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Research in Economics at Banco de Portugal • Biannual • Year V • Autumn 2017

9

Overview

Researchers at a central bank have a comparative advantage that they work in an institutional environment that always offers new challenges. For those working at a central bank there are always new data and new policy questions. It is very hard not to be working on very relevant and interesting issues.

The relevance of the research and the studies developed inside a central bank can be judged by the contribution to the quality of the policy advice inside the organization but the assessment should not stop there. The studies produced at a central bank have a much broader scope. For Banco de Portugal this means contributing to the quality of the policy design in the Eurosystem as well as to the policy design in Portugal.

At a central bank, there is natural exposure to peers in other central banks. But this should not diminish the exposure to academia. The academic community is the referee of the way the questions are framed, as well as of the methods used. The awareness of the latest contributions from the academic community is the way to guarantee the good quality of our work.

The period covered by this newsletter, the six months from April to October 2017, helped showing the commitment of Banco de Portugal to good quality studies and research.

We have arranged for several points of contact between the bank communities and those of the Eurosystem, other central banks and universities. We have hosted the annual external meeting of the WGPF, with Claudia Braz, an economist from DEE, as the chair of the group. This summer, Lisbon was the city of academics in the field of Economics. The two largest European meetings of the profession were hosted in Lisbon: the *33rd Annual Congress of the European Economic Association* and the *71st European Meetings of the Econometric Society*. These meetings brought to Lisbon for one week more than 1000 researchers in Economics. Banco de Portugal joined this event and co-organized and hosted the 2017 *ESCB Day-Ahead Conference* that for one Sunday brought together an interesting group of researchers working on Monetary Economics and Finance.

Banco de Portugal organized in June and July two most emblematic academic conferences. The *9th Banco de Portugal Conference on Monetary Economics* has kept the high standards imposed from the very beginning due to the generous collaboration of Sérgio Rebelo, who has contributed immensely to the organization of the conference since the very first edition. In the same way, João Santos has helped design and has co-organized the *Banco de Portugal Conference on Financial Intermediation* that was held in July for the seventh time. Let me use this newsletter to thank Sérgio and João for their priceless contribution to this important instrument in the development of research and studies at Banco de Portugal.

Isabel H. Correia

Head of the Economics
and Research Department (DEE)

Also in this issue

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Interviews

Emmanuel Farhi Professor of Economics, Harvard University

Over the last years, your research has focused several times on the importance of further integration in the economic monetary union in europe. Specifically, you have defended the need for a banking union for some time. What is your sense of the efforts that have already been taken in this direction?

A well-functioning banking union requires two pillars. The first one is the harmonization of regulation and the centralization of banking supervision at the union level. The second one is the availability and the institutionalization of a centralized fiscal backstop to assist or resolve financial institutions and protect their depositors. I would say that there has been a lot of progress on the first pillar, but, so far, very little on the second.

What else do we need and what is most urgent?

I think that there is a lot of interest in furthering the second pillar of the banking union, and I am hopeful that we will see some positive developments in the coming years. There are a lot of difficulties in calibrating the appropriate balance between insurance and incentives for financial institutions. But the fact that there has already been a lot of progress on the centralization of supervision should make it easier to make progress on this front.

Some of your research also emphasizes the scarcity of safe assets. Some proposals have been made for the creation of a euro area safe asset by pooling and tranching government debt from several countries of the euro area, the so called ESBies. Do you believe this could be an important step?

There are various proposals to create a euro area safe asset, with different modalities, and different motivations. Some argue that the creation of a euro area safe asset by pooling and tranching debt acquired on secondary markets would help diffuse the doom loop between banks and sovereigns that has been so important in catalysing the recent financial crisis in Europe. One problem is that securitization does not eliminate risk, and the question of who would hold the risky tranches must be resolved. In my mind, this would have to be coupled with real regulatory changes recognizing the riskiness of sovereign bonds and incentivizing banks to diversify away from domestic sovereign bonds.

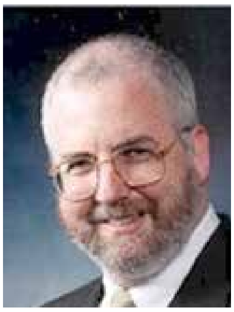
Other proposals involve some mutualisation of the debts of different countries on primary markets. These proposals include an element of insurance across countries, and they could be helpful to handle asymmetric shocks.

I have long argued that there is a shortage of safe assets, which is destabilizing the European economy by lowering natural interest rates and depressing economic activity, and by creating perverse incentives in the financial sector. To the extent that these official schemes do not crowd out their private counterparts, they could expand the total (official and private) supply of euro area safe assets and contribute to stabilizing the European economy.

Regarding the integration at other levels, you have discussed a European unemployment insurance. Could you give us some basic notions on how such a mechanism could be implemented with countries with such heterogeneous labour markets?

The idea of a European unemployment insurance scheme is that it would create automatic stabilizers at the European level, which would help smooth asymmetric shocks in the Eurozone. Basically, it would be a form of insurance. In principle, that different European countries have different labor market institutions is not an obstacle to the elaboration of such a risk-sharing system, but it does require a careful calibration that it remains actuarially fair so that every country stand to gain on average and that it does not lead to systematic directional transfers. It would also require a form of monitoring in order to prevent countries from gaming the system by engaging in various forms of moral hazard. Think of a car insurer insuring good and bad drivers against accidents: By charging a higher premium to bad drivers than to good ones, and by mandating car inspections, it manages to put in place a risk-sharing system where all drivers gain.

By António Antunes



Charles Kahn Professor Emeritus of Finance, University of Illinois

It has been a privilege to benefit from your active participation in most of the editions of the Financial Intermediation Conference organized by Banco de Portugal. What is your opinion on events such as this, which aim at fostering the debate between academics and central bankers? What has changed over the years and what can be improved in the future?

One trend that has remained constant over the time I have been an academic researcher is the improvement in the quality of the research activity at central banks. By combining their institutional and regulatory expertise, their natural advantages in the collection of data, and their willingness to recruit the best talent, central banks have become leaders in a variety of research areas. This has made the dialogue between academics and central bankers more and more fruitful as time goes by.

Research on financial intermediation gained momentum during the last decade, as the global financial crisis helped to make clear that we needed to know more about banks and their role on the economy. Now that we're "getting back to normal", do you think that this field will lose the attention it has deserved recently?

Well, I'm not recommending generating another crisis to rectify this, but I do think that there is some danger. I've already noticed it in my teaching: for a few years, MBA's were complaining that their economics classes were not teaching enough banking and macroeconomics—now they're back to complaining that there is too much banking and macroeconomics!

On the other hand, perhaps the focus shouldn't be so much on banks specifically, but on financial intermediation more generally—if the crisis has taught us anything it is that the institutions on the periphery of the financial industry also matter. And in general, current events have kept the financial industry in the public eye, so I don't think the danger of inattention is too severe at this broader level. The challenge will be for researchers who use bank data to make clear how the implications of their work apply to other portions of the financial industry as well.

This heightened interest on banks allowed us to investigate in depth many issues that were ignored or unknown until recently. What do you think were the main achievements for research in this field?

There has been enormous progress in our understanding of liquidity and its role, and in our ability to chart the effects on the broader economy of bank lending and limitations to bank lending.

European researchers have been at the forefront of this work.

And what is still missing? What are the main open questions?

On the theory side, we need more work on the links between payments systems and liquidity provision—asset liquidity is a continuum, from payments media through savings vehicles, derivatives and other financial assets and onward. But the various portions of this spectrum behaved very differently during the financial crisis; and the systems that supported them behaved differently as well—and while we've made a start, we still don't have a good handle on the reasons for the differences. But I'm encouraged to see people working on this very question right now!

Regulation also changed dramatically in the last decade. Many changes were implemented in haste at the peak of the crisis, without available research to support them. With 10 years gone by, in which areas do you think we're still lacking good research to support policymakers' decisions?

This is actually a natural follow up to the previous question: I think we became too enamored of the apparent successes of centrally cleared derivatives during the financial crisis, without a real understanding of the benefits and costs of centralization of these markets. In this area there is an awful lot of work still to be done—ironically, there was a lot of classic academic work on derivatives and governance of futures markets and their history, which still has not adequately been integrated into mainstream research either by academics or by regulators. It's probably time to reexamine some of that with the benefit of the latest tools. I see that just beginning to happen as well.

At the same time, as we approach this 10th anniversary, we witness conflicting pressures. While some argue that regulation is now too stringent on banks, undermining their ability to finance the economy, others argue that many of the agreed regulatory reforms are still waiting to be implemented. One important aspect in this debate, as noted by Governor Carlos da Silva Costa in his opening remarks at the conference, are the key challenges still facing the European resolution framework.[1] What are your thoughts on this, given the important contributions that your own research has offered to the way we think about banks' liquidation and regulation?

