalized impulse response functions of LVSTAR model (IPI) in Italy as a result of a downward shock of EONIA (policy rate proxy)

Low Financial Fragmentation Regime

High Financial Fragmentation Regime

Figure 4

Generalized impulse response functions of LVSTAR model (IPI) in Spain as a result of a downward shock of EONIA (the policy proxy)

Low Financial Fragmentation Regime

High Financial Fragmentation Regime

licy rate) in a less financially fragmented environment, inflation slightly decreases but increases again shortly and the unemployment rate decreases. This is, somehow, in line with the dynamics of a conventional Phillips curve. In a more fragmented environment, inflation decreases and remains so for a long period while unemployment rate stagnates, see Figure 1. The other border case with respect to the first model is France, representing a core economy. In both integrated and fragmented environments, shocking the EONIA downwards leads (counter-intuitively) to an increase in unemployment, while inflation remains unchanged, if not decreasing a little bit in both cases, see Figure 2.

With respect to the second model we also observe an interesting behavior. For instance, in Italy, a downward shock of EONIA in a financially integrated context leads to an increase in IPI growth rate (our proxy for output) and a decrease in unemployment. In a more fragmented environment, the dynamics are altered, see Figure 3. This portrays perfectly the effect of increased lending rates on output. Spain in this second model behaves counter-intuitively, where both IPI and unemployment increases and decreases respectively in both cases (Figure 4).

To be brief, financial market variety, somehow unsurprisingly, comes with differential transmission of monetary policy impulses. Thus, heterogeneity becomes more important in crisis environments.

4 Policy implications

The differences in impulse responses across euro area member states confirm the crucial role of the structure of the financial systems or the relative importance of banking in the euro area. Despite a gradual reduction of the policy rate, lending rates in banking systems under stress went up and monetary impulses from the policy rate were impaired (over-compensated), leading to a muted and inappropriate impulse for the real economy. Differences in lending rates across euro area economies were closely associated with debt sustainability issues. Sovereigns, perceived as less than fully safe but nonetheless obliged to bail out their national banks became ever more vulnerable. They also saw their debt ratings deteriorate. This again spilled-over into lending spreads, feeding a vicious downward spiral.

Responses to the crisis, thus, were mediated by the financial structure of the euro area's economies. Thus, they were mediated differentially so. While our analysis shows that heterogeneity, i. e. different national echo chambers, implies different monetary conditions, it is not straightforward to conclude from here that a stronger capital market orientation is called for. Such a proposition has to rest on empirical assessments as well as on normative judgements.

However, these are not as straightforward as it appears from our brief review of the current literature in Section 2.

The German financial system is a case in point. It is regularly presented as the poster-child of a bank-oriented (relation-ship driven) system. As regards its banking system, defined by a "three pillar structure" (comprising private credit institutions, the saving banks group, and the cooperative banks group), it shows a further idiosyncrasy. Bank-dominated and with a large share of non-profit banks, according to currently standard priors, it should have been hit worst by the GFC.

Indeed, the system was substantially shocked, in need of a massive bail-out, however, across the sectors. Further, and most distinctively, it was the large, internationalized banks, heavily invested in (in particular in U.S.) structured products, which were in need of support (Kotz and Schmidt 2017). The smaller banks (be they cooperative, public sector or privately owned), though all universal in scope, were much less afflicted.

Consider, local savings banks, i. e. legally independent small and mid-sized banks, mainly focused on serving their local clients, like the cooperative sector banks. These institutions have been, for decades, the leaders in their respective markets in lending to small and medium-sized firms, in mobilizing local deposits and in granting loans to private households, especially mortgage loans. They were (like cooperative sector banks) mainly focused on one dimension, their home region, basically placing bets on their local economies. Hence, they were only exposed to second-round effects of the GFC, in a certain way casualties of high-wired market-based banking.

Until about 20 years ago, almost all European countries had a 'three-pillar' banking system. However, since then many EU member states have implemented far-reaching structural reforms, which have mainly affected the two 'pillars' of the savings and cooperative banks. In Italy, savings banks were partially privatized (as foundations) and several of them were integrated into large commercial banks (UniCredit, INTESA), and the regional principle was abolished. This is like Spain where savings banks have been privatized and consolidated, and the regional principle was abolished.

In other words, the German case does not confirm the current mainstream hypotheses on the benefits of disintermediation (see in particular Levieuge and Pollin 2017 in this volume). Thus, it is not only about financial structures. Rather, there are a number of obvious counter-arguments that are not accounted for in the prevailing view. The proximate cause for the crisis was not found in a universal bank, but rather a nonbank institution (Lehman Bros.) and other instruments (CDOs and other structured products) that were functionally substituting for boring banks. Against this context, it is difficult to conjure up the requested belief in the efficiency of markets on which the prevailing view bases its propositions (see Zingales 2015).

However, banks vs. markets is too binary (too antipodal) a view. Financial systems are located on a spectrum of ways of intermediating between ultimate savers and ultimate investors. (Clearly, markets do not perform their screening and monitoring functions in a direct, non-intermediated way.) Moreover, banks and markets are heavily and in complex ways intertwined (Cetorelli 2014). In other words, banks (including the smaller ones) are hybrid institutions. Market prices have a strong impact on their behavior. From this angle, all banking is market-based (think of interest rate swaps or CDS premia with their impact on the pricing of credit).

In terms of policy therefore, the pertinent question is whether there are convincing reasons to emphasize, with regulatory means, a stronger reliance on transactional, market-based finance.

As concerns monetary policy, the singleness of its policy implementation is, clearly, buttressed by less heterogeneity in financial structures. Consequently, in the case of the euro area, this variety reflects a mixture of underlying (national) societal trade-offs. Against this background, monetary policy becomes particularly challenging in crisis contexts. More homogeneity would be preferable, or a different allocation of responsibilities in terms of performing stability functions. Fiscal

policy could, as well, take charge of a larger burden. Monetary policy is easily overburdened (see e.g. Semmler and Haider 2017).

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