Research in Economics at Banco de Portugal • Biannual • Year III • Autumn 2015

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Overview

There is no good research, and, therefore, no useful policy advice, without exposure to, and interaction with other active researchers. I am very much convinced of this, which I came to realize early on in my own experience and the experience of those that I have worked with. For this reason at the Bank we devote many resources to promote exposure and interaction.

This year has been a particular good year in this respect. We organized and hosted two outstanding conferences, one on monetary economics, the other on financial intermediation. Very interesting new work, raising lively discussion, was presented by people like Bob Lucas and Fernando Alvarez from Chicago, V.V. Chari and Patrick Kehoe from Minnesota, Bob Hall from Stanford, Marios Angeletos and Ivan Werning from MIT, Franklin Allen and Douglas Gale from the Imperial College or Charlie Khan from Illinois. We also had researchers at the Bank actively participating both by presenting their work or by discussing the work of others. We were very happy with, and very thankful for, the involvement of Sergio Rebelo from Northwestern, that has helped us organize the Monetary Conference since its start back in 2000, and João Santos from the NY Fed that has also helped us with the organization of the Financial Intermediation conference, also since its start in 2005.

In November 2014 we had the 7th Conference "Desenvolvimento Económico Português no Espaço Europeu". These conferences aim at stimulating studies with a focus on the Portuguese Economy. They work as the main channel of interaction between the Banco de Portugal and the most relevant departments of Economics in Portugal.

A reflection on structural reforms was the aim of the Conference Growth and Reform in Europe in the Wake of Economic Crisis organized in May 2015.

This year for the first time, we were also fortunate to have Rui Albuquerque and Steve Ongena as consultants, working closely with some of the researchers in the Department.

As usual we had short courses in different aspects of economics that may be relevant for the policy analysis at the Bank. This year we have had Gianluca Violante from NYU, and now in the Fall, we will have Marios Angeletos and Debbie Lucas, both from the MIT. In this we have now introduced a new feature, that some of the courses will have part of the sessions devoted to the presentation of related work by our researchers to be discussed by the lecturer of the course.

Surely, we have maintained the seminar series which is also an occasion for interaction with the faculty at the universities in the Lisbon area. In the future, and given that the number of seminars in Lisbon has been increasing, we want to be even more careful with the quality of our series.

We very much hope to be able to continue these initiatives that make it possible to produce the top level research that can shape the policy debate, currently facing so many challenges. As author, discussant or simply participant, you have played an essential role and we count on you to pursue it in the future. Many thanks!

Isabel H. Correia

Head of the Economics
and Research Department (DEE)

Also in this issue

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Robert Emerson Lucas, Jr. is an economist at the University of Chicago. He received a B.A. in History in 1959 and a PhD in Economics in 1964, both from the University of Chicago. He was awarded the Nobel Memorial Prize in Economic Sciences in 1995 for developing and applying rational expectations theory, which claims that individuals, in their microeconomic decision-making process, form expectations by constantly updating and reinterpreting information. Lucas demonstrated that this process has far-reaching consequences for economic policy and for the use of statistical methods to examine economic relationships. In addition to his revolutionary work in macroeconomic theory, Lucas has made significant contributions to labor economics, investment theory, financial economics, dynamic public economics, international finance and economic growth.

This interview was prepared by Joana Garcia and Maria Francisca Rebelo.

Interview

We know that you were a student of Milton Friedman. At the time, how did Friedman distinguish himself from the Keynesians? Were his ideas well-regarded initially?

Politically Milton Friedman was a libertarian: he was a charter member of the Mount Pelerin Society [and] a younger friend of Hayek's. In those days the free market was really in bad shape; the Depression was still on everybody's mind. The Russians didn't have a depression in 1929, so why did the capitalist countries? Great Britain at the end of World War II set up a socialist based economy, nationalized a lot of industries, and was way over to the left. And that was a kind of the common view. So being a libertarian and a free market guy made you a bit of a freak, especially in the academics.

When I look back at what I was doing with monetary theory, I think it fits right in [with] what Keynes was doing. Milton, when he taught macro theory, he used Keynes's book. We focus on the money supply, on the monetary aspects of recessions, but that's perfectly Keynesian. Keynes may have put more emphasis on fiscal stimulus but it was certain that in the IS-LM curves... one of those curves is for money! But Milton thought it was being neglected. But anyway, that led to a lot of studies of monetary behavior in the world.

Sometimes when we look back, that period is portrayed as if there existed two opposing factions: the Keynesians and the Monetarists.

Economic thought has to be intimately tied to public policy. If it wasn't for public policy you wouldn't be an economist and neither would I. There wouldn't be economics.

I was talking about Friedman's politics. He was a Barry Goldwater type and was an outlier in that direction. But economics really is a science. You can cut away a lot of this ideology and learn something from everybody. History of [economic] thought was written by people who usually aren't very good economists. They focus on personalities and so on and don't really think too much about scientific evolution, for example the massive increase in datasets that were made available. And that's really amazing. When I started, compared to now, that's the most striking thing: there are all these great datasets of various aspects and they're being organized by economists who know how to work with them. They just piled a huge amount of information that everybody can tap into. That's not partisan. Simon Kuznets got a Nobel Prize for putting together fabulous datasets, so it's not completely ignored, but it doesn't show up much.

Who is the economist that is changing the field today the way Friedman did at his time?