Political economy becomes central to the debate. The choices of whether to tighten or loosen regulation probably have less to do with the merits of the argument than with the political climate. The best we can hope for is that when the push comes for increases in regulation, the regulators are wise enough to find those aspects of the regulatory environment where increased scrutiny and attention are merited, and when the counter push comes the regulators are able to focus attention on those aspects of regulation where relaxation is merited—and, in the process, as the Governor mentioned, to resist the temptations to blur the distinctions between regulation and supervision or to open up novel avenues for regulatory arbitrage in the wake of increased cross-border activity and oversight.

These tensions put researchers at central banks in an odd position. When I've worked on models of political economy in bank regulation, it's mostly been with central bank researchers, and I've wondered if they've felt deep down some discomfort at investigating models in which regulators' or supervisors' interests and the public interest are not identical!

But in fact with the development in Europe of the Banking Union Framework, with its multiple levels of regulation and supervision and with officials holding mandates from different constituencies, it becomes impossible to assume a simple, single public interest anymore in our regulatory models. Therefore it becomes all the more important to develop political economy models to analyze situations where there are conflicts among the interests of the various constituencies in the financial system. Resolution scenarios are the prime example of where these conflicting concerns come to the fore.

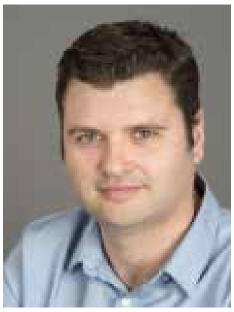
And so we have a new, important role for researchers at national central banks in Europe: to be specialists in the analysis of these processes, sometimes as a counterweight to the work taking place on similar topics at the ECB! On the whole, I think the Federal Reserve System has been well served by having separate research voices at the various branches. I think the importance of this multi-voiced approach to policy is becoming increasingly apparent in Europe as well.

By Diana Bonfim

1. https://www.bportugal.pt/intervencoes/opening-remarks-governor-carlos-da-silva-costa-seventh-conference-financial

In every issue, we ask experts to briefly present and discuss two papers written by staff members. In this issue, the guests are Prof. Joana Silva and Prof. Paulo Bastos

Joana Silva is a Senior Economist at the Office of the Chief Economist for Latin America and the Caribbean of the World Bank. She has expertise in labor economics, international trade, economics of education, poverty and inequality, firm productivity and policy evaluation. Her research has been published in leading academic journals, including the *American Economic Review, Journal of International Economics, Economics Letters, Review of International Economics*, and *Review of World Economics*. She has authored four books. She is currently leading the research program on labor market adjustment in Latin America, as well as a number of impact evaluations and research on globalization and its impacts on growth and inequality. She has extensive experience advising governments in Latin America and the Caribbean, Europe, and the Middle East and North Africa. Before joining the World Bank, Joana worked for the Globalization and Economic Policy Research Center and taught at the University of Nottingham. She holds a PhD in economics from the University of Nottingham.



Paulo Bastos is a Senior Economist at the Development Research Group of the World Bank, Trade and International Integration Unit (DECTI). His research interests include the drivers of firm performance in export markets, links between globalization and technological change, and the distributional impacts of trade and FDI. His research has been published in leading academic journals, including the *American Economic Review, Journal of International Economics, Journal of Development Economics, Journal of Industrial Economics* and *International Journal of Industrial* Organization. Prior to joining the World Bank, he held positions at the Research Department of the Inter-American Development Bank, the European Commission and the Uni-versity of Nottingham. He holds a Ph.D. in Economics from the University of Nottingham and a *licenciatura* in Economics from the University of Porto.

Featured published paper

Review of Silva, Marta, L.F. Martins, and H. Lopes. 2017. "Asymmetric Labour Market Reforms: Effects on Wage Growth and Conversion Probability of Fixed-Term Contracts", *ILR Review*. (JEL Classification: J31, J41, C24)

Portugal raised the maximum legal duration of fixed-term contracts from 3 to 6 years in 2004. How important was this reform for the probability of conversion of fixed-term contracts into permanent ones? Will the increased flexibility induced by the reform impact the wage growth differential between converted and non-converted fixed-term contracts? The effects of greater labor flexibility are a key question in labor economics and policy, with potentially important implications for welfare and productivity.

Several European countries lowered restrictions on temporary contracts in recent years. For efficiency reasons, in contexts where permanent contracts have higher firing restrictions and costs, more flexible temporary contracts will lead to higher use. By reducing firms' costs, employers could hire more. However, the timing of the reform is critical. Bad times lead to less hiring, and managing expectations is critical. Moreover, this type of contracts often acts as a buffer stock that allows firms to adjust to shocks more easily and at a lower cost. As the rate of economic growth rises, more hiring will be done through temporary contracts. Under imperfect competition, temporary contracts and their successive extension can become the vehicle of choice, particularly in sectors with more volatile activity and among certain worker types (e.g. youth).

Lower conversion has long-run effects. Many firms use temporary contracts to learn about the quality of the match before offering a permanent contract. They have an incentive to limit job training to "good matches." In this setting, temporary contracts have flatter wages. In segmented labor markets, conversion of fixed-term into a permanent contract often implies higher wages and returns to skills. Despite these differences, the counterfactual for many workers is unemployment or inactivity, not permanent contracts. For them, an extension of the fixed-term contract means less time in employment with lower earnings.

Evaluating the effects of more flexible contracting forms is difficult. First, selection bias arises from the fact that both conversion and the wage are determined simultaneously. Second, other shocks affecting workers that are more sensitive to the change in legislation would generate omitted variable bias. Third, unobserved ability is a source of endogeneity.

The paper "Asymmetric Labour Market Reforms" by M. Silva, L. Martins and H. Lopes addresses these issues. It follows workers and firms over time using data from the large administrative micro data set "*Quadros de Pessoal*." It estimates effects of the labor reform on the probability of conversion using endogenous switching regression model. It also measures the effect of the reform on wage growth of converted and non-converted fixed-term contacts. Finally, it decomposes the wage growth differential between non-converted and converted fixed term contracts in its sources, and assesses the role of the reform in those.

Interestingly, the paper finds that the reform reduced the probability of conversion of fixed-term contracts, and implied a larger reduction in wage growth for workers with non-converted than converted fixed-term contracts. The magnitude of the wage effects is large: the wage growth differential between non-converted and converted fixed-term contracts increased by 27% in the years in which the reform was in force (2004-2009).

There are broader lessons from this paper. The long-term implications for productivity and growth of the reduction in conversion could be limited by complementing the reform with training and other active labor market programs. Yet enforcement and impacts are uncertain. Recent reforms in Italy tried to reduce labor market segmentation by making permanent con-tracts more similar to temporary ones. Is this the way to go? Identifying labor market reforms that enhance welfare and productivity growth remains an important task for further research.

Featured article from *Banco de Portugal Economic Studies*

A review of Campos, Maria Manuel and Hugo Reis .2017. "Revisiting the Returns to Schooling in the Portuguese Economy" (JEL Classification: I26, J31, C21), *Banco de Portugal Economic Studies*, April.

Schooling plays a critical role in modern labor markets. A large body of empirical evidence reveals that individuals with more schooling tend to earn higher wages, are less likely to be unemployed, and typically work in more prestigious occupations than their less-educated counterparts. Schooling also tends to be associated with non-market drivers of individual and social welfare, including child wellbeing, health status, political participation and fertility. Quantifying the private returns to schooling is important for understanding, guiding and influencing individual and collective decisions to invest in education. It is also a critical input for the design of redistributive policies.

International comparisons reveal that private returns to schooling in Portugal rank high among other European Union countries. However, there is less systematic evidence on how they evolved in recent decades, when a host of factors – including technological change, globalization, expanded provision of tertiary education and rising female participation in the labor market – affected both the demand and supply of skills in Portugal.

In this recently published article, Maria Manuel Campos and Hugo Reis provide an overview of how private returns to schooling in Portugal have evolved over the period 1986-2013. The article exploits the *Quadros de Pessoal* data set to estimate the returns to schooling separately for men and women, at the mean and along the conditional wage distribution. It also provides estimates of the relative wage premium associated with specific levels of educational attainment. The goal is to provide a comprehensive description of the evolution of returns to schooling, without claiming a causal relationship between schooling and earnings.

The article provides evidence that private returns to schooling increased in the late-1980s and 1990s, especially for tertiary education. Interestingly, this upward trend coincided with an expansion in the proportion of workers holding university degrees, suggesting that the demand for skilled labor increased considerably during this period. In contrast, returns to schooling remained fairly stable during the late 1990s and early-2000s (reflecting to a significant extent the stabilization of the wage premium for tertiary education), and have declined mildly in the post-2009 period both for secondary and tertiary education.

The authors argue that a rise in the share of workers with secondary and tertiary education appears to have played an important role in explaining these more recent dynamics. Nevertheless, they cannot rule out the possibility that other factors, such as changes in relative demand for skill or differences in worker ability, may also have played an important role. Despite these recent dynamics, the article shows that tertiary education still has the highest private returns, and argues that it therefore likely that demand for tertiary education will continue to rise. This raises the profile of policy options aimed at increasing individual participation in the financing of tertiary education, while paying close attention to provisions aimed at enhancing the access of low-income households.

