SPILLOVERS

BANCO DE PORTUGAL
EUROSYSTEM

Research in Economics at Banco de Portugal • Biannual • Year IV • Spring 2016

6

Overview

Since part of our mission is to stand ready to advise on the Portuguese economy, we have it as the subject of a great deal of our research and analysis.

This is the main reason why Banco de Portugal has a relatively strong group of economists studying issues closely related to the strict role of a central bank, including issues on financial intermediation within the Portuguese economy. Moreover, the increasing openness of the Portuguese economy, which we could say sustained the internal devaluation associated to the corrections of our imbalances in terms of flows during the adjustment programme, implies a clear understanding of both the relatively slow process of reallocation of resources and exports as a driver of the recovery of the Portuguese economy. This is a topic that we have been focusing on, both in trying to understand our advantages and in characterising impediments to exports. Lastly, let me mention the ability developed since the very inception of the department to evaluate and to monitor public finances.

The ability to develop knowledge that can be useful to the decision maker should be a very important criterion for our choices. With that aim we have invested in the in-house training of our economists. This has been done by inviting economists whom we identified as leaders in their fields to spend a week with us. Having an optimal mix between an academic and a policy vita is key to fulfil this role. This is not always easy to achieve!

But the period covered by this issue of Spillovers is a good example that sometimes we really can do it. Banco de Portugal organised two courses: one last November and a second one in January. To teach these two courses we invited two top economists. Debbie Lucas and Tim Kehoe are in the frontier of the development of our understanding respectively of public finance and international trade.

Debbie Lucas is a professor at MIT's Sloan School of Management and the Director of the MIT Center for Finance and Policy. Her recent research has focused on measuring and accounting for the costs and risks of government financial obligations. An expert in federal credit programs, she has testified before Congress on budgeting for Fannie Mae and Freddie Mac, student loans and on strategically important financial institutions. A distinctive feature of her career has been the enrolment as a scholar on very relevant policy work and on advising policymakers. Previous appointments include positions as assistant and associate director at the congressional Budget Office, chief economist at the Congressional Budget Office, senior economist at the Council of Economic Advisers and member of two social Security Technical Advisory Panels.

Tim Kehoe has dedicated his research and teaching to the theory and application of general equilibrium models. Far from being "just" an excellent scholar, Tim has always differentiated himself from other scholars by his interest on places where questions are raised and solutions have to be taken. As examples of this, he has advised several foreign governments, including Spain on the impact of joining the European Community in 1986, Mexico on the impact of joining the North America Free Trade Agreement in 1994, and Panama regarding foreign trade and investment reform in 1997-98. These days he is back to Mexico to evaluate the role of NAFTA in the development of that country.

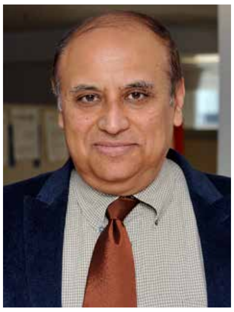
Both Debbie and Tim share the rare and incredibly valuable characteristic of mixing their work as leading scholars with policy work as advisers. Such experience can give us the standards to use our knowledge to improve the policy discussion and to extract from the policy discussion the really important questions to be scrutinised by scientific methods. Through this mixing we can be sure that the spillovers from research to policy are possible and that having research as an important activity in Banco de Portugal can make a difference!

Isabel H. Correia
Head of the Economics
and Research Department (DEE)

Also in this issue

Links

Economists | Publications
Conferences | Seminars



Professor Anjan Thakor is the John E. Simon Professor of Finance at the Olin Business School, Washington University. Prior to this appointment, he was The Edward J. Frey Professor of Banking and Finance at the Ross School of Business, University of Michigan, where he also served as chairman of the Finance area. He has served on the faculties of Indiana University, Northwestern University, and UCLA. His research interests comprise corporate finance, financial intermediation, corporate governance, the economics of asymmetric information, and banking and financial institutions. He is a former president of the Financial Intermediation Research Society and a former managing editor of the Journal of Financial Intermediation. He has published more than 90 academic articles, most of which in top finance journals.

This interview was prepared by Diana Bonfim and Luciana Barbosa.

Interview

There is a large body of academic literature (including many papers you co-authored) showing that a better capitalized banking system is safer and more resilient, thereby having a positive contribution to the economy and society. However, now that the devastating consequences of the global financial crisis seem to be something of the past, the debate is turning to the pressures on bank profitability exerted by regulation. Though in the short run increasing bank capital will certainly constrain profitability, the debate seems to forget the well-established relationship between risk and return. A better capitalized banking system will certainly have a lower required rate of return on equity. What are your thoughts on this?

This is related with what I like to call the "inverted pyramid of ignorance". We start with one flawed premise at the bottom and build on this a whole pyramid. This flawed premise is the argument put forth by some bank CEOs, who argue that increasing bank capital will destroy shareholder value. Many people easily believe this and you get this whole pyramid of consensus based on something that is wrong.

Let me give you a small example to illustrate my idea. Many years ago, before the crisis, I was in a conference where there was a panel of bankers. They were talking about how we should not increase capital requirements in banking, because that would destroy banks' shareholder value. So, then I raised my hand and asked: "I do not understand how does capital destroy the value of your bank?" The simple answer was: "Because it reduces our ROE." I said: "I see. That's mechanical. But why does a reduction in ROE mean destruction in the value of bank?" And the speaker could not go beyond his flawed premise and offer a reasoned argument.

Bankers argue that capital is expensive but they seem to be oblivious to the fact that they operate in a sector where the average firm has only 3 or 4 per cent of equity. The remaining 96 or 97 percent are debt. Of course, with these high levels of debt, equity capital will be costly due to the high financial risk premium. When you increase the amount of capital, mechanically ROE falls. But bankers commonly seem to not acknowledge the basic trade-off between risk and return: the required ROE also falls when capital increases. That is what should matter for shareholders.

Why do you think it is so difficult to convince shareholders/CEOs?

Because increasing capital decreases ROE. And this is very important for CEO compensation. I am working on a new paper with other co-authors where we are using a new detailed dataset on bonuses and compensation for CEOs in the US, both for banks and other firms. We find that in banks most CEOs have their bonus indexed to ROE, which is not so common in other industries. In banking, the dependence of CEOs bonuses on ROE is much higher than in other industries. If compensation contracts are designed to maximize ROE, it is not a surprise that CEOs vehemently argue against an increase in capital, given that the first order effect is inevitably a decrease in ROE. To overcome this, we need to design contracts that do not offer the wrong incentives for CEOs.

In theoretical models of optimal capital regulation, we have a social planner that maximizes welfare, but that is not how it happens in the real world. Regulation is usually the outcome of bargaining between regulators and banks. Because bankers believe so strongly that higher capital is bad, academics are not successful in convincing them that it is not so.

Charles Calomiris and Stephen Haber have a recent book on the politics of regulation (Calomiris and Haber, 2014). Their argument is that banks are made fragile by design, so that they are dependent on government protection. If banks need government support they need to make strong promises to serve political purposes. So there is a lot of bargaining also between bankers and politicians.