People are changing the field all time. It is not a question of some giant figures; it is dozens of people doing things. I look back at my career and I think about what I know now and how I think about economic issues compared to where I was when I graduated from my PhD and it's all just a matter of interacting with smart people. Progress usually involves lots of people interacting and talking. That is why you need concentrations of talent. Like in the 1900s the best painters in this world were all in France. And if you weren't French, if you're Picasso in Spain, you would go to France because that way you would be right at the frontier.

As you said the field of economics has changed a lot since you started. What do you think were the most important developments in macroeconomics?

For me and for Tom Sargent and Neil Wallace, the mathematical models that came out seemed to all of us like the way we've got to go. We have to write down models and make predictions of how we think things will happen, and then they're testable and we work at them, and that was exciting. Milton Friedman didn't like the math; he thought that this type of work was too crude. There was a political aspect to it, as it looks like centralized planning. And in a way it is: models [can be] used in order to get the government to lead this way or that way. On the other hand maybe some planning is good.

That was one thing and the other thing was, and this is what I was involved in, dynamic economic theory. The idea that if you are looking to the future, you have to take into account that what people do now is pretty much a response of what they think is going to happen down the road. And that leads to a whole new way of writing down models and thinking about things. And I think that's pretty well adopted now.

You once said that once one starts thinking about growth it's hard to think about anything else. What are the most relevant policy questions nowadays? For example, is Chinese growth sustainable?

Sure China is going to continue to grow. They're still way poorer... What we care about is living standards but of course the way we get to high living standards is to grow, so we care about growth in China. The Chinese are going to increase living standards even more since they relaxed the communist regime or certain aspects of it. Of course we can extrapolate the growth rate of China and compare it to the growth rate of OECD countries, and it looks like China is going shoot past them. But that's not the way it works, as you get closer and closer to the leaders you slow down. What Japan went through, that was the same thing. They were going to take over everything, and now it's just another western country.

And you'd much rather live in Japan than in China. I mean, what's going to happen in China... people are all the same, or so we think, basically. So of course governments are going to prevent [things], there are a lot of barriers to [allowing] society to exploit its innate talents effectively. But you're looking across the street to see what the other guy is doing, that has to have a big effect. I mean that's how the Industrial Revolution worked so far. It's fanning out: it started out from the English speaking countries, then to all the European countries, then the Asian miracles, and then there's Africa which is going to start.

I think that in a certain way when the Japanese miracle happened, there was an increase, maybe just coincidentally, in the US growth rate. It is not a zero sum thing at all; it is almost the other way around. I think there are huge benefits to America to get all these new products at great prices around the world.

One final question: if you were to start your PhD in economics now what would be the topic that would most interest you?

The hook for me is that math is central to real social science, something which I had no clue of all throughout my undergraduate degree and a lot of students now still don't. They think if you like math you have to be a physicist or engineer. I dropped it [math]. So if I were starting right now, I would try to think about the workings of the economy in a physical way. So now I think of the labor force as being a state variable and there's kind of a distribution of people by age and talent and things like that, and those things are evolving and you take some of them as given. And so what you've got is as system of partial differential equations which describe these things.

So you would look at the economy in the way the physicists are looking for a theory of everything?

Not at all, that's what Adam and Eve were chased out of the garden for — that is not for us to do. I am just talking about the modelling of specific things, of orbits of sun and moon and some bits and how they work out. If you try to do too many orbits all at the same time, it's always a problem. I'm talking about something specific to identify some simple forces and then to see if those forces will produce some complex patterns.

For example, looking at the data on age earnings profiles is a good thing to do. What I'd like to be able to say is, if you change certain features in the economy, how would that change the income distribution for people in different levels of their career? It's interesting to know [the answer to] that question. I don't see why it's something beyond our realm. That's what I'd like to see, a set of questions that would help us answer that.

Lisbon, June 2015

Joana is an economist in the Economics and Research Department at Banco de Portugal since April. She holds a BSc and a MSc in Economics from Católica-Lisbon. Currently she is working in the Monetary Policy Division, participating in activities aimed at advising the Board of Directors in monetary policy and conducting studies in the field.

Francisca is an economist in the Economics and Research Department since April, working in the area of Financial Intermediation. She holds a Bachelor of Arts in Political Science from Northwestern University and a MSc in Economics from Católica-Lisbon. Her current research includes investigating the effects of corporate debt overhang in Portugal.

Paulo Guimarães joined Banco de Portugal in 2014 where he assumed the responsibility of setting up the BPLim – Banco de Portugal microdata laboratory. He is also an invited professor at the Faculdade de Economia, Universidade do Porto. Paulo earned his PhD in Economics from the University of South Carolina. Prior to joining Banco de Portugal he worked at universities in Portugal, the United States, and the United Arab Emirates. His primary research interests are in applied microeconometrics with particular emphasis on applications to regional, labor, and industrial economics. He has published more than 40 refereed articles some in top field journals such as *Journal of Urban Economics, Journal of Economic Geography, Review of Economics and Statistics, Journal of Industrial Economics,* and *American Economic Journal: Macroeconomics*.

Banco de Portugal micro data research laboratory – BPLim

There is an increasing consensus among economists that "big data" will change the landscape of economic policy and economic research. The growing availability of large administrative micro data sets and the ability to combine information from several sources allows researchers to tackle a variety of new and interesting questions which can provide a much better grounding to economic policy. The use of micro data is now routine practice in the fields of labor and industrial economics and is rapidly extending to other areas such as international, finance, macroeconomics, regional economics, etc..