Recently published

Our economists publish in a wide range of economic and finance journals and scholarly books.

Mathematical and quantitative methods

de Carvalho, Miguel and António Rua. 2017. **"Real-Time Nowcasting the US Output Gap: Singular Spectrum Analysis at Work"**, *International Journal of Forecasting*, Volume 33, pp. 185-198. (JEL Classification: C50, E32)

Duarte, Cláudia, Paulo M.M. Rodrigues and António Rua. 2017. **"A Mixed Frequency Approach to the Forecasting of Private Consumption with ATM/POS Data"**, *International Journal of Forecasting*, Volume 33, pp. 61-75. (JEL Classification: C53, E27)

Georgiev, Iliyan, Paulo M.M. Rodrigues and A.M. Robert Taylor. 2017. **"Unit Root Tests and Heavy-Tailed Innovations"**, *Journal of Time Series Analysis*, Volume 38, Issue 5, pp. 733-768. (JEL Classification: C12, C22, C58)

Rua, António. 2017. **"A Wavelet-Based Multivariate Multiscale Approach for Forecasting"**, *International Journal of Forecasting*, Volume 33, pp. 581-590. (JEL Classification: C22, C40, C53)

Forthcoming

Andraz, J.M.L., R.F.C. Guerreiro, and Paulo M.M. Rodrigues. 2017. **"Persistence of Travel and Leisure Sector Equity Indices"**, *Empirical Economics*. (JEL Classification C22, G21, G32)

Del Barrio Castro, T., Paulo M.M. Rodrigues and A. Taylor. 2017. **"Semi-Parametric Season-al Unit Root Tests"**, *Econometric Theory*. (JEL Classification: C12, C22)

Dias, Francisco, M. Pinheiro. and António Rua. 2017. **"A Bottom-up Approach for Forecasting GDP in a Data Rich Environment"**, *Applied Economics Letters*. (JEL Classification: C22, C53)

Ribeiro, P.P. and J.D. Curto. 2017. **"How do Zero-Coupon Inflation Swaps Predict Inflation Rates in the Euro Area? Evidence of Efficiency and Accuracy on 1-Year Contracts"**, *Empirical Economics*. (JEL Classification: C13, G14, G17, E31)

Macroeconomics and monetary economics

Forthcoming

Gomes, Sandra. 2017. **"Euro Area Structural Reforms in Times of a Global Crisis"**, *Journal of Macroeconomics.* (JEL Classification: E52, F42, F47)

Verona, Fabio, Manuel M.F. Martins and Inês Drumond. 2017. **"Financial Shocks, Financial Stability, and Optimal Taylor Rules"**, *Journal of Macroeconomics*. (JEL Classification: E32, E44, E52)

International economics

Amador, João and Sónia Cabral. 2017. **"Networks of Value-added Trade"**, *The World Economy*, Volume 40, No. 7, pp. 1291-1313. (JEL Classification: F12, F14, C67)

Financial economics

Bonfim, Diana and Qinglei Dai. 2017. **"Bank Size and Lending Specialisation"**, *Economic Notes*, Volume 46, Issue 2, pp. 329-380. (JEL Classification: G21, G30)

Bonfim, Diana. and S. Costa. 2017. **"International Banking and Cross-border effects of regulation: Lessons from Portugal"**, *International Journal of Central Banking*, 13(S1), pp. 341-377. (JEL Classification: F42, G21, G28)

Panetti, Ettore. 2017. **"A Theory of Bank Illiquidity and Default with Hidden Trades"**, *Review of Finance*, Volume 21, Issue 3, pp. 1123-1157. (JEL Classification: G01, G21, G28)

Forthcoming

Pereira, J. and António Rua. 2017. "Asset Pricing with a Bank Risk Factor", Journal of Money, Credit and Banking. (JEL Classification: G12, G21)

Labor and demographic economics

Addison, John T., Pedro Portugal and Hugo Vilares. 2017. **"Unions and Collective Bargaining in the Wake of the Great Recession: Evidence from Portugal"** *British Journal of Industrial Relations*, Volume 55, Issue 3, pp. 551–576. (JEL Classification: J31, J52, J53)

Amador, João and Ana Cristina Soares. 2017. **"Markups and Bargaining Power in Tradable and Non-Tradable Sectors"**, *Empirical Economics*, Volume 53, Issue 2, pp. 669–694. (JEL Classification: J5, L10, L60, O50)

Campos, Maria M., Domenico Depalo, Evangelia Papapetrou, Javier J. Pérez and Roberto Ra-mos. 2017. "Understanding the Public Sector Pay Gap", IZA Journal of Labor Policy, Volume 6, Issue 1, pp. 1-29. (JEL Classification: J31, J45, H50)

Forthcoming

Silva, Marta, L.F. Martins, and H. Lopes. 2017. **"Asymmetric Labour Market Reforms: Effects on Wage Growth and Conversion Probability of Fixed-Term Contracts"**, *ILR Review*. (JEL Classification: J31, J41, C24)

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Mathematical and quantitative methods

Impact of Uncertainty Measures on the Portuguese Economy • Cristina Manteu • Sara Serra – BP WP 9/2017

The purpose of this paper is to review developments in a number of uncertainty measures for Portugal and gauge their impact on macroeconomic developments in recent years, particularly on GDP, private consumption and GFCF. Our analysis shows that elevated uncertainty had a significant negative impact on economic activity during the financial and sovereign debt crises, while the unwindinding of uncertainty associated with the conclusion of the economic and financial assistance programme in 2014 boosted the subsequent recovery. (JEL Classification: C32, E27, E32)

The Portuguese Post-2008 Period: A Narrative from an Estimated DSGE Model • Paulo Júlio • José R. Maria – BP WP 15/2017

We present a medium scale small-open DSGE model for an euro-area economy that encom-passes a financial accelerator mechanism and a well-developed fiscal block coupled to an overlapping generations scheme. This setup endogenously triggers myopia in households' decisions, breaking the traditional Ricardian equivalence in asset holders. We use Bayesian methods to estimate the model for the Portuguese economy and compute several by products of interest—namely historical and variance decompositions and key Bayesian impulse response functions. Finally, we carry out parameter stability tests. (JEL Classification: C11, C13, E20, E32)

Macroeconomics and monetary economics

Modelling Currency Demand in a Small Open Economy within a Monetary Union • António Rua – BP WP 10/2017

Currency management is a core business function of a central bank. Understanding the factors driving cash demand and its denomination structure are vital for the smooth functioning of the economy. We pursue an analytical framework which allows to model the demand for each denomination individually as well as to capture the interactions between them, both over the short- and long-run. The approach builds on the DSUR estimator for the long-run relationships coupled with a SUR ECM for modelling the short-run dynamics. The focus is on a small open economy within the euro area monetary union. Such a context adds dimensions which go beyond the traditional drivers considered in the previous literature. In particular, the importance of currency migration through tourism flows is highlighted. Furthermore, the interconnections between demand for different denominations are found to be quite significant and the heterogeneous role of the determinants across denominations is documented. (JEL Classification: C32, E41, E50)

Boom, Slump, Sudden Stops, Recovery, and Policy Options. Portugal and the Euro • Olivier Blanchard • Pedro Portugal – BP WP 11/2017

Over the past 20 years, Portugal has gone through a boom, a slump, a sudden stop, and now a timid recovery. Unemployment has decreased, but remains high, and output is still far below potential. Competitiveness has improved, but more is needed to keep the current account in check as the economy recovers. Private and public debt are high, both legacies of the boom, the slump and the sudden stop. Productivity growth remains low. Because of high debt and low growth, the recovery remains fragile. We review the history and the main mechanisms at work. We then review a number of policy options, from fiscal consolidation to fiscal expansion, cleaning up of non-performing loans, labor market reforms, product market reforms, and euro exit. We argue that at this point, the main focus of macroeconomic policy should be twofold. The first is the treatment of non-performing loans, which would allow for an increase in demand in the short run and an increase in supply in the medium run. We argue that, to the extent that such treatment requires recapitalization, it makes sense to finance it through an increased fiscal deficit, even in the face of high public debt. The second is product market reforms, and reforms aimed at increasing micro-flexibility in the labor market. Symmetrically, we also argue that at this point, some policies would be undesirable, among them faster fiscal consolidation, measures aimed at decreasing nominal wages and prices, and euro exit. (JEL Classification: E3, E6)

International economics

Entrepreneurial Risk and Diversification through Trade • Federico Esposito – BP WP 14/2017