All this has an impact on how regulators design their policies. They are caught in the arguments of bankers and academics. I have a paper with Viral Acharya (Acharya and Thakor, 2016) showing that when there is higher leverage, banks choose more correlated asset portfolios. This increases correlated failures or systemic risk. Lower capital thus leads to a more fragile system. The expected consequence is an increase in systemic-risk regulation and an increase in the cost on banks for compliance. Of course, this provides further fuel to bankers' argument that more capital decreases ROE.

So it all starts with a basic premise that ROE is really important to banking. This is at the bottom of what I call the inverted pyramid of ignorance.

After the global financial crisis, regulation became tighter not only in bank capital but also in bank liquidity. The regulation of liquidity risk was possibly one of the most important additions in Basel III. Do you think that the new regulations on liquidity correctly address the underlying market failures? How do you perceive the interactions between capital and liquidity regulation?

Let me be very direct: I absolutely do not believe in liquidity regulation. I think that there is a misreading of what happened during the global financial crisis. It is true that banks faced a liquidity problem during the crisis. However, it was not a short-term liquidity problem caused by some sunspot liquidity shock. The liquidity crunch was due to insolvency concerns.

That is not a very consensual view.

No, it is not. I have a recent paper that argues that the FED misread the crisis in its early days (Thakor, 2015). Most of the measures taken were addressed at solving a pure liquidity crisis, being designed to inject liquidity in the system. As such, most of these measures were not successful or even made things worse. Only when the authorities recognized that this was an insolvency crisis did they take the right actions. At that point, the FED rightly focused on recapitalizing the banks, getting the banking system back on track. There was also an effort to make banks clean up their balance sheets which were loaded with bad quality assets that were affecting banks' capital. Banks were not willing to grant loans at the time also because there was no creditworthy loan demand. Further, the government appointed representatives for many of the banks' boards. Central banks and other authorities learned as they went along.

The policy instruments needed to address a liquidity crisis or an insolvency crisis are very different. The main lesson is that injecting liquidity in the system when there is an underlying solvency problem in the banking system does not solve anything. It is essential to recapitalize banks and clean up their balance sheets. This is why I believe that imposing liquidity requirements on banks does not work. This amounts to asking banks to hold these very liquid assets without any returns. This does affect profitability. So, increasing capital is not what hurts banks' profits in the long run. But holding liquid assets does.

At the end of the day, it is very hard to overcome the idea that central banks will always be the ultimate guarantors of liquidity. Liquidity regulation hardly has a role beyond that. Ensuring that banks have enough liquidity to survive a 30-day period will not be enough to solve fundamental liquidity problems. Further, by holding these liquid assets banks are unable to lend.

Let us go back to the issue on bad quality assets. One of the main hindrances to the recovery of bank profitability, especially in Europe, relates to the so-called legacy assets on banks' balance sheets. Some banks have been slow to recognize the losses on their balance sheets. This may be partly related to evergreening practices, with banks rolling over debt to virtually zombie customers to avoid recording losses (and possibly also to avoid cascade defaults in highly bank-dependent economies). An important cost of evergreening practices is that it might generate severe misallocation problems, excluding new, innovative and viable firms from credit markets. Do you think these practices are prevalent enough to hinder the usually positive cleansing effects of recessions?

As I mentioned before, it is fundamental to clean up banks' balance sheets. That may mean that some firms might need to go bankrupt. That is the cleansing effect usually associated with recessions.

This issue is especially important if firms have a lot of debt. Again, here there are important differences between the US and Europe. There is a paper that looks at leverage in the US before the crisis (Goel, Song and Thakor, 2014). Commercial and investment banks' leverage went up. But we did not find that in non-financial firms. Their leverage was relatively stable. In Europe the situation for non-financial firms was very different. Banks may have an important role in forcing corporate deleveraging. And regulators can help banks by providing them with the right incentives to clean up their balance sheets and stop lending to bad quality borrowers. Firms that are not viable should not be kept on life support from banks and evergreening practices should be discouraged.

This will obviously have some repercussions on borrowers. If firms do not get funding through non-bank sources of finance, they have to react and adjust. This process can be positive. Firms that are not financially constrained and are strong will possibly buy these weaker firms. This may contribute to a more competitive reallocation of resources in the economy, possibly without major disruptions in labor markets.

For this to work, something else is important: markets should work and firms should be able to have access to non-bank sources of funding. The European capital markets initiative is really important. Reducing the reliance of firms on banks and increasing the reliance on other sources of funding (either capital markets or other financial intermediaries) should be encouraged. Securitizations got a bad name during the crisis, but in Europe they actually performed well. Encouraging well-designed securitizations could also be an important policy option. If markets are working competitively, evergreening practices will be less likely.

Acharya, V. and A. Thakor. 2016. "Dark Side of Liquidity Creation: Leverage and Systemic Risk", *Journal of Financial Intermediation*, forthcoming.

Calomiris, C. and S. Haber. 2014. "Fragile by Design: The Political Origins of Banking Crises and Scarce Credit", *Princeton University Press*.

Goel, A., F. Song and A. Thakor. 2014. "Correlated Leverage and its Ramifications", *Journal of Financial Intermediation*, 23(4), 471-503.

Thakor, A.. 2015. "The Financial Crisis of 2007-09: Why Did It Happen and What Did We Learn?", *Review of Corporate Finance Studies*, 4(2), 115-205.

In every issue, we ask an expert to briefly present and discuss two papers written by staff members. In this issue, the guest is Prof. Cesaltina Pires.

Cesaltina Pires is a Full Professor in the Management Department of the University of Évora, where she is the Director of the PhD program. She was the Scientific Coordinator of the Centre for Advanced Studies in Management and Economics (CEFAGE) from 2006-2016, helping CEFAGE to become a dynamic and reputed research center. Her research covers topics such as decision under ambiguity, price discrimination, entry deterrence, innovation, venture capital and default risk. She published in journals such as *International Journal of Game Theory, International Journal of Industrial Organization, Theory and Decision, Journal of Financial Services Research and Quantitative Finance*, among others.

Featured published paper

Once upon a time it was possible to build models with the most elegant and tractable assumptions, without much concern regarding empirical validity. Nowadays, with the increasingly sophisticated empirical research, good theoretical work has to be concerned with empirical validity.

In the last decades, economics has evolved a lot as a result of theories being empirically tested, leading to identification of discrepancies, which leads to new theory, additional empirical testing, ... in a never ending cycle that keeps improving our understanding of the world. However, most of the time, a researcher either is a «theory guy» or an "empirical guy" and, similarly, most papers either provide theory contributions or empirical contributions. It is much less common that a paper «has the courage» of doing both. However, when that happens, one has to feel admiration by seeing, in one work, science evolving in all fronts. This is what I felt when I read the paper of Alfonso Irarrazabal, Andreas Moxnes, and Luca Opromolla. In a single paper we have "theory, empirical work, back to theory".

In general, trade costs are modelled as multiplicative (iceberg) costs. This implies that more expensive goods are costlier to trade. However, the evidence suggests that additive trade costs (i.e. costs per unit of the product) are prevalent in trade policy instruments, shipping and distribution. The paper provides evidence regarding the magnitude of these costs in international trade. Using a simple theoretical framework, with iceberg and additive trade costs, the authors show that the elasticity of demand with respect to the producer price decreases with additive trade costs and that this effect is stronger for low producer prices. The intuition is that the additive trade costs act as wedge between producer and consumer prices, weakening the relationship between producer prices and demand and this dampening effect is stronger for low priced goods. Using Norwegian firm-level trade data, the authors estimate the magnitude of trade costs for every destination and product, by comparing the difference in the elasticity of the volume of exports with respect to f.o.b. prices between low and high-price firms for a particular product, across destinations. They find that, on average, additive-trading costs are 14% of the price.