However, exploration of large administrative data sets with millions of records poses new challenges. First, there is the question of accessibility and confidentiality. While researchers long for unfettered access to data, care must be taken to ensure the confidentiality concerns of the data providers. Second, because of their sheer size, complexity, and dynamic nature, it often takes time to build a body of knowledge around a given database. Without this "know-how" it is impossible to fully explore the data and identify its potential for analysis. Moreover, preparing the data for statistical or econometric analysis is often a daunting task for the individual researcher, requiring a considerable investment of time and resources. Finally, the fruitful exploration of large data sets hinges on the availability of adequate computational resources and software which may not be available to researchers. More than that, researchers need to keep abreast of recent developments on methodology and master econometric techniques that are often unfamiliar to the empirical practitioner.

Central Banks are particularly well positioned to bridge the gap between producers of administrative micro data and the research community in general. That is because they collect and produce micro data sets, or have privileged access to administrative data sets, while at the same time have a body of in-house researchers that routinely use the data for their research activities. Thus, central banks have the ability to understand the data concerns both from the producer and researcher perspective. Not surprisingly, some central banks (e.g. Banca d'Italia, Bundesbank) have already put in place some type of structure to facilitate access of micro data sets to the research community.

Over the years Banco de Portugal (BdP) has developed a vast amount of knowledge regarding the collection, handling and production of micro data sets. Of particular relevance is the Central

Balance Sheet Database (Central de Balanços), an annual survey of comprehensive accounting data for all companies operating in Portugal which is entirely managed by the BdP. Moreover, several researchers from the Economics and Research Department (DEE) have had a successful research agenda centered on the exploration of Portuguese administrative micro data bases. By setting up a research unit dedicated to the analysis of micro data the BdP hopes to harness the power of the Portuguese administrative micro data sets and thus further stimulate research anchored on these data. The BPLim, an autonomous research unit within the (DEE), will have as a core mission the easing of access to the administrative micro databases hosted by the BdP and will actively try to extend its reach to other administrative data sets. Through the BPLim, both internal and external researchers will gain access to well documented and anonymized micro data sets customized to their particular needs and will also have the possibility to use the computational resources available at the laboratory. Since the BPLim will allow remote access to the data we hope to attract the attention of both national and international researchers.

What sets the BPLim apart from other units which provide access to micro data is the fact that the BPLim will host a core of researchers that are well connected with the academy and who will work jointly with researchers at the DEE, drawing on their long experience as end-users of these data sets. The BPLim researchers will have active research agendas centered on the analysis of the micro data and will provide assistance and training on the use of the data sets and the techniques needed to analyze them. Thus, we envisage the regular promotion of activities such as workshops, conferences and seminars centered on issues related to the use and exploitation of the micro data bases. Additionally, by offering regular scholarships we hope to attract doctoral students and visiting scholars who will gain familiarity with the data sets and the specific econometric techniques required to analyze them. Hopefully, these researchers will help orient their research agendas towards the exploration of the Portuguese micro data sets thus contributing to the improvement of our knowledge about the workings of the Portuguese economy.

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. Odd Rune Straume.

Odd Rune Straume is Associate Professor at the Department of Economics – University of Minho. He is also Director of the Economic Policies Research Unit (NIPE) at University of Minho and Co-Editor of the *Portuguese Economic Journal*. He holds a PhD in Economics (2002) from the University of Bergen in Norway.

His main research area is industrial organization, where most of his research is related to competition and regulation in health care and pharmaceutical markets, but he has also worked on several topics that lie in the intersection of industrial organization, international trade and labor economics.

His research has been published in journals such as *Journal of Public Economics, Journal of International Economics, RAND Journal of Economics, Journal of Health Economics, Journal of Development Economics, European Economic Review, Journal of Economics & Management Strategy, International Journal of Industrial Organization, Scandinavian Journal of Economics and Journal of Economic Behavior & Organization*.

Featured published paper

How important is geographical proximity for knowledge flows? This is one of the perennial research questions in economic geography and is key to understanding the role of knowledge spillovers as a potential source of external scale economies. The question is particularly pertinent in a world where information and communication technologies evolve ever more rapidly, potentially making geographical distance largely irrelevant for knowledge flows.

Attempts to quantify the effect of proximity on knowledge spillovers are fraught with difficulties. The standard way of measuring the flow of knowledge – which by nature is a somewhat intangible and elusive entity – is by counting patent citations. However, a major identification problem remains: How do you separate any causal effect of proximity on knowledge spillovers from correlations stemming from the spatial distribution of relevant industrial activity? Spillovers tend to be stronger within than across industries, which in turn tend to be characterized by spatial agglomeration ("localization") of firms. Thus, knowledge flows can be higher between co-located firms not because of spatial proximity in itself, but because co-located firms tend to belong to the same industry.

A common way to deal with this problem has been to adopt a matching approach, where each citing patent is matched to an otherwise similar non-citing patent, implying that localization is indirectly controlled for by the construction of such a control group. However, major doubts remain regarding the ability of such an approach to convincingly control for localization effects, and the existing literature offers mixed evidence of the effect of proximity on knowledge spillovers.