Demand shocks have been shown to be an important determinant of firm sales' variation across different markets. The key insight of this paper is that, in presence of incomplete financial markets, firms can reduce demand risk through geographical diversification. I first develop a general equilibrium trade model with monopolistic competition, characterized by stochastic demand and risk-averse entrepreneurs, who exploit the imperfect correlation of demand across countries to lower the variance of their total sales. Despite its complexity, I provide a novel analytical characterization of the firm's problem and show that both entry and trade flows to a market are affected by its risk-return profile, which in turn depends on the multilateral covariance of the country's demand with all other markets. Moreover, I show that welfare gains from trade can be significantly higher than the gains predicted by standard models which neglect firm level risk. After a trade liberalization, risk-averse firms boost exports to countries that offer better diversification benefits. Hence, in these markets foreign competition becomes stronger, lowering the price level more. Therefore, countries with better risk-return profiles gain more from international trade, while riskier markets reap lower gains. I then use data on Portuguese firm-level international trade flows, from 1995 to 2005, to provide evidence that exporters behave in a way consistent with my model's predictions. Finally, policy counterfac-tuals reveal that, for the median country in the sample, the risk diversification channel increas-es welfare gains from trade by 15% relative to traditional models with risk neutrality. (JEL Clas-sification: F12, F14, F15)

Goods and Factor Market Integration: A Quantitative Assessment of the EU Enlargement • Lorenzo Caliendo • Luca David Opromolla • Fernando Parro • Alessandro Sforza – BP WP 17/2017

The economic effects from labor market integration are crucially affected by the extent to which countries are open to trade. In this paper we build a multicountry dynamic general equilibrium model with trade in goods and labor mobility across countries to study and quantify the economic effects of trade and labor market integration. In our model trade is costly and features households of different skills and nationalities facing costly forwardlooking relocation decisions. We use the EU Labour Force Survey to construct migration flows by skill and nation-ality across 17 countries for the period 2002-2007. We then exploit the timing variation of the 2004 EU enlargement to estimate the elasticity of migration flows to labor mobility costs, and to identify the change in labor mobility costs associated to the actual change in policy. We apply our model and use these estimates, as well as the observed changes in tariffs, to quantify the effects from the EU enlargement. We find that new member state countries are the largest winners from the EU enlargement, and in particular unskilled labor. We find smaller welfare gains for EU-15 countries. However, in the absence of changes to trade policy, the EU-15 would have been worse off after the enlargement. We study even further the interaction ef-fects between trade and migration policies and the role of different mechanisms in shaping our results. Our results highlight the importance of trade for the quantification of the welfare and migration effects from labor market integration. (JEL Classification: F16, F22, F13, J61, R13, E24).

Financial economics

Lending Relationships and the Real Economy: Evidence in the Context of the Euro Area Sovereign Debt Crisis • Luciana Barbosa – BP WP 8/2017

The recent euro area sovereign debt crisis put the financial sector under pressure and imposed several challenges, mainly in the countries most affected by the crisis. The sovereign-bank linkage can negatively affect the economic activity, especially by bank-dependent firms. This study explores the heterogeneity across banks in their funding structure, sovereign exposures, solvency, and availability of collateral, with the aim of investigating the effect of the crisis on firms' investment and employment decisions. Exploring a detailed database that covers virtually all bank loans granted to Portuguese firms, for the period 2007-2012, the results suggest an impact on investment and employment paths for firms whose lenders depend more heavily on interbank and market funding. Moreover, the results also stress the importance of assets eligi-ble as collateral in monetary operations conducted by Central Bank. The findings suggest how a deterioration in sovereign creditworthiness can affect the real economy via the banking sec-tor. (JEL Classification: G21, G31, E22, E24, E44, E51)

Inefficiency Distribution of the European Banking System • João Oliveira – BP WP 12/2017

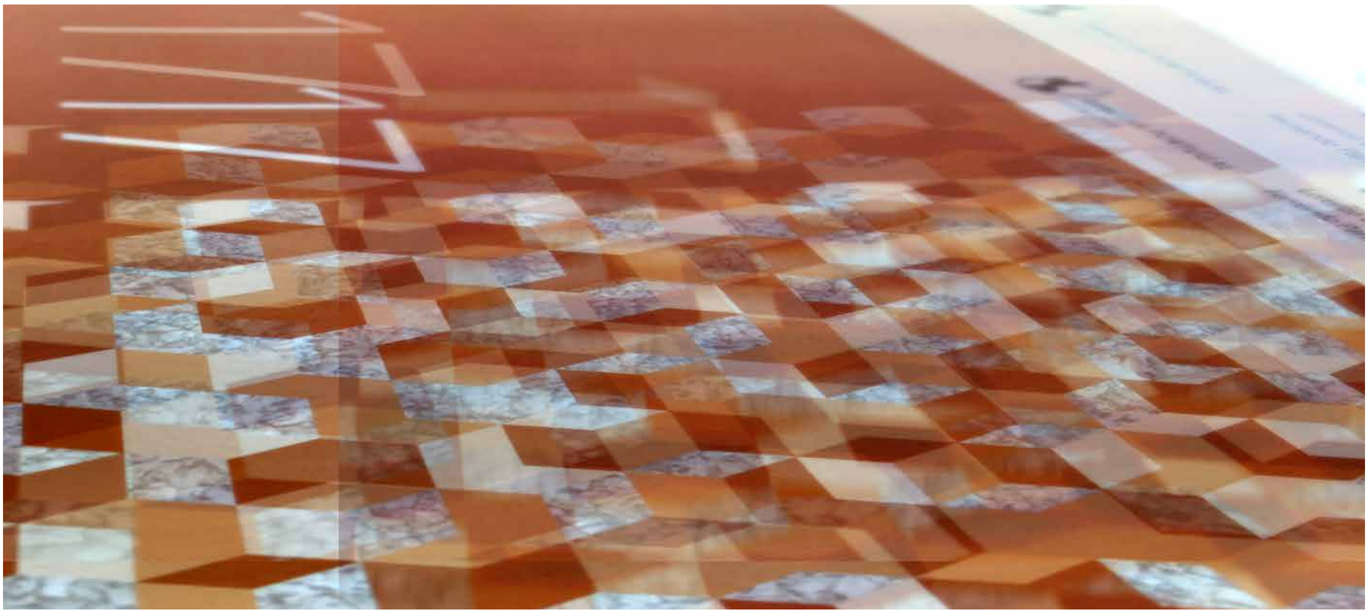
The inefficiency of the European banking system has been pointed out as a major vulnerability from a financial stability point-of-view. This paper contributes to the assessment of this vulnerability by considering several important features of financial intermediation such as factor prices, economies of scope and scale. We use a stochastic frontier analysis method to characterize the production function of financial intermediation in Europe and quantify inefficiency. We find that: (i) in 2013 the median European bank operated with costs 25 to 100% above the efficient level; (ii) there is ambiguous evidence on productivity growth, although inefficiency of financial intermediation has been increasing over time, possibly driven by the least efficient banks; (iii) increasing returns to scale are limited to smaller banks, although scope savings are found to be robust across all models for the average bank and (iv) that there exists a positive association between inefficiency-cost and implicit credit spreads, which are an indicator of credit market restrictions. (JEL Classification: D24, G21, L13)

Banks' Liquidity Management and Systemic Risk • Luca G. Deidda • Ettore Panetti – BP WP 13/2017

We study a novel mechanism to explain the interaction between banks' liquidity management and the emergence of systemic financial crises, in the form of self-fulfilling runs. To this end, we develop an environment where banks offer insurance to their depositors against both idio-syncratic and aggregate real shocks, by holding a portfolio of liquidity and productive but illiq-uid assets. Moreover, banks' asset portfolios and the probability of a depositors' self-fulfilling run are jointly determined via a "global game". We characterize the sufficient conditions under which there exists a unique threshold recovery rate, associated with the early liquidation of the productive assets, below which the banks first employ liquidity and then liquidate, in order to finance depositors' early withdrawals. Ex ante, the banks hold more liquidity than in a full-information economy, where there are no self-fulfilling runs and risk is only due to idiosyncratic and aggregate real shocks. (JEL Classification: G01, G21)

A Theory of Government Bailouts in a Heterogeneous Banking System • Filomena Garcia • Ettore Panetti – BP WP 16/2017

How should a government bailout a heterogeneous banking system subject to systemic self-fulfilling runs? To answer this question, we develop a theory of banking with multiple groups of depositors of different size and wealth, where systemic self-fulfilling runs emerge as a consequence of a global game, and a government uses a public good to bailout banks through liquidity injections. In this framework, we characterize the endogenous probability of a systemic self-fulfilling run, and the conditions under which a full bailout cannot be part of the equilibrium. The optimal bailout strategy should target those banks whose bailout has the largest marginal impact on the probability of a systemic self-fulfilling run, and whose depositors are at the lower end of the wealth distribution. (JEL Classification: D81, G01, G21, G28)



From the *Banco de Portugal Economic Studies*

Banco de Portugal Economic Studies aims to publish theoretical and applied studies prepared by economists at Banco de Portugal, often co-authored with external researchers. All articles are signed and are of the sole responsibility of their respective authors. The articles aim to contribute to an informed and high-quality debate on the Portuguese economy, in line with those published in the *Economic Bulletin* until 2014. The journal intends to be a reference publication in that debate, and is directed to a relatively specialized public on economic issues.