After showing the empirical relevance of additive trade costs, the authors developed a general equilibrium model and proved that a reduction in additive import tariffs implies higher welfare gains and larger increases in trade than an equal yield multiplicative tariff. The intuition is that the additive tariff distorts both the relative prices of the high and low priced varieties of a product and the relative prices across countries whereas multiplicative tariffs only distort prices across countries. Moreover the paper helps explaining the prevalence of zeros in bilateral trade flows and explaining why the empirical estimations of the gains from trade are higher than predicted by theory.

Conclusion: if you are building a trade model or running a regression with trade costs and are thinking about including only iceberg trade costs, think again!!!

A review of Irarrazabal, Alfonso, Andreas Moxnes, and Luca David Opromolla. 2015. "The Tip of the Iceberg: a Quantitative Framework for Estimating Trade Costs", *The Review of Economics and Statistics*, 97 (4), pp.777-792.

Featured article from *Banco de Portugal Economic Studies*

There exists a vast literature analyzing the sources of the large and persistent differences in productivity across countries. Over the past decade, a parallel strand of research has suggested large and persistent heterogeneity in firm-level productivity, in narrowly defined industries. These themes are related because heterogeneity in firm-level productivity may indicate misallocation of resources across firms with negative effects at the aggregate level. Thus it is important to identify the degree of misallocation of resources across firms; understand the sources of these misallocations; and try to create conditions that reduce these misallocations, in particular by eliminating policy-induced distortions.

Previous studies of the authors show that the misallocation of resources in Portugal is significantly higher in the services subsectors than in manufacturing. Considering that the service sector represents around 75% of the GDP in Portugal, identifying the sources of the greater misallocation in this sector, and trying to implement policies to reduce these distortions may have large effects on aggregate productivity. In this paper, the authors try to explain the sources of misallocation differences between manufacturing and services sectors. In particular, they analyze whether these differences are due to methodological issues; to differences in the characteristics of the two sectors; or to differences on the impact of these characteristics on the degree of misallocation.

Without distortions, all the firms in a given subsector should have the same Revenue Total Factor Productivity (TFPR). Thus TFPR heterogeneity is an indicator of firm-specific distortions. The misallocation in a subsector is measured by the efficiency gain that would occur, if we could change the allocation of the resources used by the subsector moving resources to firms with TFPR above the subsector average, maintaining constant the subsector demand of each input.

The authors show that methodological changes (related to assumptions on elasticity of substitution, outliers, minimum firm dimension), can only account for about one half of the difference between the service and manufacturing sector misallocation. Thus there are structural differences, which the authors explain using regression analysis. The results show that the impact of productivity shocks is higher in the service sector, suggesting higher input adjustment costs and higher price rigidity in this sector. The impact of the asymmetry in productivity on the degree of misallocation is also higher in the services, which the authors explain with the more informal nature of this sector. Finally, the service sector has a higher proportion of young firms (likely to be more financially constrained) although the impact of this variable on misallocation is smaller in the service sector.

Conclusion: policies that promote competition in the service subsectors and the elimination of policy induced distortions can help increasing efficiency in this sector, with large impacts on Portugal aggregate productivity.

A review of Dias, Daniel, Carlos Robalo Marques and Christine Richmond. 2016. **"Comparing Misallocation between Sectors in Portugal"**, *Banco de Portugal Economic Studies*, Vol. II, Issue 1, pp.27-44, January.

Recently published

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

Mathematical and quantitative methods

Forthcoming

Uwe Hassler, Paulo M. M. Rodrigues and Antonio Rubia. 2016. "Quantile Regression for Long Memory Testing: A case of Realized Volatility", *Journal of Financial Econometrics*.

Macroeconomics and monetary economics

Forthcoming

Castro, Gabriela, José R. Maria, Ricardo M. Félix and Cláudia R. Braz. 2016. "Aging and fiscal sustainability in a small euro area economy". *Macroeconomic Dynamics*.

International economics

Esteves, Paulo Soares and António Rua. 2015. "Is There a Role for Domestic Demand Pressure on Export Performance?". *Empirical Economics*, Vol. 49, No. 4, pp. 1173-1189, Springer.

Gomes, S., P. Jacquinot and M. Pisani. 2015. "Fiscal Devaluation in the Euro Area: A Model-Based Analysis". *Economic Modelling*, Vol. 52, Part A, pp. 58-70, Elsevier.

Irarrazabal, Alfonso, Andreas Moxnes and Luca David Opromolla. 2015. "The Tip of the Iceberg: A Quantitative Framework for Estimating Trade Costs" *The Review of Economics and Statistics*, MIT Press, Vol. 97(4), pp. 777-792, October.

Financial economics

Bonfim, D. and S. Pinheiro. 2015. "Contingency Funding Plans", *in van Lelyveld, I., P. Hilbers and C. Bonner (eds.), Liquidity Risk Management and Supervision: A Guide to Better Practice*, Risk Books, December.

Forthcoming

Panetti, E. 2016. "Market Participation in a Two-Sector Diamond-Dybvig Economy". *Studies in Economics and Finance*.

Labor and demographic economics

Cabral, Sónia and Cláudia Duarte. 2016. "Lost in Translation? The Relative Wages of Immigrants in the Portuguese Labour Market", *International Review of Applied Economics*, Vol. 30:1, pp. 27-47.

Forthcoming

Cardoso, Ana Rute, Paulo Guimarães and Pedro Portugal. 2016. "What Drives the Gender Wage Gap? A Look at the Role of Firm and Job-titile Heterogeneity", *Oxford Economic Papers*, DOI: 10.1093/oep/gpv069.

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Mathematical and quantitative methods

A New Regression-Based Tail Index Estimator: An Application to Exchange Rate • João Nicolau • Paulo M. M. Rodrigues – BP WP 14/2015

In this paper, a new regression-based approach for the estimation of the tail index of heavy- tailed distributions is introduced. Comparatively to many procedures currently available in the literature, our method does not involve order statistics and can be applied in more general contexts than just Pareto. The procedure is in line with approaches used in experimental data analysis with fixed explanatory variables, and has several important features which are worth highlighting. First, it provides a bias reduction when compared to available regression-based methods and a fortiori over standard least-squares based estimators of the tail index. Second, it is more resilient to the choice of the tail length used in the estimation of the index than the widely used Hill estimator. Third, when the effect of the slowly varying function at infinity of the Pareto distribution (the so called second order behaviour of the Taylor expansion) vanishes slowly our estimator continues to perform satisfactorily, whereas the Hill estimator rapidly deteriorates. Fourth, our estimator performs well under dependence of unknown form. For inference purposes, we also provide a way to compute the asymptotic variance of the proposed estimator under time dependence and conditional heteroscedasticity. An empirical application of the procedure to exchange rates is also provided.