In a recently published paper, Octávio Figueiredo, Paulo Guimarães and Douglas Woodward present a novel econometric approach to analyze the effect of proximity on knowledge spillovers, where the effect of industry localization is directly controlled for. By merging patent data with industrial data, the authors estimate a gravity-type model using Poisson regression, measuring knowledge spillovers by number of patent citations. The estimated specifications include variables measuring both geographical and technological distance (between citing and cited patents), and localization (measured by total number of establishments/employment in the region of the citing patent).

The results strongly confirm that geographical proximity do play a key role in determining the amount of knowledge spillovers, with a doubling of distance leading to a decrease in the number of citations of at least 25 per cent on average. A striking feature of the results is that the estimated coefficients are remarkably stable across different specifications and are very robust to alternative ways of selecting the data.

The authors also point out that their results imply a trade-off between distance and localization, with respect to spillovers, where an increase in distance can be compensated by increased localization. It is not obvious that this trade-off is conceptually meaningful, though, since the positive effect of localization on spillovers is ultimately also explained by geographical proximity.

A review of Figueiredo, Octávio, Paulo Guimarães and Douglas Woodward (2015), "Industry localization, distance decay, and knowledge spillovers: Following the patent paper trail", *Journal of Urban Economics*, No. 89, pp.21-31.

Featured article from *Banco de Portugal Economic Studies*

Trade union membership rates ("union density") have been on the decline for several decades, in Portugal as well as in most other OECD countries. Although union coverage (the share of workers covered by collective agreements) is still quite high in many countries, the decline in union density has inevitably led to an erosion of both the influence and legitimacy of trade unions in industrial relations.

What are the causes behind the decline of trade unionism? And how can trade unions respond in order to regain the legitimacy and relevance of their existence? These are the main questions discussed by Hugo Vilares in this recently published article.

The article identifies the historical achievements and success of trade unionism as, perhaps paradoxically, a key factor contributing to the decline in membership rates. The argument is that many of the benefits that were originally provided for and guaranteed by trade union membership – such as regulated working hours and working conditions, vacations, sick leave insurance, retirement benefits, etc. – have eventually become worker rights through labor legislation. This implies that workers have been increasingly able to enjoy these benefits without being union members, which obviously gives strong incentives for free-riding. In other words, trade unions might have become the victims of their own success.

Is there anything trade unions can do to turn the tide and become a greater force to be reckoned with? The answer given in this article is a tentative "yes", but only if the trade union movement is willing to undergo a reorientation of its role and functions in a modern society.

For one, the author argues in favour of a more decentralized (firm-level) bargaining regime which allows for more wage flexibility. While this might improve labor market efficiency, by ensuring faster and more appropriate adjustments to idiosyncratic shocks and economic cycles, it probably remains an open question whether trade unions would stand to benefit from it. After all, it is worth noting that in what are perhaps the last remaining strongholds of trade unionism – the Scandinavian countries – wage bargaining is highly centralized. Moreover, the relatively low levels of unemployment in these countries are often attributed to the centralized nature of the wage bargaining institutions, where macroeconomic considerations are internalized in the wage bargaining process, as rationalized by the "Calmfors-Driffill hypothesis".

The article also argues for a break-up of the trade unions' bargaining monopoly and for trade unions to reorient themselves in the direction of being service providers for their members, for example through provision of health and unemployment insurance, or other services that are not universally provided by the state. The latter suggestion certainly seems like promising avenue for reducing the free-rider problem that has clearly been a key factor in the decline of trade unionism.

A review of Vilares, Hugo (2015), **"Trade Unions: The winners curse?"**, *Banco de Portugal Economic Studies*, Vol. 1, Issue 2, pp. 83-88.

Recently published

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

Mathematical and quantitative methods

Castro, T.B., P.M.M. Rodrigues and A.M.R. Taylor. 2015. "On the Behavior of Phillips-Perron Tests in the Presence of Persistent Cycles". *Oxford Bulletin of Economics and Statistics,* Department of Economics, University of Oxford, Vol. 77, Issue 4, pp. 495-511.

Dias, Daniel, Carlos Robalo Marques, Fernando Martins and João Santos Silva. 2015. "Understanding Price Stickiness: Firm-level Evidence on Price Adjustment Lags and their Asymmetries". *Oxford Bulletin of Economics and Statistics,* Department of Economics, University of Oxford, Vol. 77, Issue 5, pp. 701-718.

Dias, Francisco, Maximiano Pinheiro and António Rua. 2015. "Forecasting Portuguese GDP with Factor Models: Pre- and Post-crisis Evidence". *Economic Modeling*, Elsevier, Vol. 44, pp. 266-272.

Forthcoming

Dias, Daniel, Carlos Robalo Marques and Fernando Martins. 2015. "A Replication Note on Downward Nominal and Real Wage Rigidity: Survey Evidence from European Firms". *Empirical Economics*, Springer.

Valle e Azevedo, João and João Tovar Jalles. 2015. "Model-Based vs. Professional Forecasts: Implications for Models with Nominal Rigidities". *Macroeconomic Dynamics*, Cambridge University Press.

Macroeconomics and monetary economics

Castro, Gabriela, Ricardo M. Félix, Paulo Júlio and José R. Maria. 2015. "Unpleasant debt dynamics: Can fiscal consolidations raise debt ratios?". *Journal of Macroeconomics*, Elsevier, Vol. 44, June 2015, pp. 276-294.