Banco de Portugal Economic Studies, April 2017

Revisiting the Returns to Schooling in the Portuguese Economy • Maria Manuel Campos • Hugo Reis

This paper provides an overview of the evolution of the private returns to schooling in the Por-tuguese economy along the 1986-2013 period. We estimate the returns separately for men and women, at the mean and along the conditional wage distribution. Returns to schooling are found to be high, particularly for women, and to increase along the distribution. Our results point that the magnitude of the returns increased throughout the 1986-2013 period, but particularly in the 1990s. We also provide estimates of the relative wage premium associated with specific levels of educational attainment. The returns are highest for tertiary education. In the first decades under analysis, relative wage premia associated with the 9th grade stand above those estimated for secondary education, whereas in the most recent period these differences are negligible. All in all, our results suggest that education remains a profitable investment for individual agents. This is a valuable piece of information also for policymakers, who should take it into account together with the social returns to education when designing policies and incentive schemes. (JEL Classification: I26, J31, C21)

Impact of Uncertainty Measures on the Portuguese Economy • Cristina Manteu • Sara Serra

The purpose of this article is to review developments in a number of uncertainty measures for Portugal and gauge their impact on macroeconomic developments in recent years, particularly on GDP, GFCF and private consumption. Our analysis shows that elevated uncertainty had a significant negative impact on economic activity during the financial and sovereign debt crises, while the unwinding in uncertainty associated with the conclusion of the economic and financial assistance programme in 2014 boosted the subsequent recovery. (JEL Classification: E24, J24, J41)

Output in the Portuguese post-2008 period: A General Equilibrium Narrative • Paulo Júlio • José R. Maria

We use Bayesian methods to estimate a simplified version of PESSOA, a medium scale small-open Dynamic Stochastic General Equilibrium model featuring key characteristics of an economy integrated in a monetary union. Financial factors emerge as the most important driving force of business cycle fluctuations since the Euro Area inception. The 2008–2009 recession was primarily driven by external and tecnhological factors, whereas the 2011–2013 downturn was triggered by fiscal and financial developments, and latter amplified by technology shocks. (JEL Classification: C11, C13, E20, E32)

Banco de Portugal Economic Studies, July 2016

Spillovers of Prudential Policy Across Borders: Evidence for Portugal • Diana Bonfim • Sónia Costa

When a (macro-)prudential authority implements tools available within its toolkit, its primary concern is with the domestic financial stability, independently of the domestic or foreign origin of the risks. However, an important aspect that is often neglected is that these decisions may have (positive or negative) cross-border spillovers. In this article we summarize the results for Portugal of a joint international research project involving central banks worldwide, to study cross-border effects of bank regulation using bank-level data. We confirm that credit developments in Portugal are affected by foreign bank regulation. This effect depends on the type of regulation and on the channel of transmission. We also show that the cross-border effects of capital requirements work differently through branches and subsidiaries of foreign banks operating in Portugal. (JEL Classification: F42, G21, G28)

Operational Cycle and Tax Liabilities as Determinants of Corporate Credit Risk • Luciana Barbosa • Paulo Soares de Pinho

Liquidity and turnover indicators are usually mentioned as important dimensions in the corpo-rate credit risk literature. However, these variables may reflect different firms' operational activity management and efficiency. In this article, we investigate if information on these firms' allow us to improve the assessment of firm's financial positions and in determining its probability of a bank credit default event. For this, we explore the breakdown of working capital and turnover into variables related to cash, activity indicators, investment, and tax liabilities. According to the results obtained, we observe that firms that take longer to repay their suppliers, or firms whose purchase stay longer as inventories, have higher probabilities of a credit default event. Moreover, there is evidence of a positive relationship between firms' credit risk and the share of tax liabilities in total assets. These indicators seem to be signals about a firm's financial fragilities. (JEL Classification: G21, G33, C25)

A Model with Financial Frictions and a Banking System for the Portuguese Economy • Sandra Gomes

The recent financial crisis has made clear the importance of the linkages between the financial sector and the macroeconomy, both as a trigger to the crisis but also as having an instrumental role in the propagation of the initial shock to other sectors of the economies. This has led a reassessment of the need to introduce financial frictions into what was then the workhorse macroeconomic structural model and thus to a considerable number of contributions to the literature introducing financial frictions in structural models. The introduction of financial frictions in New-Keynesian DSGE models has led to the possibility to use this models to study new questions but it has also enriched the transmission channels embedded in these models. In this paper we take a large scale open economy dynamic structural model including frictions in the financial sector, called EAGLE-FLI, and calibrate it to the Portuguese economy. The EAGLE-FLI model is built on the New-Keynesian framework and incorporates financial frictions and country-specific banking sectors. The detailed structure of the model makes it an appropriate tool to assess domestic and crosscountry macroeconomic effects of financial shocks. We run simulations of several shocks in order to understand their transmission mechanisms in the model and their macroeconomic impact. We analyse not only shocks originating in the financial sector but also explore the way other shocks transmit in this model where financial frictions matter. (JEL Classification: E51; E32; E44; F45; F47)

Seminars

DEE regularly invites experts in various fields of economics to present their latest research. Banco de Portugal staff, as well as researchers from other central banks, Portuguese and foreign universities are invited to attend. The following is a list of the seminars that were organized during the last six months. See the seminars' webpage for a list of past and next seminars.

March 7th | 2017

Diagnostic Expectations and Credit Cycles

Nicola Gennaioli • Università Bocconi

March 8th | 2017

Self-Fulfilling Debt Crises: A Quantitative Analysis

Alessandro Dovis • University of Pennsylvania

March 14th | 2017

Large Time-Varying Parameter VARs: A Non-Parametric Approach

Massimiliano Marcellino • Università Bocconi

March 22nd | 2017

Barriers to Entry and Regional Economic Growth in China

Kjetil Storesletten • University of Oslo

March 28th | 2017

The Unemployment Accelerator

Gaston Navarro • Federal Reserve Board

April 5th | 2017

Low Real Interest Rates and the Zero Lower Bound

Stephen D. Williamson • Federal Reserve Bank of St. Louis

April 10th | 2017

An Analysis of Consumer Debt Restructuring Policies

João Cocco • London Business School

April 19th | 2017

Monetary Policy for a Bubbly World

Vladimir Asriyan • Universitat Pompeu Fabra

April 26th | 2017

Low-frequency Asset Pricing Dynamics

Federico M. Bandi • Johns Hopkins University, Carey Business School

May 5th | 2017

Financial Frictions, Asset Prices, and the Great Recession

José-Víctor • Ríos-Rull • University of Pennsylvania

May 8th | 2017

The Cross-Section of Household Preferences

Francisco Gomes • London Business School

May 11th | 2017

The Macroeconomic Impact of Money Market Freezes

Fiorella De Fiore • European Central Bank

May 17th | 2017

The Demographic Deficit

Thomas F. Cooley • New York University

June 7th | 2017

The Impact of Brexit on Foreign Investment and Production

Ellen McGrattan • University of Minnesota

June 9th | 2017

When Inequality Matters for Macro and Macro Matters for Inequality

Greg Kaplan • University of Chicago

June 19th | 2017

Non-Bank Financing of European Non-Financial Firms

Miguel Ferreira • Nova School of Business and Economics

June 28th | 2017

The Rise of Market Power and the Macroeconomic Implications

Jan Eeckhout • University College London

June 30th | 2017

On the Design of a European Unemployment Insurance Mechanism

João Brogueira de Sousa • European University Institute

July 4th | 2017

Self-Fulfilling Debt Crises with Long Stagnations

João Ayres • University of Minnesota

July 5th | 2017

Regulation and the Evolution of the Financial Sector

Vania Stavrakeva • London Business School

July 12th | 2017

Lies, Damned Lies, and Statistics? Examples from Finance and Economics

Karim M. Abadir • Imperial College London

July 19th | 2017

Information-driven Business Cycles: A Primal Approach

Robert Ulbricht • Toulouse School of Economics

July 20th | 2017

Macroeconomic Effects of Medicare

Daniela Costa • University of Minnesota

July 21th | 2017

Financial Engineering and Economic Development

Pedro Amaral • Federal Reserve Bank of Cleveland

August 22th | 2017

To Ask or not to Ask: Collateral vs. Screening in Lending Relationships

Artashes Karapetyan • Norwegian Business School

August 24th | 2017

Optimal Fiscal Policy with Recursive Preferences

Anastasios Karantounias • Federal Reserve Bank of Atlanta

September 21th | 2017

Intergenerational Redistribution in the Great Recession

Dirk Krueger • University of Pennsylvania

September 27th | 2017

Fiscal Consolidation and Inequality

Pedro Brinca • Nova School of Business and Economics

October 9th | 2017

Breaking Through the Zero Lower Bound

Miles Kimball • University of Colorado Boulder

October 10th | 2017

Implementing Deep Negative Rates

Miles Kimball • University of Colorado Boulder

October 16th | 2017

Household Behavior and the Dynamics of Inequality

Richard Blundell • University College London

October 18th | 2017

Economics Links, Market Risk in Customer-Supplier Chains

Ramazan Gençay • Simon Fraser University

Courses

September 28th – 29th (part I) | 2017

Oligopoly Dynamics: Outline

Luís Cabral • New York University

Workshops

July 3rd | 2017

Public Finance Workshop on Fiscal-Structural Reforms: Towards Economic Growth and the Sustainability of Public Finances

On the 3rd July Banco de Portugal hosted a workshop on 'Fiscal-Structural reforms: towards economic growth and the sustainability of public finances' organised in the context of the external meeting of the Working Group on Public Finances of the European System of Central Banks. The workshop gathered an outstanding group of fiscal experts coming from central banks, fiscal councils, international institutions like the IMF, the European Commission and the OECD, as well as representatives of Portuguese institutions, including the Portuguese Public Finance Council, the Debt Management Agency and the Parliamentary Technical Budget Sup-port Unit.