House Prices: Bubbles, Exuberance or Something Else? Evidence from Euro Area Countries • Rita Fradique Lourenço • Paulo M. M. Rodrigues – BP WP 17/2015

The real estate market plays a crucial role in a country's economy. Since residential property is the most important component of households' wealth, real estate markets price trends can affect households' consumption and investment decisions via wealth effects. As real estate is often used as collateral for loans, changes in real estate prices affect households' debt and their ability to repay loans, and consequently also impact on the banking sector. As housing covers a basic human need, analyzing fluctuations in residential property prices is also important from a social perspective. Furthermore, since the construction industry is a main employer, investment in construction has a major influence on economic activity. Thus, developments in the real estate market have far-reaching implications on the economy as a whole as well as on financial stability. In this paper we use different methodologies with the objective of providing evidence regarding potential bubble/exuberant behaviour of economic agents in several European countries and the US, over the last four decades.

A Mixed Frequency Approach to Forecast Private Consumption with ATM/POS Data • Cláudia Duarte • Paulo M. M. Rodrigues • António Rua – BP WP 1/2016

The recent worldwide development and widespread use of electronic payment systems opened the opportunity to explore new data sources for monitoring macroeconomic activity. In this paper, we analyse the usefulness of data collected from Automated Teller Machines (ATM) and Points-Of-Sale (POS) for nowcasting and forecasting quarterly private consumption. To take advantage of the high frequency availability of such data, we use Mixed Data Sampling (MIDAS) regressions. A comparison of several MIDAS variants proposed in the literature is conducted, both single- and multiple variable models are considered, as well as different information sets within the quarter. Given the high penetration of ATM/POS technology in Portugal, it becomes a natural case study to assess its information content for tracking private consumption behaviour. We find that ATM/POS data displays better forecast performance than typical indicators, reinforcing the potential usefulness of this novel type of data among policymakers and practitioner.

Output and Unemployment, Portugal, 2008-2012 • José R. Maria – BP WP 3/2016

The Portuguese economy experienced a dramatic 2008-2012 period. Gross Domestic Product fell around 10%, while the unemployment rate jumped 8 percentage points, reaching almost 17% by 2012Q4. A semi-structural model with rational expectations – named, for ease of reference, Model Q – largely assigns such developments to "non-cyclical disturbances" in product and labour markets. The economy was also severely hit by two recessive periods in the euro area, and to a lesser extent by abnormally high risk premia. Model Q embodies a relatively robust Okun's law, but not without important revisions in trend components. Recursive estimates over 2008-2012 include a decrease in the longrun real interest rate, shared by both Portugal and the euro area, as well as a decrease in the long-run growth rate of the trend component of output, mirrored by an increase in long-run unemployment, which raises "secular stagnation" concerns. ModelQ fits the characteristics of a small economy integrated in the credible monetary union, and is parametrized with Bayesian techniques.

Residual-Augmented IVX Predictive Regression • Matei Demetrescu • Paulo M. M. Rodrigues – BP WP 5/2016

Bias correction in predictive regressions stabilizes the empirical size properties of OLS-based predictability tests. This paper shows that bias correction also improves the finite sample power of tests, in particular so in the context of the extended instrumental variable (IVX) predictability testing framework introduced by Kostakis et al. (2015, *Review of Financial Studies*). We introduce new IVX-statistics subject to a bias correction analogous to that proposed by Amihud and Hurvich (2014, *Journal of Financial and Quantitative Analysis*). Three important contributions are provided: first, we characterize the effects that bias reduction adjustments have on the asymptotic distributions of the IVX test statistics in a general context allowing for short-run dynamics and heterogeneity; second, we discuss the validity of the procedure when predictors are stationary as well as near-integrated; and third, we conduct an exhaustive Monte Carlo analysis to investigate the small-sample properties of the test procedure and its sensitivity to distinctive features that characterize predictive regressions in practice, such as strong persistence, endogeneity, non-Gaussian innovations and heterogeneity. An application of the new procedure to the Welch and Goyal (2008) database illustrates its usefulness in practice.

Microeconomics

Productivity and Organization in Portuguese Firms • Lorenzo Caliendo • Luca David Opromolla • Giordano Mion • Esteban Rossi-Hansberg – BP WP 4/2016

The productivity of firms is, at least partly, determined by a firm's actions and decisions. One of these decisions involves the organization of production in terms of the number of layers of management the firm decides to employ. Using detailed employer-employee matched data and firm production quantity and input data for Portuguese firms, we study the endogenous response of revenue-based and quantity-based productivity to a change in layers: a firm reorganization. We show that as a result of an exogenous demand or productivity shock that makes the firm reorganize and add a management layer, quantity based productivity increases by about 4%, while revenue-based productivity drops by more than 4%. Such a reorganization makes the firm more productive, but also increases the quantity produced to an extent that lowers the price charged by the firm and, as a result, its revenue-based productivity.

Macroeconomics and Monetary Economics

The Effect of Bank Shocks on Firm-Level and Aggregate Investment • João Amador • Arne J. Nagengast – BP WP 15/2015

We show that credit supply shocks have a strong impact on firm-level as well as aggregate investment by applying the methodology developed by Amiti and Weinstein (2013) to a rich dataset of matched bank-firm loans in the Portuguese economy for the period 2005 to 2013. We argue that their decomposition framework can also be used in the presence of small firms with only one banking relationship as long as they account for a small share of the total loan volume of their banks. The growth rate of individual loans in our dataset is decomposed into bank, firm, industry and common shocks. Adverse bank shocks are found to strongly impair firm-level investment, particularly in small firms and in those with no access to alternative financing sources. For the economy as a whole, granular shocks in the banking system account for around 20-40% of aggregate investment dynamics.

Monetary Developments and Expansionary Fiscal Consolidations: Evidence from the EMU • António Afonso • Luís Martins – BP WP 2/2016

We provide new insights into the existence of expansionary fiscal consolidations in the Economic and Monetary Union, using annual panel data from 14 European Union countries, over the period of 1970-2013. Different measures were calculated for assessing fiscal consolidations, based on the changes in the cyclically adjusted primary balance. A similar ad-hoc approach was used to compute monetary episodes. Panel estimations for private consumption show that, in some cases, when fiscal consolidations are coupled with monetary expansions, the traditional Keynesian signals are reversed for general government final consumption expenditure, social transfers and taxes. Keynesian effects prevail when fiscal consolidations are not matched by monetary easing. Panel probit estimations suggest that longer consolidations contribute positively to its success, whilst the opposite is the case for revenue-based ones.

The Effect of Quantitative Easing on Lending Conditions • Laura Blattner • Luísa Farinha • Gil Nogueira – BP WP 8/2016

We analyze the effect of the ECB's Quantitative Easing program (Expanded Asset Purchase Program – EAPP) on bank lending using security-level bank balance sheet data combined with a comprehensive dataset on new loans in Portugal. Our identification relies on the fact that only a subset of Portuguese banks was exposed to EAPP via prior holdings of EAPP-eligible securities and origination of eligible ABS and covered bonds. Using a difference-in-differences specification with borrower and bank fixed effects, we find that lending rates to the same borrower drop by 64 b.p. at banks exposed to QE relative to banks not exposed to QE. Loan volumes to existing corporate clients grow by one percentage point faster at exposed banks relative non-exposed banks. This result is robust to including both bank and borrower*time fixed effects, as well as a wide range of loan and borrower characteristics. At the extensive margin, the probability of credit approval to a new corporate client is about 1 percentage point higher at exposed banks post-QE announcement.