Teles, Pedro, Harald Uhlig and João Valle e Azevedo. 2015. "Is Quantity Theory Still Alive?". *The Economic Journal*, Royal Economic Society.

Forthcoming

Christensen, Ian, Paul Corrigan, Caterina Mendicino and Shinishy Nishiyama. 2015. "Housing Collateral, Residential Investment and the Canadian Business Cycle". *Canadian Journal of Economics*, Canadian Economics Association.

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International economics

Amador, João and Filippo di Mauro. 2015. The Age of Global Value Chains: Maps and Policy Issues. *VOX EU e-book.*

Amador, João and Sónia Cabral. 2015. A Basic Network Perspective, in *The Age of Global Value Chains: Maps and Policy Issues*, edited by João Amador and Filippo di Mauro, *VoxEu.org book*, CEPR Press.

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Amador, João, Rita Cappariello and Robert Stehrer. 2015. "Foreign Value Added in Eurozone Exports", in *The Age of Global Value Chains: Maps and Policy Issues*, edited by João Amador and Filippo di Mauro, *VoxEu.org book*, CEPR Press.

Amador, João, Rita Cappariello and Robert Stehrer. 2015. "Global Value Chains: A View from the Euro Area". *Asian Economic Journal*, Vol. 29, Issue 2, pp. 99-120.

Portugal, Pedro, and José Mata. 2015. "The Termination of International Joint Ventures: Closure and Acquisition by Domestic and Foreign Partners". *International Business Review,* Elsevier, Vol. 24, Issue 4, pp. 677-689, (August 2015).

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Financial economics

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Karmakar, Sudipto and Junghwan Mok. 2015. **"Bank Capital and Lending: An Analysis of Commercial Banks in the United States"**. *Economics Letters*, Elsevier, Vol. 128 (C), pp. 21-24.

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Public economics

Kilponen, Juha, Massimiliano Pisani, Vesna Corbo, Tibor Hledik, Josef Hollmayr, Samuel Hurtado, Paulo Júlio, Dmitry Kulikov, Matthieu Lemoine, Matija Lozej, Henrik Lundvall, José R. Maria, Brian Micallef, Dimitris Papageorgiou, Jakub Rysanek, Dimitrios Sideris, Carlos Thomas and Gregory De Walque. 2015. **"Comparing Fiscal Multipliers Across Models and Countries In Europe"**. *ECB Working Paper Series*, No. 1760.

Labor and demographic economics

Martins, Fernando. 2015. **"What Survey Data Reveal About Price and Wage Rigidity in Portugal"**. *Labour Economics*, Elsevier.

Forthcoming

Dias, Daniel, Carlos R. Marques, Fernando Martins and J.M.C. Santos Silva. 2015. **"Understanding Price Stickiness: Firm-level Evidence on Price Adjustment Lags and their Asymmetries"**. *Oxford Bulletin of Economics and Statistics*, Department of Economics, University of Oxford.

Business administration and business economics • Marketing • Accounting • Personnel economics

Serra, J., A. Correia and P.M.M. Rodrigues. 2015. **"Yielding Tourist's Preferences"**. In Correia, A., J. Gnoth, M. Kozak and A. Fyall (eds) *Marketing Places and Spaces, Advances in Culture, Tourism and Hospitality Research*, Emerald Group Publishing Limited, Vol. 10, pp. 281-292.

Urban, rural, regional, real estate, and transportation economics

Figueiredo, Octávio, Paulo Guimarães and Douglas Woodward. 2015. **"Industry Localization, Distance Decay, and Knowledge Spillovers: Following the Patent Paper Trail"**. *Journal of Urban Economics*, Elsevier, No. 89, pp. 21-31.

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Mathematical and quantitative methods

Macroeconomic Forecasting Starting from Survey Nowcasts • João Valle e Azevedo • Inês Gonçalves – BP WP 2/2015

We explore the use of nowcasts from the Philadelphia Survey of Professional Forecasters as a starting point for macroeconomic forecasting. Specifically, survey nowcasts are treated as an additional observation of the time series of interest. This simple approach delivers enhanced model performance through the straightforward use of timely information. Important gains in forecast accuracy are observed for multiple methods/models, especially at shorter horizons. Still, given that survey nowcasts are very hard to beat, this approach proves most useful as a means of developing a sharper forecasting routine for longer-term predictions.

Covariate-Augmented Unit Root Tests With Mixed-Frequency Data • Cláudia Duarte – BP WP 7/2015

Unit root tests typically suffer from low power in small samples, which results in not rejecting the null hypothesis as often as they should. This paper tries to tackle this issue by assessing whether it is possible to improve the power performance of covariate-augmented unit root tests, namely the ADF family of tests, by exploiting mixed-frequency data. We use the mixed data sampling (MIDAS) approach to deal with mixed-frequency data. The results from a Monte Carlo exercise indicate that mixed-frequency tests have better power performance than low-frequency tests. The gains from exploiting mixed-frequency data are greater for near-integrated variables. An empirical illustration using the US unemployment rate is presented.