Structural reforms are key to improving long-term economic growth prospects and to reducing the economies' vulnerabilities to future adverse shocks. They may be linked to fiscal policies through various channels. This workshop focused on a specific subset of structural reforms, namely fiscal-structural reforms. Fiscal-structural reforms encompass areas like taxation, social security and pension systems, healthcare, education, justice, the institutional framework and public finance management, among others. Against the current background of very high debt ratios and important risks to the sustainability of public finances, fiscal-structural reforms gain prominence as an approach to improve the efficiency and quality of public finances. Indeed, if well designed and implemented, they can support inclusive economic growth.

Meetings

July 4th | 2017

WGPF Meeting - Lisboa, Banco de Portugal

On 4th July Banco de Portugal hosted the external meeting of the Working Group on Public Finances of the European System of Central Banks

Conferences

June 11th-13th | 2017

9th Banco de Portugal Conference on Monetary Economics

The *9th Conference on Monetary Economics* took place in Ílhavo on 11th-13th June. Bringing together some of the most prominent economic researchers of the field, the three day conference comprised the presentation of twelve papers encompassing different themes, such as fiscal and monetary policy, asset pricing and banking.

The first paper of the conference *Deadly Embrace: Sovereign and Financial Balance Sheet Doom Loops* was presented by Emmanuel Farhi. This paper proposes a theory of the feed-back loop between banks and their sovereigns with important implications for the renationalization of sovereign debt, macroprudential regulation, and the rationale for banking unions.

The second paper *Take the Short Route: Equilibrium Default and Debt Maturity* was presented by Mark Aguiar. Starting from the empirical observation that fiscal authorities under sovereign debt crises tend to finance themselves with short-term debt instead of long-term, a model was presented to account for this counterintuitive fact. In it, short-term debt issuance pro-vides incentives for the sovereign to choose a fiscal trajectory that reduces the risk of default. Because this is not the case with long-term debt, that debt will be more expensive, as its issuance affects future default risk. A consequence of the model is that short-term debt is a better option whenever there is non-zero default probability.

The third paper of the day was presented by Martin Schneider. In this paper, a model was developed which took into account certain stylized facts about payment systems which often go unacknowledged in monetary models. The idea was that the payment system is organized into two layers of transactions, an enduser layer in which consumers buy goods and investors buy securities using payment instruments provided by banks and an interbank layer, in which banks settle transactions through government supplied reserves. The model shows that financial structure matters for how policy works and how asset pricing events affect inflation.

The first day of presentations was concluded with *Monetary Policy According to HANK*, presented by Greg Kaplan. The paper presented a Heterogeneous Agents New Keynesian model and its implications for monetary policy. While monetary policy effects in the representative agent framework come from direct effects, specifically the intertemporal substitution channel, with heterogeneous agents this effect becomes negligible and is surpassed by the indirect effects that come from the change in household's disposable income.

This last presentation was followed by a wine tasting workshop, with several challenges for participants, such as identifying the colour of a wine without looking at it and a test that divided the conference participants into non-tasters, tasters and supertasters. For this latter test participants tasted propylthiouracil, a drug commonly known as PROP which has the unusual property that it either tastes very bitter or is virtually tasteless, depending on the genome of the person taking it. Some participants distrusted the results since Pedro Teles was identified as a non-taster despite his preference for exquisite meals...

The second day of the conference initiated with a presentation by Martin Eichenbaum about *Monetary Policy and the Predictability of Nominal Exchange Rates*. It was shown that the real exchange rate is highly negatively correlated with future changes in the nominal exchange rate in horizons longer than two years, contrarily to inflation, suggesting that the purchasing power parity between countries who target inflation is established by the nominal exchange rate and not the inflation differentials. The paper also developed a model that could account for these facts.

Adrien Verdelhan presented his paper *Deviations from Covered Interest Rate Parity*. The paper demonstrates empirically that since the economic crisis there have been persistent deviations from covered interest parity, suggesting that arbitrage opportunities are available in the market. It was suggested a relationship between this fact and banking regulations which create a balance sheet cost that makes it unprofitable to pursue these arbitrage strategies.

The afternoon started with a presentation by Fatih Guvenen about Wealth Taxation. While the literature has long held that wealth taxation and capital taxation are equivalent if agents are homogeneous in terms of capital returns, this is no longer true when they are not. The paper developed the idea that wealth taxation, in this framework, provided better incentives than capital taxation because it divided taxes between all wealth owners instead of taxing more those which precisely use capital in a more productive way. In the discussion, Robert Hall pointed out that the idea developed in the model that modern wealth inequality comes mostly from very productive entrepreneurs who get very rich over one generation is much more realistic than the idea developed by Piketty that wealth has a dynastic accumulation nature.

The Nobel laureate Lars Hansen presented a paper developed with Tom Sargent about asset pricing in an environment with model ambiguity, that is, in which agents are uncertain about which model explains the economy, its parameterization, and cannot really impute probabili-ties between possibilities.

After the end of the presentation, the participants visited the vineyards of Luís Pato and tasted some of this brand's wines, with guidance by the oenologist's daughter. At dinner, held in the caves S. João, participants had the opportunity of eating piglet from Bairrada, accompanied by good wine from the cellar.

The last day of the conference began with a presentation by Sebastian di Tella of the paper *Why are Bank Balance Sheets Exposed to Monetary Policy?*. The authors question why banks have a maturity mismatch that leads to losses when interest rates are increased. A model is developed in which, because spreads are higher with higher interest rates, this maturity mismatch which induces losses when rates are increased works as an optimal hedging strategy by banks. Lower rates, through lower spreads, imply lower profits in the medium-run so the ma-turity mismatch allows for higher profits when the interest rate drops, to hedge against the future lower profits.

Fernando Alvarez presented the paper *Random Risk Aversion and Liquidity: a Model of Asset Pricing and Trade Volumes* which develops a theoretical model of asset pricing and trading volume. In this model, agents' motivation to trade arises from uninsurable idiosyncratic shocks to agents' risk aversion. These shocks make investors trade to rebalance their portfolios between risky and riskless assets.

Lunch was followed by the presentation of the paper *The Heterogeneous Effects of Government Spending: It's All About Taxes* by Axelle Ferriere. The paper showed, empirically, that the effect of government spending on output depends on the progressivity of the taxation that financed it. Higher progressivity entails a higher multiplier, due to the heterogeneous marginal propensities to consume, as well as, labour supply elasticities.

Finally, the last paper presented was *Growth Policy, Agglomeration and (the Lack of) Competition*. The paper presented empirical evidence, through an econometric approach, that firms that agglomerate closely to each other are more likely to incur in collusion, raising prices above the competitive level.

Over the different presentations in the conference it was possible to understand the direction that macroeconomic research, and in particular monetary policy research, seems to be taking and which, in all likelihood, will continue as its focus in the near future. The suggestion made by Robert Hall and Juan Pablo Nicolini to make this conference on an annual basis (instead of every two years) illustrates how successful this conference was, from the quality of the research presented to the overall quality of the organization.

By Joana Garcia and João Ritto

July 7th-8th | 2017

7th Banco de Portugal Conference on Financial Intermediation

The *7th Conference on Financial Intermediation* was focused on three topics with particular relevance in the current economic and financial context: i) public policy and banks' risk-taking incentives; ii) the designing of effective resolution and supervisory arrangements; and iii) the drivers of systemic risk.