International Economics

Assessing European Firms' Exports and Productivity Distributions: The CompNet Trade Module • Antoine Berthou • Emmanuel Dhyne • Matteo Bugamelli • Ana Maria Cazacu • Calin-Vlad Demian • Peter Harasztosi • Tibor Lalinsky • Jaanika Meriküll • Filippo Oropallo • Ana Cristina Soares – BP WP 13/2015

This paper provides a new cross-country evaluation of competitiveness, focusing on the linkages between productivity and export performance among European economies. We use the information compiled in the Trade module of CompNet to establish new stylized facts regarding the joint distributions of the firm-level exports performance and productivity in a panel of 15 countries, 23 manufacturing sectors during the 2000's. We confirm that exporters are more productive than non-exporters. However, this productivity premium is rising with the export experience of firms, with permanent exporters being much more productive than starters. At the intensive margin, we show that both the level and the growth of firm-level exports rise with firm productivity, and that the bulk of aggregate exports in each country are made by few highly productive firms. Finally, we show that during the crisis, the growth of exports by high productive firms sustained the current account adjustment of European "stressed" economies. This last result confirms that the shape of the productivity distribution within each country can have important consequences from the point of view of the dynamics of aggregate trade patterns.

Networks of value added trade • João Amador • Sónia Cabral – BP WP 16/2015

Global Value Chains (GVCs) became the paradigm for the production of most goods and services around the world. Therefore, linkages among countries can no longer be adequately assessed through standard bilateral gross trade flows and new methods of analysis are needed. In this paper, we apply visualisation tools and measures of network analysis on value-added trade flows in order to understand the nature and dynamics of GVCs. The paper uses data on the bilateral foreign value added in exports from the World Input-Output Database (WIOD) for the period 1995-2011 and, in each period, the GVC is represented as a directed network of nodes (countries) and edges (value added flows). The analysis is extended beyond total trade flows with a view to discussing the distinct roles of goods and services in GVCs. Moreover, the differences between Germany, the US, China and Russia as major suppliers of value added in GVCs are also examined.

Market Integration and the Persistence of Electricity Prices • João Pedro Pereira • Vasco Pesquita • Paulo M. M. Rodrigues • António Rua – BP WP 9/2016

There is an ongoing trend of deregulation and integration of electricity markets in Europe and North America. This change in market structure has naturally affected the interaction between agents and has contributed to an increasing commoditization of electric power. This paper focuses on one specific market, the Iberian Electricity Market (MIBEL). In particular, we assess the persistence of electricity prices in the Iberian market and test whether it has changed over time. We consider each hour of the day separately, that is, we analyze 24 time-series of day-ahead hourly prices for Portugal and another 24 series for Spain. We find results consistent with the hypothesis that market integration leads to a decrease in the persistence of the price process. More precisely, the tests detect a break in the memory parameter of most price series around the year 2009, which coincides with a significant increase in the integration of Portuguese and Spanish markets. The results reinforce the view that market integration has an impact on the dynamics of electricity prices.

Financial Economics

Sorry, We're Closed: Loan Conditions When Bank Branches Close and Firms Transfer to Another Bank • Diana Bonfim • Gil Nogueira • Steven Ongena – BP WP 7/2016

We study loan conditions when bank branches close and firms subsequently transfer to a branch of another bank in the vicinity. Such transfer loans allow us for the first time to observe the conditions granted when banks poolprice new applicants. Consistent with recent theoretical work on hold up in bank-firm relationships we find that transfer loans do not receive the discount in loan rates that prevails when firms otherwise switch banks. We hereby critically augment recent empirical evidence on dynamic cycles in loan rates.

Labor and Demographic Economics

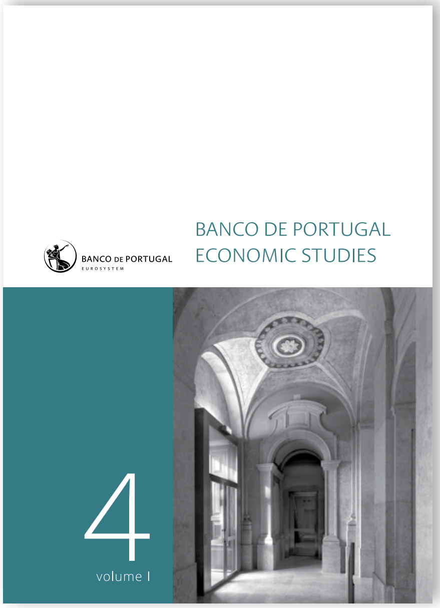
Understanding the Public Sector Pay Gap • Maria M. Campos • Evangelia Papapetrou • Domenico Depalo • Javier J. Pérez • Roberto Ramos – BP WP 6/2016

We uncover the short- and long-run structural determinants of the existing cross-country heterogeneity in public-private pay differentials for a broad set of OECD countries. We explore micro data (EU-SILC, 2004-2012) and macro data (1970-2014). Three results stand out. First, when looking at pay gaps based on individual data, more than half of the cross-sectional variation of the sample can be accounted for by the degree of exposure to international competition, and by the size of the public sector labour force and its composition (i.e. the intensity in the provision of pure public goods), while labour market institutions play a very limited role. Second, we find that pay gaps have narrowed significantly during the recent financial crisis; nevertheless, this decrease can be explained by the widespread process of fiscal consolidation rather than by structural factors. Third, we find that in the log-run openness to international trade and improvements in the institutional quality of governments are associated with decreases in the public-private wage gap. Our findings can be rationalised by a body of research stressing non-competitive wage settlements in the public sector.

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, November 2015



The Portuguese Money Market Throughout the Crisis: What Was the Impact of ECB Liquidity Provision? • Sofia Saldanha • Carla Soares

Money markets were severely impaired by the financial and sovereign debt crises. We investigate how the Portuguese part of the euro unsecured interbank money market was affected by the crises and how the ECB's unconventional policy measures, in particular the fixed rate full allotment procedure, impacted the market. We adapt a widely used method in the economic literature to identify unsecured interbank loans – with maturities ranging from overnight to one-month – settled in TARGET payment system, in which at least one of the counterparties is a Portuguese bank. We find that the Portuguese unsecured money market was hit especially by the sovereign debt crisis. There was a significant reduction in market activity, both in the number of operations and in market turnover. Alongside, price dispersion increased and rates agreed upon loans became on average more expensive than the reference rate for the respective maturity. We also find that domestic loans were more expensive than loans traded with a foreign bank. Finally, by analyzing the impact of monetary policy measures taken during the crises' periods, we find that the increased intermediation by the central bank contributed to a compression of spreads and a reduction in loan amounts. We observe that banks perceived as riskier began being penalized during the crisis.