Microeconomics

Income Smoothing Mechanisms After Labor Market Transitions • Nuno Alves • Carlos Martins – BP WP 10/2015

This article quantifies several household income smoothing mechanisms following labor market shocks. These shocks correspond to individual transitions between employment, unemployment and inactivity. The analysis covers 25 European countries for the period 2004-2011. We identify the relative role of labor and non-labor household income sources, income taxes and individual and household transfers in smoothing income fluctuations. We conclude that the tax and transfer system is the main household insurance mechanism following individual labor market transitions. This finding is robust before and after the Great Recession of 2009. Quantitatively, the relative role of these smoothing mechanisms is conditional on the characteristics of the labor market shock and varies across countries in the sample. Finally, even though we do not identify a relevant labor market response of household members in the intensive margin, household income pooling is an important smoothing mechanism among couples.

Macroeconomics and monetary economics

Capital Regulation in a Macroeconomic Model with Three Layers of Default • Laurent Clerc • Alexis Derviz • Caterina Mendicino • Stephane Moyen • Kalin Nikolov • Livio Stracca • Javier Suarez • Alexandros P. Vardoulakis – BP WP 3/2015

We develop a dynamic general equilibrium model for the positive and normative analysis of macroprudential policies. Optimizing financial intermediaries allocate their scarce net worth together with funds raised from saving households across two lending activities, mortgage and corporate lending. For all borrowers (households, firms, and banks) external financing takes the form of debt which is subject to default risk. This "3D model" shows the interplay between three interconnected net worth channels that cause financial amplification and the distortions due to deposit insurance. We apply it to the analysis of capital regulation.

Expectation-Driven Cycles: Time-Varying Effects • Antonello D'Agostino • Caterina Mendicino – BP WP 4/2015

This paper provides new insights into expectation-driven cycles by estimating a structural VAR with time-varying coefficients and stochastic volatility, as in Cogley and Sargent (2005) and Primiceri (2005). We use survey-based expectations of the unemployment rate to measure expectations of future developments in economic activity. We find that the effect of expectation shocks on the realized unemployment rate have been particularly large during the most recent recession. Unanticipated changes in expectations contributed to the gradual increase in the persistence of the unemployment rate and to the decline in the correlation between the inflation and the unemployment rate over time. Our results are robust to the introduction of financial variables in the model.

Financial Fragmentation Shocks • Paulo Júlio • Ricardo Mourinho Félix • Gabriela Lopes de Castro • José R. Maria – BP WP 8/2015

We define "financial fragmentation shocks" as fluctuations in credit market frictions in a small euro area economy. The shock changes the financial integration status quo of the monetary union, given its negligible international spillover. An increase in credit market frictions triggers a recession in the small economy. Perfect competition and the absence of nominal rigidities attenuate output volatility. Expectations also matter: real impacts weaken when long fragmentation time spans are perceived to be short lived. Contrarily to ""risk shocks", defined as fluctuations in borrowers' riskiness, fragmentation shocks do not imply strongly countercyclical bankruptcy rates. The results are based on PESSOA, a general equilibrium model with a Bernanke-Gertler-Gilchrist financial accelerator mechanism.

Central Bank Interventions, Demand for Collateral, and Sovereign Borrowing Costs • Luís Fonseca • Matteo Crosignani • Miguel Faria-e-Castro – BP WP 9/2015

We analyze the effect of unconventional monetary policy, in the form of collateralized lending to banks, on sovereign borrowing costs. Using our unique dataset on monthly security- and bank-level holdings of government bonds, we document that Portuguese banks increased their holdings of domestic public debt during the allotment of the three year Long-Term Refinancing Operations (LTRO) of the European Central Bank. We argue that domestic banks engaged in a "collateral trade", which involved the purchase of high-yield bonds with short maturities that could be pledged as collateral for low cost and long-term borrowing from the ECB. This significant increase in bond holdings was concentrated in shorter maturities, as these were especially suited to mitigate funding liquidity risk. The resulting steepening of the sovereign yield curve and the timing and characteristics of government bond auctions are consistent with a strategic response by the debt management agency.

Decomposing the Wage Losses of Displaced Workers: The Role of the Reallocation of Workers Into Firms And Job Titles • Pedro Portugal • Pedro S. Raposo • Anabela Carneiro – BP WP 11/2015

Using an unusually rich matched employer-employee-job title data set for Portugal, this paper evaluates the sources of wage losses of workers displaced due to firm closure based on the comparison of workers' wages differentials before and after displacement. Potential wage losses of displaced workers can be related to firm, job title, and match heterogeneity in the pre- and post-displacement jobs. In this vein, we estimate a three-way high-dimensional fixed effects regression model that enables us to decompose the sources of the wage losses into the contribution of firm, job title, and match fixed effects. The worker-firm match plays a very sizable role. We found that the allocation of workers into poorer matches accounts for 38 per cent of the total average wage loss. Sorting among firms accounts for 36 per cent. Job downgrading also plays a significant role in explaining the wage loss of displaced workers, accounting for the remaining 26 per cent.

Labor and Demographic Economics

Seriously Strengthening the Tax-Benefit Link • Pedro Portugal • Pedro S. Raposo – BP WP 5/2015

On January 1st 1994 Portugal introduced, for the first time, inflation indexation in the old-age pension formula. This change considerably decreased the uncertainty regarding the perception of the link between the stream of labor earnings and future pensions. The effect of indexation was large and, by itself, increased the expected pension amount by 28 per cent in real terms. Individuals appear to have reacted to the policy change: labor earnings increase significantly during the eligible years approaching retirement age.