The conference started with three papers on the impact of unconventional monetary policy measures on banks' lending, investment and financial stability. The first paper in this session presented by Andrew MacKinlay studies whether banks react differently upon FED purchases of Mortgage Back Securities (MBS) and government bonds upon the 2008 financial crisis. The authors found evidence that banks that sold more MBS increased their share of mortgage originations but reduced C&I lending, which suggests a crowding out between the two loans segments. In addition, financially-constrained firms that had relationships with these banks cut investment raising further questions on the distortive impact of non-standard monetary policy measures. The second paper in this session presented by Guillaume Platin presented a theoretical model of overlapping generations aimed at explaining the current environment of low interest rates and low investment. In their model, an accommodative monetary policy leads to leveraged share buybacks crowding out investment and creating socially excessive financial risk taking. The last paper on this section presented by Luisa Carpinelli explored the effect of European Central Bank LTRO program on Italian banks credit supply. In particular, the paper focus on the guarantees provided by the Italian Government that allowed banks to create collateral eligible to those operations. First, the authors compare bank credit supply between the normal and the dry-up period to assess the impact of the shock. Then, they compare the dry-up and the intervention period (after December 2011) to assess the effectiveness of the intervention, exploring banks' recuse to the Governments' guarantees. They found that banks that suffered large dry-ups reduced credit supply and then increased it again after LTROs. In addition, they found that banks with more liquidity problems also had lower collateral, which highlights the importance of government guaranteed bonds.

The second session dealt with the design of effective resolution and supervisory frameworks. Rafael Repullo presented a model of hierarchical bank supervision where a single bank interacts with a national and a supranational supervisor. In this model both the national and the central supervisor collect information but only the central supervisor has the power to resolve the bank. The national supervisor has a lower charge of collecting information but a higher cost following bank liquidation. The hierarchical supervision model is then compared with the decentralized and centralized supervisor cases. The authors show that the hierarchical case dominates local supervision in terms of social welfare whenever the cost of getting local infor-mation is low or the bias of local supervisors is high. For sufficiently low values of gathering information or sufficiently high local supervisors' bias the central supervision model dominates the hierarchical supervision model. Giovanni Dell'Ariccia presented a model that emphasizes agency problems between local and central supervisors that emerge from different objective functions. In this model the central supervisor sets the prudential requirements but the local supervisor is the only one that collects information. Following high potential negative spill over effects from a particular bank the central supervisor may raise capital requirements in spite of local supervisor opposition. This may then try to offset the central supervisor decision reducing information requirements. The second session ended with an article on resolution strategies over global systemic banks brought by Martin Oehmke. The article develops a theoretical model that compares single point of entry with multiple point of entry resolution. The first is considered more efficient in terms of costs (reduces TLAC requirements) but may not be chosen due to potential cross-border transfers, which are not accepted by the local supervisor of the holding company. This leaves two hypothesis. Either a multiple point of entry strategy is followed or the authority is concentrated on a supranational supervisor with powers over a harmonized juridical system.

The third session of the conference focused on systemic risk drivers, liquidity management, executive payments and bank runs. The first paper presented by Ettore Panetti developed a theoretical model based on a Diamond-Dybvig economy with uncertainty in order to study why banks hold more liquidity during systemic crisis. Amid a context of imperfect information on project quality and other agents' behaviour depositors face a trade-off between consumption smoothing and the risk of other depositors running first. Banks face a trade-off between higher returns on long-term assets and the possibility of bank runs. In this model banks' liquidity provision and depositors' expectations are jointly and endogenously determined with banks holding excess liquidity in comparison to the full information outcome and promising less to early consumers. The authors are exploring this framework to derive policy implications, mainly the optimal pecking order related to liquidity and liquidation decisions. In the second paper of this session, Robert DeYoung presented a new analytic framework for measuring the negative externalities in terms of systemic risk and liquidity creation produced by executive pay incentives. The authors build empirical measures to capture private and public risk. Their analysis has relevant policy implications. Namely, an increase in CEO pay-risk sensitivity results in a larger systemic risk and liquidity creation externalities. In turn, an increase in CEO pay-performance sensitivity is related with less systemic risk liquidity creation externalities. The last paper of the conference was brought by Giorgia Piacentino who presented a theoretical model of bank runs. The authors of this paper developed a theoretical model aiming to answer why in the nineteenth century banks used to issue debt that was simultaneously demandable and tradable. They claim that this type of debt has similarities with today's repos and allows banks to increase their debt issuance capacity at the cost of a higher chance of bank runs, which in this model result from dynamic coordination problems in the secondary markets.

By Nuno Silva and Luciana Barbosa

August 20th | 2017

2017 ESCB Day-Ahead Conference

Meet our researchers

In this issue we present two members of our research staff.

Paulo Júlio is an economist at the Economics and Research Department of Banco de Portugal since 2012. At the Bank, Paulo has mostly worked on Dynamic Stochastic General Equilibrium models. Paulo has previously been a teaching assistant at NOVA School of Business and Economics and an economist at the Office for Strategy and Studies at the Ministry of Economy. He holds a BA and a PhD from NOVA School of Business and Economics.

Please, tell us about the research you are carrying on at DEE

My research has been devoted to the estimation and development of Dynamic Stochastic General Equilibrium (DSGE) models. I have been working on a novel DSGE model which brings together financial frictions, banking frictions featuring the new Basel III rules, and occasionally biding endogenous credit constraints. In this model, most of the times credit restrictions are absent and credit is demand driven. However, there are instances, e.g. under negative financial shocks triggering large bank value losses, where credit constraints become biding during some period of time. In that horizon, credit collapses and spreads hike, as banks restrict the supply of credit and strive to recover the lost value and replenish capital ratios. The new model enables the analysis of a number of policy issues under financial distress and/or banking crisis, such as the impacts of quantitative easing, the effects of banking regulations and the role of the countercyclical capital buffer, amongst many other policy issues currently under discussion.

I have also recently concluded the estimation of PESSOA – a DSGE model for the Portuguese economy. Results highlight the vulnerability of the Portuguese economy to external and financial factors in the recent period, though fiscal policy has also played an important role. In the past few years I have also applied PESSOA to better understand a number of macroeconomic and fiscal issues, from fiscal multipliers and the effects of alternative fiscal policy packages, from the dynamics of debt to fiscal consolidation, or from the effects of higher risk to financial fragmentation.

Nikolay Iskrev is a research economist in the monetary policy team in the research department of Banco de Portugal. His major fields of study are macroeconomics and applied econometrics. Iskrev's research has been published in *Journal of Monetary Economics*, the *Journal of Economic Dynamics and Control, and the Economic Letters*. Prior to joining the Bank in 2008, Dr. Iskrev was a research and teaching assistant at the University of Michigan in Ann Arbor. He also worked as a research intern at the Research and Statistics Division of the Federal Reserve's Board of Governors. Dr. Iskrev received his B.A. in finance from the Economic University in Bulgaria, and a M.Sc. in economics from the Central European University in Budapest, Hungary. He earned his doctoral degree in economics from the University of Michigan.

Please, tell us about the research you are carrying on at DEE

My research interests lie in the intersection of macroeconomics and econometrics. Specifically, I have been working on the development of methods and tools that are useful to researchers who build and estimate macroeconomic models as well as the readers of such research. Structural macroeconomic models, known as dynamic stochastic general equilibrium models, are the standard tool of quantitative macro. Macroeconomists use them to formalize their reasoning about how the world works, to assess the relative importance of different economic forces, and to provide prescriptions on economic policy. An important requirement for such models to be useful in practice is that their parameters are estimated from data. In addition to parameters, when taking models to the data, researchers are also interested in estimating various unobserved variables such as output gap, natural rate of interest, as well as different exogenous shocks driving the economy. In order to assess the credibility of estimated models, it is important to understand whether there is sufficient information in the data about the objects of interest - parameters and unobserved variables, and what the main sources of such information are. However, as models grow in size and complexity, it has become impossible to answer these questions by reasoning alone. In my research I have developed methods that allow researchers to answer such questions in a formal manner. This helps modellers better understand the properties of their models, and also increases the transparency of the estimation results, thus benefiting the readers of published research.

Visiting Fellows

Banco de Portugal offers cash grants to support research projects in the field of Economics, with a view to promoting interchange between the scientific and academic communities and the Bank, and to contributing towards the improvement of theoretical and applied research in Portugal.

Artashes Karapetyan is Associate Professor of Finance at BI Norwegian Business School, Finance Department. He earned his Ph.D. in Financial Economics from University of Zurich, his MSc in Finance from Universitat Pompeu Fabra, Barcelona and his M.A. from Central European University, Budapest. He worked as an Advisor at the Central Bank of Norway, Monetary Policy 2013-2015, and Financial Stability 2010-2013. His research interests are financial intermediation and household finance. His work has been published in the *Review of Finance, Journal of Banking and Finance* and *Journal of Financial Economics.*

Artashes Karapetyan's collaboration with Banco de Portugal during the second half of 2016 was related to the role of relationship banks: do relationship borrowers enjoy more lenient credit terms, in particular, less collateral requirements?

The question is addressed in a research paper in collaboration with Sudipto Karmakar at the Bank, as well as with Hans Degryse at Leuven University in Belgium.

The motivation of this topic builds on the evidence that small and young firms. Facilitating access credit for these firms is crucial, since they are at the heart of economic growth, promoting research and innovation. Yet, it is exactly at the beginning of its life that a small firm lacks necessary collateral, and needs unsecured financing in credit markets. The authors show that borrower's loyalty can reduce lenders' collateral requirements and thus increase access to finance.