The Euro Area Financial Network and the Need for Better Integration • Nuno Silva

At the time of the creation of the Economic and Monetary Union (EMU), it was widely held that balance of payments constraints for individual euro area countries would disappear. Con-trary to this dominant view, private capital suddenly stopped flowing into euro area deficit countries in the wake of the financial crisis. Understanding why these financial constraints might emerge inside a monetary union is of crucial importance given its potential impact on resources allocation. We find that that the euro area financial system mirrors an arrangement of relatively closed networks connected mostly through banks and governments, two sectors that are strongly interconnected, over dependent on domestic economies and for which default is typically a complex way of satisfying their budget constraints. This fact is argued to lead to the amplification of shocks within each country. This has been observed in countries like Portugal during the recent european sovereign debt crisis. The article concludes that it is vital to mitigate the impact coming from the home bias in banks' balance sheets, and consequent underdiversification, on the flow of funds between institutions with excess savings and non-financial sectors in any country. Cross-border expansion preferably following a branches model is one possibility. Nevertheless, mergers and acquisitions between banks from different euro area countries have not been very significant. In addition, the emergence of pan-european banks may increase the too-big-to-fail problem. This study suggests that asset-backed securities could be an efficient alternative to solve the problem.

A Reappraisal of Eurozone Countries Output Differentials • Jorge M. Andraz • Paulo M.M. Rodrigues

In this paper, we use the concept of real convergence (considering the stationarity of per capita cross-country output differences) and present updated evidence on the persistence properties of output differential data, accounting for the potential occurrence of persistence changes. We focus on per capita output differences for 14 Eurozone countries over the period 1950-2015. Results suggest that the gap between the central and northwestern countries has been reduced through persistent convergence paths. However, the convergence path of the southern countries to the central and northern countries seems to have been interrupted.

Banco de Portugal Economic Studies, January 2016

Structure of Corporate Funding • Luciana Barbosa • Paulo Soares de Pinho

Funding is crucial for firms to invest but also to operate their daily business. Different types of debt have different characteristics and requirements for firms. This paper aims to identify the main determinants of the composition of corporate funding. In addition to bank and trade credit, two relevant funding sources, we also include in the analysis tax liabilities and loans from shareholders or intragroup operations. The results suggest that some firms' characteristics present a similar impact on alternative funding sources, such as profitability, while others show a heterogeneous effect. Moreover, the results suggest the relevance of variables related to firms' operational activity and business risk in funding structure.

Comparing Misallocation between Sectors in Portugal • Daniel Dias • Carlos Robalo Marques • Christine Richmond

Recent empirical studies documented that the level of resource misallocation in the service sector is significantly higher than in the manufacturing sector. In this article, we try to understand to what extent the documented differences are due to methodological reasons or reflect structural differences between the two sectors. Our results suggest that about 50 percent of the original estimated differences can be attributed to methodological choices, while the other 50 percent can be attributed to differences in the characteristics of the two sectors. We also conclude that higher output-price rigidity and labour adjustment costs, together with higher informality in the service sector, account for the remaining differences of allocative efficiency between the two sectors.

How the Portuguese Firms Reacted To the Economic and Financial Crisis: Main Shocks and Channels of Adjustment • Fernando Martins

This article reports the findings of a survey conducted in 2014/2015 on a sample of Portuguese firms with the main purpose of identifying the major shocks faced by firms during the recent crisis and detecting their response in terms of wage-setting, price setting and labour force composition. Firms' difficulties in being repaid by their customers and the decline of demand were reported as the two most important factors affecting firms negatively during the crisis. The impact of these two shocks was particularly felt in very small firms, in sectors such as construction, energy or trade and in firms that sell mostly to domestic markets. Reducing employment was the main instrument to accommodate negative shocks, in particular through the freeze or reduction of new hires, non-renewal of temporary contracts at expiration or individual dismissals. An increasing number of firms also froze the base wages of their workers and reduce their prices.

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.

October 20 | 2015

Austerity

Harris Dellas • University of Bern

November 9 | 2015

Lending-Of-Last-Resort Is As Lending-Of-Last-Resort Does: Central Bank Liquidity Provision and Interbank Market Functioning In the Euro Área

Florian Heider • European Central Bank

November 27 | 2015

The Transmission of Foreign Monetary Policy Shocks into the United States through Foreign Banks

Judit Temesvary • Hamilton College

December 11 | 2015

Labor Reallocation and Productivity Dynamics: Financial Causes, Real Consequences

Enisse Kharroubi • Bank for International Settlements

December 21 | 2015

Wealth Inequality, Family Background, and Estate Taxation

Mariacristina De Nardi • University College London and Federal Reserve Bank of Chicago

January 11 | 2016

Unemployment (Fears) and Deflationary Spirals

Pontus Rendahl • University of Cambridge

February 1 | 2016

Money and Collateral

Fabrizio Mattesini • Università di Roma

February 15 | 2016

Data Revisions and DSGE Models

Ana Beatriz Galvão • University of Warwick

February 22 | 2016

Financial Frictions and Unconventional Monetary Policy in Emerging Economies

Roberto Chang • Rutgers University

February 26 | 2016

Balance of Payments Adjustment in a Computable Stochastic General Equilibrium Framework

Urho Lempinen • CD Financial Technology

Workshops

November 16 | 2015

Challenges of Microdata
Research Labs • Paulo Guimarães

February 29/March 1 | 2016

European Monetary Integration
• José Luis Malo De Molina, Banco de España

Courses

October 19/23 | 2015

Coordination, Information, and Beliefs in Macroeconomics

George-Marios Angeletos • Massachusetts Institute of Technology

During the fourth week of October, between the 19 and 23, we had at Banco de Portugal Professor George-Marios Angeletos, from the Massachusetts Institute of Technology, giving a course on "Coordination, Information, and Beliefs in Macroeconomics". The objective of the course was to review the recent work on the formation of expectations in macroeconomics. Angeletos and his co-authors are responsible for a large part of the literature in this topic.

According to Angeletos a large number of macroeconomic interactions, which are characterized by coordination motives, can be modeled as games in which the players' actions are strategic complements. Many times these games exhibit multiple equilibria. They therefore open the door to coordination failures and self-fulfilling beliefs, forces that are often thought to be important to many phenomena, for instance financial crises. But even when the equilibrium is unique, the coordination motives can critically affect the aggregate outcomes and their response to exogenous disturbances.

The implications of strategic uncertainty were stressed by Angeletos. In the presence of incomplete information the strategic uncertainty can blur the seemingly sharp distinction between models with unique equilibrium and models with multiple equilibria in two complementary ways. It can help in selecting a unique equilibrium in models that "normally" admit multiple equilibria and it may permit unique-equilibrium models to accommodate forces akin to animal spirits, coordination failures, and self-fulfilling beliefs. Other topics studied in the mini-course were: global games; beauty contests; incomplete information as a source of nominal rigidity; optimal monetary policy under incomplete information; news and uncertainty shocks; higher-order beliefs as a source of business-cycle volatility; and explorations of what "aggregate demand" means both in the theory and in the data.

By Bernardino Adão

Aiyagari, R. 1994. "Uninsured Idiosyncratic Risk and Aggregate Saving". *Quarterly Journal of Economics*, 109(3): 659-684.

Aiyagari, R. and E. R. McGrattan. 1998. "The optimum quantity of debt". *Journal of Monetary Economics*, 42(3): 447-469.

Galí, J., D. López-Salido and J. Vallés. 2007. "Understanding the effects of government spending on consumption". *Journal of the European Economic Association*, 5(1): 227-270.