Unions and Collective Bargaining in the Wake of the Great Recession • John T. Addison • Pedro Portugal • Hugo Vilares – BP WP 6/2015

This paper provides the first definitive estimates of union density in Portugal, 2010-2012, using a unique dataset. The determinants of union density at firm level are first modelled. Next, estimates of the union wage gap are provided for different ranges of union density. Since these estimates fully reflect the reality of an industrial relations system in which collective agreements are extended to non-union workers and firms, the final issue examined is contract coverage. The pronounced reduction in the number of industry-wide agreements and extension ordinances in recent years has been uncritically equated with a fall in coverage. However, the authors show that the number of workers covered by new and existing agreements has remained largely unaffected by economic crisis. The reduced frequency of new agreements and extensions is instead attributed to downward nominal wage rigidity in deflationary times, rather than (as yet) the expression of a crisis in collective bargaining.

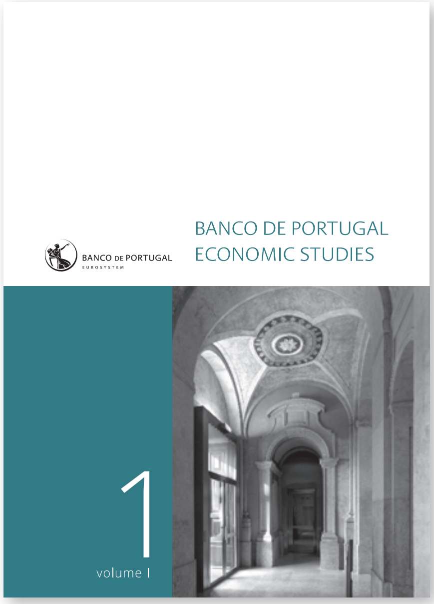
Sources of the Union Wage Gap: Results from High-Dimensional Fixed Effects Regression Models • John T. Addison • Pedro Portugal • Hugo Vilares – BP WP 11/2015

We estimate the impact of union density on wages using matched employer-employee-contract data for Portugal. We extend omitted variable bias decomposition procedure of Gelbach (2016) to obtain the contribution of worker, firm, and job-title heterogeneity to the union wage premium. The principal result is the dominance of the allocation or workers among firms with different wage policies. The unobserved skills of union workers have a modest impact on wages; unions do not place their members into higher job-titles along the job career hierarchy; the wage cushion enables firms to partially undo the bargained wage; and, while fringes matter, matching does not.

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, May 2015



Co-movement of revisions in short- and long-term inflation expectations • António Armando Antunes

This article studies the co-movement between large daily revisions of short- and long-term inflation expectations using copulas. The main findings are: first, the co-movement between unusually large changes in short- and long-term inflation expectations increased markedly since mid-2012, which implies that long-term inflation expectations might not be, in a precise sense, well-anchored. Second, this co-movement measure is quite noisy. Finally, the result is shown not to be an artefact of the methodology or of the specific data used in the analysis.

Determinants of civil litigation in Portugal • Manuel Coutinho Pereira • LaraWemans

This article studies the evolution of the resort to civil justice in Portugal in the last two decades, particularly seeking to identify the main determinants of the litigation rate observed in the different regions, benefiting from a dataset with information by comarca. We conclude that the length of proceedings tends to reduce litigation and, therefore, there is evidence of rationing by waiting list in the access to justice. At the same time there is some evidence of demand inducement by lawyers. Socioeconomic characteristics as the illiteracy rate, purchasing power and the location of enterprises influence the level of litigation in the different regions of the country. Moreover there are significant spatial spillovers in the generation of litigation – not only the characteristics of the comarca itself, but also those of the neighboring ones, play a relevant role.

Revisiting the monthly coincident indicators of Banco de Portugal • António Rua

After a decade releasing the monthly coincident indicators of Banco de Portugal, this article revisits the main features of these indicators which play an important role in the conjunctural assessment of the Portuguese economy. In particular, it is analyzed its behavior as underlying measures of the evolution of the corresponding macroeconomic aggregates as well as their real-time behavior in monitoring economic developments.

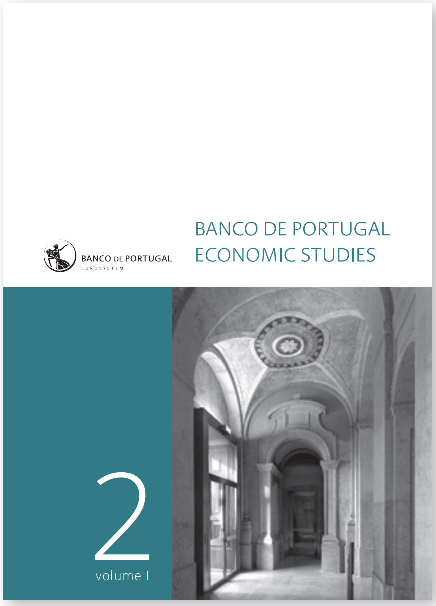
Banco de Portugal Economic Studies, July 2015

Increased Strength of Monetary Policy • Bernardino Adão • André C. Silva

Firms cash holdings distribution changed substantially from 1980 to 2013. We study the effects of this change in the formulation of monetary policy using a model with financial segmentation. We find that the interest rate channel of the transmission mechanism of monetary policy has become more powerful, as the impact of monetary policy over the real interest rate increased. Now, with the increase in firm cash holdings, the real interest rate takes 3.4 months more to return to its initial value after a shock to the nominal interest rate.