A second, related question that the authors address has to do with recent regulatory requirements imposed by the European Banking Authority. Does a regulatory change in the relative cost of lending technologies (such as transactional lending based on collateral versus lending based on information acquired through relationships) provide a shift in focus in the total lending portfolio of the banks?

Studying the impact of EBA's requirements on banks to increase their risk weighted capital, the authors find, that indeed banks on average shift their focus to more collateralized lending since it requires less risk-weighted regulatory capital (and is thus less costly). However, in doing so, banks remain more lenient to their relationship borrowers, whom they either have known for some time, or who are deemed to remain loyal in the future.

Ana Rute Cardoso is Associate Professor of Research at the Institute for Economic Analysis of the Spanish National Research Council (IAE-CSIC) and Affiliated Professor of the Barcelona Graduate School of Economics. She earned her Ph.D. from the European University Institute in Florence, Italy, where she was awarded the Prize for the Best Thesis in Economics defended 1995-1998. She had completed her bachelor and master degrees at the Lisbon Technical University. Her fields of interest are labor economics and economics of inequality. Her work has been published in the *Quarterly Journal of Economics, American Economic Journal: Applied Economics, Journal of the European Economic Association, Journal of Labor Economics, Journal of Applied Econometrics, Scandinavian Journal of Economics*, among others.

She visited Banco de Portugal during the month of April 2017, to work with Paulo Guimarães, Pedro Portugal, and Hugo Reis on the project "The role of firm and task heterogeneity shaping the returns to schooling in the Portuguese economy". This project aims at quantifying the role of the employer shaping the private returns to education and the social returns to education. Our aim is to answer the following questions: How much of the economy-wide return to schooling is due to the allocation of workers with different schooling levels to firms with different pay standards? What is the role of spillovers of education at the firm level? Does working with more schooled co-workers make an individual more productive and thus increase his wage?

More generally, Ana's work has aimed at bringing the firm to the forefront of the analysis, progressing from the previous literature, which has most often assumed that firms are homogeneous. She has also been interested in the mediation between labor supply and demand provided by labor market institutions, namely minimum wages and collective bargaining.

Webpages

http://www.iae.csic.es/investigadorPersonSelectedPublications.php?idinvestigador=60&lang=ing,

http://www.iza.org/en/webcontent/personnel photos/index_html?key=1131

Daniela Viana Costa is a recent Ph.D. graduate in Economics of the University of Minnesota. Currently, she works as a public policy economist at the Penn Wharton Budget Model. Her areas of expertise are international trade, the macroeconomic impact of changes in health policy and the theory of economic development.

During her visit to Banco de Portugal, she worked on one of her thesis chapters, *From Primary Commodities to Output Fluctuations* This chapter revisits the empirical literature on terms of trade and real GDP fluctuations, documents a theoretical puzzle in explaining the comovements of these two aggregates and identify mechanisms that can get around the puzzle.

João Ayres is a research economist at the research department of the Inter-American Development Bank. He received his B.Sc. in Economics from the University of São Paulo, his M.Sc. and D.Sc. in Economics from Getulio Vargas Foundation, and his Ph.D. in Economics from the University of Minnesota. During his studies, he held visiting positions at Columbia University and Federal Reserve Bank of New York and worked as a research analyst at the Federal Reserve Bank of Minneapolis. His research focuses on international economics, macroeconomics, and public finance.

During his visit to Banco de Portugal, he worked on two of his projects. The first project measures the flow of knowledge within private corporations using data on U.S. multinational enterprises and assesses its implications for measured returns on foreign direct investment and international business cycles. The second one is a joint project with three co-authors, among them Pedro Teles, a senior economist at Banco de Portugal. They study multiplicity of equilibrium in quantitative sovereign debt models focusing on the recent European Debt Crisis.

Visitors

Alexandro Ruiz (Centro de Estudios Monetarios y Financieros - CEMFI)

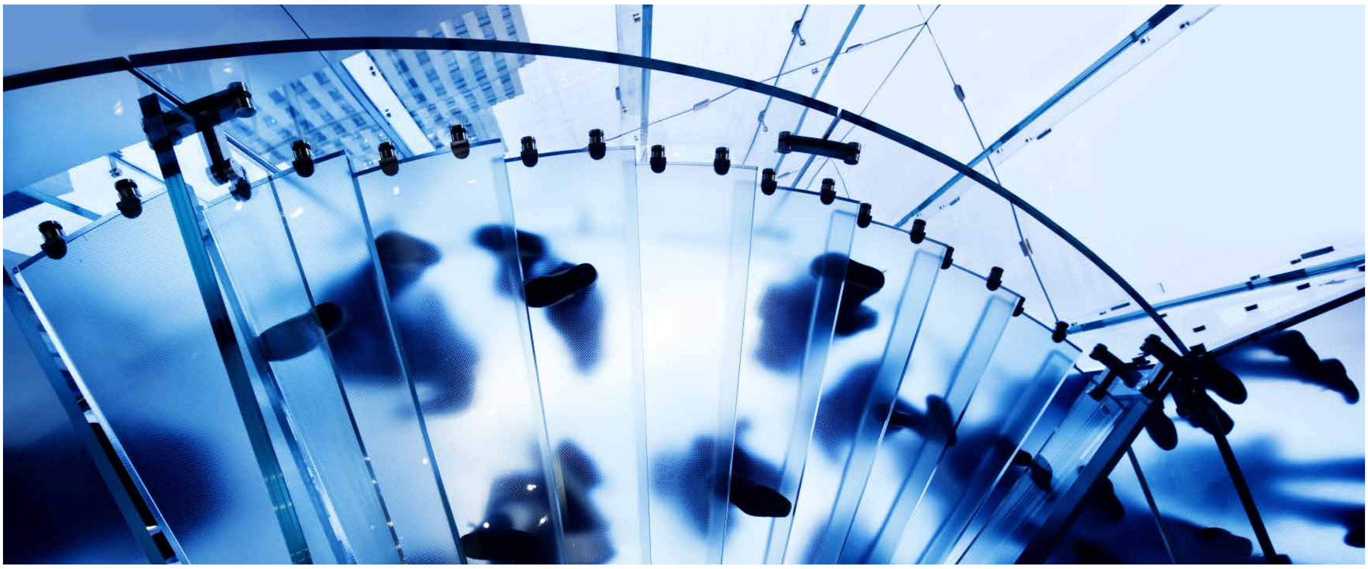
Andrada Bilan (University of Zurich and Swiss Finance Institute - SFI)

Filomena Garcia (Indiana University)

Gil Nogueira (NYU Stern)

Giordano Mion (University of Sussex)

Hugo Vilares (London School of Economics)



Upcoming events and announcements

Seminars

October 30th | 2017
To be announced

Nir Jaimovich • University of Zurich

October 31st | 2017
Flexibility in Hours: Employment Policies in the US and Germany?

João Brogueira de Sousa • European University Institute

November 6th | 2017
To be announced

Elise Gourier • Queen Mary, University of London

November 15th | 2017
To be announced

Peter Feldhütter • Copenhagen Business School

November 24th | 2017
To be announced

Cezar Santos • Fundação Getulio Vargas

November 27th | 2017
To be announced

Bas Jacobs • Erasmus University Rotterdam

December 11th | 2017
To be announced

Juan Carlos Conesa • Stony Brook University

December 13th | 2017
To be announced

Michael Koetter • Halle Institute for Economic Research

December 19th | 2017
To be announced

Manuel Adelino • Duke University

January 10th | 2018
To be announced

Alessandro Pavan • Northwestern University

February 7th | 2018
To be announced

Marcelo Veracierto • Federal Reserve Bank of Chicago

March 28th | 2018
To be announced

Omar Rachedi • Banco de España

April 11th | 2018
To be announced

Dejanir Silva • University of Illinois at Urbana-Champaign

May 2nd | 2018
To be announced

Anjan Thakor • Washington University in St. Louis

May 7th | 2018
To be announced

Loukas Karabarbounis • University of Minnesota

May 9th | 2018
To be announced

Murillo Campello • Cornell University

May 29th | 2018
To be announced

Heitor Almeida • University of Illinois at Urbana-Champaign

November 14th | 2018
To be announced

Andrew Ellul • Kelley School of Business

Courses

October 19th – 20th (part II) | 2017
Oligopoly Dynamics: Outline

Luís Cabral • New York University

November 20th – 23rd | 2017
Causal Inference in Corporate Finance

Daniel Paravisini • London School of Economics

December 18th – 21st | 2017
Topics in Macro and Financial Markets

Guillermo L. Ordoñez • University of Pennsylvania

January 15th – 19th | 2018
Topics in Banking and Macroprudential Policy

Javier Suarez • CEMF

December 17th – 21st | 2018
Topics in Macro and Financial Markets Relevant for Central Banking

Lawrence J. Christiano • Northwestern University

Conferences

September 29th – 30th | 2017
Conference on Banker's Pay: Incentives and Regulation

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This newsletter, as well as other online information about Economic Research at Banco de Portugal is available here.

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