November 23/27 | 2015

On Public Debt

Deborah J. Lucas • MIT Sloan School of Management

The Economics and Research Department of Banco de Portugal organized a course entitled "Financial Economics for Public Policy" by Prof. Deborah Lucas (MIT), between November 23 and November 27, 2015. The course derived its motivation from the fact that governments play a central role in allocating capital and risk within the economies. They provide a variety of implicit and explicit guarantees on financial intermediaries, pension benefits, healthcare, and so on. The policymakers often lack the financial training to correctly assess the costs and risks associated with such government guarantees or programs. The focus of the course was to review some recent financial tools that can be used to analyze and evaluate the government's financial assets and liabilities which in turn should lead to more informed policy making.

The course started with reviewing basic concepts of finance like risk and return, capital structure, weighted average cost of capital, and derivatives/option pricing. The first lecture drew parallels between the government and a large financial institution whose activities include making real investments, granting credit, guaranteeing contingent liabilities, and regulating the economy. It focused on understanding the portfolio risk and return using alternative methods like the state pricing and the consumption based asset pricing approaches. We analyzed the cost of capital for the government under complete markets and how government intervention in incomplete markets can raise social welfare. Once the theoretical foundation was laid, we moved onto applications. We analyzed the profitability of two state owned enterprises: Tennessee Valley Authority and the European Bank for Reconstruction and Development.

The next step was to have a better understanding of the material covered by means of more applications like valuing pension liabilities and direct and guaranteed government lending: two extremely important programs of the US government. This lecture alluded to the controversy over the use of the right discount rate to evaluate pension programs. It discussed how the traditional literature suggested the use of the risk-free rate (tax adjusted) while a more recent strand of literature discounts pension liabilities depending on future wages. The remainder of the lecture discussed the seminal Black-Scholes-Merton option pricing model and applied it to valuing government loan guarantees.

The remainder of the course, like the first half, continued to be a blend of some theory and plenty of applications to help us gain firsthand knowledge of how we can apply these princi-ples of finance in evaluating the cost of government programs. Broadly, we covered topics like government owned financial institutions, deposit insurance, credit policy as fiscal policy, the case of TARP and ESM, and finally looked at the government as a source of systemic risk. More specifically, we studied topics like valuing deposit insurance as a put option, market evaluation of risk of Fannie Mae and Freddie Mac, and US federal credit policies. One of the most im-portant lesson was that federal credit policies have significant fiscal effects, particularly in downturns. They may improve welfare by easing borrowing constraints and act as an automatic stabilizer. However, one should be cautious of some cons as well like excessive leveraging and capital misallocation. The course concluded by underlining the fact that the government could also be a source of systemic risk given the sheer scale of its operations. The policy pre-scription to this end would be to undertake regular audits to identify systemic consequences, improve and standardize financial disclosures, and to encourage the provision of fair value disclosures.

In my opinion, the course struck a right balance between theory and applications and thereby appealing to researchers and practitioners alike. It was definitely a great learning experience.

By Sudipto Karmakar

January 20/22, 25/26 | 2016

Topics in International Trade

Timothy Kehoe • University of Minnesota

Timothy J. Kehoe, Professor at the University of Minnesota since 1987, visited the Economics and Research Department of Banco de Portugal for a course on International Trade. The covered topics were relatively widespread, and the discussions highly vivid, during which Timothy J. Kehoe addressed key issues from both empirical and theoretical perspectives.

The course begun with the most basic of all questions: why do countries trade? The alternative answers equipped the audience with an overview of the major theoretical perspectives since the classical contributions. The simplest answer is that countries trade because they are different, either because they have different production technologies, or because they have differ-ent factor endowments. Dornbusch, Fischer and Samuelson (1977, 1980) are seminal theoretical contributions using the Ricardian and Hecksher-Ohlin models with a continuum of goods setup.

An alternative answer focuses instead on the importance of intra-trade, and on the impact of monopolistic competition and returns to scale. A key contribution using a non-comparative advantage model is Krugman (1979). This "new trade theory" emphasizes the importance of evaluating the existing demand for non-homogenous goods. More recently, the new "new trade theory" shifts the focus away from countries or sectors, and moves towards a specific agent: the firm. Countries trade because they have some firms that are sufficiently efficient in producing a particular exportable good. A major contribution can be found in Melitz (2003), who argues that only highly productive firms are able to cover all fixed costs behind an exporting strategy. The model of Eaton and Kortum (2002), based on a Ricardian model of international trade (based on differences in technology) and incorporation geography barriers (natural and artificial) was also reviewed. The overview of the major theoretical contributions paved the way for a vivid discussion on whether theorists should abandon altogether any approach not based on firm characteristics: there was no definitive and undisputable final answer.

Another fundamental question addressed during the course was: what happens when countries open to trade? The contribution of Bajona and Kehoe (2010) was intensively discussed. The authors claim that much of the discussion of convergence of income levels in traditional growth theory relies on models of closed economies, fully circumventing the above-mentioned question. Using a dynamic Heckscher–Ohlin framework, the authors show that in models in which convergence in income levels is driven by faster accumulation of a productive factor in the poorer countries, opening these countries to trade can stop convergence and even cause divergence. Opening the economies reduces the returns of the relevant productive factor, thereby reducing incentives to accumulate it and thus the tendency towards convergence.

An important part of the course was dedicated to empirical evidence. Kehoe (2005) evaluated the performances of prominent general equilibrium models used to predict the impact of the North American Free Trade Agreement (NAFTA). These models drastically underestimated the impact of NAFTA on North American trade, failing to capture much of the relative impacts on different sectors. Using 1988 and 1999 bilateral trade data between Canada and México, the largest increases in the share of exports occur for those sets of categories that accounted for the smallest amount of trade in 1988. This feature is also present in other bilateral trade data, including trade between Portugal and Spain, using 1988 and 2008 data.

By José R. Maria

Bajona, C. and T. J. Kehoe. 2010. "Trade, Growth, and Convergence in a Dynamic Heckscher-Ohlin Model". *Review of Economic Dynamics*, 13 (3), 487-513.

Dornbusch, R., S. Fischer, and P. A. Samuelson. 1977. "Comparative Advantage, Trade, and Payments in a Ricardian Model with a Continuum of Goods". *American Economic Review*, 67(5): 823-839.

Dornbusch, R., S. Fischer, and P. A. Samuelson. 1980. "Heckscher-Ohlin Trade Theory with a Continuum of Goods". *Quarterly Journal of Economics*, 95(2): 203-224.

Eaton, J. and S. Kortum, 2002. "Technology, Geography, and Trade". *Econometrica*, 70(5): 1741-1779.

Kehoe, T. J. 2005. "An Evaluation of the Performance of Applied General Equilibrium Models of the Impact of NAFTA", in T. J. Kehoe, T. N. Srinivasan, and J. Whalley, editors, Frontiers in *Applied General Equilibrium Modeling: Essays in Honor of Herbert Scarf*, Cambridge University Press, 341-377.

Melitz, M. 2003. "The Impact of Trade on Aggregate Industry Productivity and Intra-Industry Reallocations". *Econometrica,* 71(6): 1695-1725.

Krugman, P. R. 1979. "Increasing Returns, Monopolistic Competition, and International Trade". *Journal of International Economics*, 9(4): 469-479.

Meet our researchers

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

António Antunes holds a degree in telecommunications engineering from Instituto Superior Técnico and a PhD in Economics from Nova School of Business and Economics, where he currently teaches. From 2002 on he served at Banco de Portugal's Economics and Research Department, working in particular in the financial intermediation and monetary policy divisions. He is currently serving as deputy head of the department.

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

I have always been interested in the quantitative side of economic problems. That has been the common theme of all my research and applied work, both in macroeconomics and in empirical economics. I have been highly interested in models with heterogeneous agents ever since I came to Banco de Portugal, with emphasis on either occupational choice or idiosyncratic labour income risk. From an applied perspective, my contributions have mostly been in the area of credit risk modelling, taking advantage of the comprehensive and expertly maintained data sets available at Banco de Portugal. More recently I have been interested in the impact of debt-financed fiscal policies on aggregate outcomes within the framework of heterogeneous agents with precautionary savings, paying special attention to household borrowing constraints. I am also interested in the impact of health shocks – be them idiosyncratic or systemic – in aggregate outcomes. Finally, I have been working on the empirics of firm debt, default and exit, again using very detailed in-house microdata complemented with information from external sources. I plan to focus on these three themes in the coming years given my current policy duties, which I think benefit enormously from research carried out within the department. I would like to add that DEE provides a highly stimulating environment for researchers in economics and empirical methods, and I am grateful to my colleagues and co-authors for that.

Nuno Silva is an economist in the Economics and Research Department at Banco de Portugal since 2009 working in the Financial Intermediation Division. He holds a M.Sc. degree in Operational Research and Finance from the University of Southampton and a Licenciatura in Economics from Nova School of Business & Economics. Nuno is currently taking a M.Sc. in Mathematical Finance. Nuno has also completed the first two levels of the CFA program. His work has been published in *Banco de Portugal Economic Studies, Banco de Portugal Financial Stability Report* and *ECB Occasional paper series*.

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

Since I started at the Economics and Research Department I have specialized myself around credit risk and how this is transmitted in networks. I follow a structural approach to credit risk, which consists in linking the occurrence of default with the evolution of firm value. This approach has been extensively used by investment banks and rating agencies with Moody's EDF and Credit Grades being the most well-known cases. I am particularly involved in quantifying the contribution of fears of extreme events (e.g. redenomination risk) to credit risk spreads. I am also interested in using these models to understand banks' capital structure and stakeholders' incentives. At this regard, I am working on market based measures able to signal how far we are from the point where resolution is the only alternative to increase banks capital. In addition to quantifying credit risk, I am interested in analyzing how this is transmitted from sector to sector with special emphasis on the relations between banks and sovereigns. In this regard, I have extensively used national financial accounts to build networks of bilateral positions between institutional sectors. This analysis led recently to the publication of one article that partially justifies the emergence of financial constraints at the national level with the topology of the euro area financial network. I say partially because the observed sudden stop also results from euro area's incomplete institutional setting, which is other topic that interests me. I am very interested in the last developments in European integration, notably the banking union and the capital markets union.

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.

Luciano Amaral is Assistant Professor at Nova School of Business and Economics and has obtained his PhD at the European University Institute, in Florence, with a thesis on the topic of economic growth in Portugal in the Golden Age (1950s-1973). Economic growth in historical perspective is one of his main research interests. The others are banking history and the history of business groups, of which he has published a number of papers in such journals as *Financial History Review* or *Business History*.

Banco de Portugal during World War II: becoming a true central bank

Up to World War II Banco de Portugal (BdP) was far from possessing the features normally associated with a central bank. It was still a commercial bank, although one that had acquired some central bank functions – especially that of issuing money under a monopoly regime. Being formally a private joint-stock commercial bank, BdP had to act like one, particularly to satisfy its shareholders. But this posed limits to the central bank functions it was also supposed to perform.

My research shows that the World War II period was decisive to change this ambiguity. The change was mostly caused by an unusually large influx of international means of payment (gold and foreign exchange) as a consequence of Portuguese neutrality during the war, which increased massively the country's exports and made of it a safe haven for refugees fleeing the war zones. Thanks to this influx BdP could step out of commercial banking and transform its balance sheet structure: the bank became the institution centralising commercial banks' reserves in the form of deposits. But in order to take such a large amount of liabilities the bank had to have access to a similarly large amount of assets: that is what gold and foreign exchange allowed for, making it much less dependent on regular commercial activities, such as discount. The bank could, thus, finally withdraw from the commercial banking market, a presence that had been at the root of a conflict of interests that had haunted its history and limited its central bank functions.

Visitors

Luca G. Deidda •
University of Sassari

Beatriz Mariano •
London School of Economics

Leonardo Gambacorta •
Bank for International Settlements

Upcoming events and announcements

Seminars

March 29 | 2016
The Long-term Effects of Conditional Cash Transfers on Child Labor and School Enrollment • Pedro Cavalcanti Ferreira, Fundação Getulio Vargas

April 8 | 2016
Banks' Incentives and the Quality of Internal Risk Models • João Santos, Federal Reserve Bank of New York

April 11 | 2016
Unemployment Fluctuations, Match Quality and the Wage Cyclicality of New Hires • Antonella Trigari, Università Bocconi

April 18 | 2016
Testing Cointegration in Large VARs • Alexey Onatskiy, University of Cambridge

April 21 | 2016
World Economic Outlook Chapter on the macroeconomic effects of product and labor market reforms in advanced economies • Alexey Onatskiy, University of Cambridge

May 2 | 2016
to be announced • Martin Ellison, University of Oxford

May 9 | 2016
to be announced • Ellen McGrattan, University of Minnesota

May 11 | 2016
to be announced • Varadarajan V. Chari, University of Minnesota

May 23| 2016
to be announced • Stephanie Schmitt-Grohé and Martín Uribe, Columbia University

May 30 | 2016
to be announced • Eduardo Dávila, New York University

May 31 | 2016
Cross-Border Bank Flows and Monetary Policy • Teodora Paligrova, Bank of Canada

June 6 | 2016
to be announced • Elena Carletti, Università Bocconi

June 14 | 2016
to be announced • Juan Pablo Nicolini, Fed Reserve Bank of Minneapolis

June 27 | 2016
to be announced • Edouard Schaal, New York University

July 8 | 2016
to be announced • Petra E. Todd, University of Pennsylvania

July 11 | 2016
to be announced • Joseph G. Altonji, Yale University

September 19 | 2016
to be announced • Anton Korinek, Johns Hopkins University

October 3 | 2016
to be announced • David Marques--Ibanez, Board of Governors of the Federal Reserve System

October 10 | 2016
to be announced • José-Luis Peydró, Universitat Pompeu Fabra

October 20 | 2016
to be announced • Fabrizio Zilibotti, University of Zurich

October 24 | 2016
to be announced • Nicola Gennaioli, Università Bocconi

November 10 | 2016
to be announced • Jérôme Adda , Università Bocconi

Courses

March 21/24 | 2016
Lectures in Theoretical Banking • Anjan Thakor, Washington University in St. Louis

May 30/ June 2 | 2016
International Macroeconomics • Stephanie Schmitt-Grohé and Martín Uribe, Columbia University

Conferences

June 3/4| 2016
New Trends and Developments in Econometrics

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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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