Temporary contracts' transitions: the role of training and institutions • Sara Serra

Despite recent reforms, labor market segmentation is still a marked feature of



several European countries. This work empirically analyses transitions out of temporary contracts, by means of a discrete duration model, with a particular focus on human capital features, labor market protection and their interaction. Transitions to open-ended contracts with the same or with a new employer are considered separately, as well as transitions to joblessness, based on data for ten European countries taken from the European Community Household Panel. Firm-training significantly increases the likelihood of transitioning to an open-ended contract with the same employer, but not in countries with more segmented labor markets. In these countries, instead, educational attainment and labor market flexibility are more important determinants of transitions to open-ended contracts. Interestingly, in these countries, firm training actually mitigates the positive (and significant) impact of labor market flexibility on the likelihood of transitioning to an openended contract with the same employer.

The Portuguese Banking System during the Sovereign Debt Crisis • Matteo Crosignani • Miguel Faria-e-Castro • Luís Fonseca

We describe the evolution of balance sheets of monetary financial institutions (MFI) in Portugal before, during, and after the sovereign debt crisis of the late 2000's. We account for several dimensions of heterogeneity including size, type, and nationality. We find that the Portuguese MFI sector rapidly expanded and increased its leverage before and during the crisis until 2012, after which it started a long deleveraging process. Many of the major aggregates, such as lending and deposits, follow this pattern. We observe a steady rise of non-traditional banking activities on both sides of the balance sheet of domestic institutions. The crisis weakened the international integration of the Portuguese financial sector, as domestic banks became less exposed to international counterparties. Finally, the Eurosystem and the Portuguese government have become relevant sources of funding as a result of the recent unprecedented monetary and fiscal interventions in the domestic financial system.

Banco de Portugal Economic Studies, July 2015, Perspectives on the Portuguese Economy

Trade Unions: The winners curse?
• Hugo Vilares

On the wage bargaining system in Portugal
• Fernando Martins

On fallacies surrounding the discussion about the reduction of social security contributions
• Pedro Portugal

The Portuguese labor market legislation: a technological shock
• Álvaro A. Novo

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.

April 20th | 2015

Market Set-Up in advance of federal reserve policy rate decisions

Dick van Dijk • Erasmus University Rotterdam

April 27th | 2015

Take the short route - How to repay and restructure sovereign debt with multiple maturities

Mark Aguiar • Princeton University

May 4th | 2015

Job uncertainty and deep recessions

Morten O. Ravn • University College London

May 11th | 2015

Financial contracts: banks versus banks

Iftekhar Hasan • Fordham University

May 18th | 2015

Testing for identification in structural vector autoregressions with GARCH residuals

Helmut Lütkepohl • Freie Universität Berlin

May 25th | 2015

A new perspective on bank-dependency: the liquidity insurance channel

Heitor Almeida • University of Illinois

June 1st | 2015

The slow growth of new plants: learning about demand?

Chad Syverson • University of Chicago

June 29th | 2015

Switching costs and retail liquidity risk

Martin Brown • University of St. Gallen

July 17th | 2015

The intrafirm complexity of systemically important financial institutions

Robin Lumsdaine • American University

July 20th | 2015

Output and unemployment dynamics

John G. Fernald • Federal Reserve Bank of San Francisco

September 28th | 2015

Anyone for social security reform?

Partha Sen • Delhi School of Economics.

October 12th | 2015

Bank quality, judicial efficiency and borrower runs: the case of loan repayment delays

Philip E. Strahan • Boston College.

Courses

June 15th/19th | 2015

Policy in Models with Heterogeneous Agents

Gianluca Violante • New York University.

Lessons from a course primarily focused on fiscal policy, and on computational tools that solve for the equilibrium of models with heterogeneous agents

José R. Maria, Banco de Portugal, Economics and Research Department

The Economics and Research Department of the Banco de Portugal welcomed Gianluca Violante, the William R. Berkley Term Professor of Economics at New York University, for a one week course on Policy in Models with Heterogeneous Agents. Gianluca Violante covered a wide range of the literature, from classic contributions to state-of-the-art research, focusing primarily on fiscal policy issues. An important objective of the course was also to equip the audience with numerical and computational tools necessary to solve for the equilibrium of this class of models.

The course begun with an in-depth review of the standard Aiyagari model (Aiyagari, 1994, and Aiyagari and McGrattan, 1998), where individuals are subject to exogenous idiosyncratic income shocks but these shocks are not fully insurable due to market incompleteness. An emphasized result was that the equilibrium of the neoclassical growth model with idiosyncratic risk displays over-accumulation of capital relative to the first best. The absence of insurance markets induces agents to save more, for self-insurance, which carries along an increase in the capital stock and places the interest rates below the first best. An important feature of the Aiyagari model is the continuum of agents that are subject to different shocks, which gives rise to a wealth distribution. Numerical solutions were presented thoroughly, particularly using endogenous grid and eigenvector methods. The model was solved for instance for the optimal quantity of government debt and for an invariant wealth distribution.

The audience was later confronted with some important policy issues, notably the need to compute welfare changes for households living through tax reforms. Gianluca Violante discussed the need to compare not only different steady states in models with heterogeneous agents but also to compute the transitional dynamics. One main motivation was to assess the impact of a permanent rise in the labour income tax, with the tax revenues being used to finance lump sum government transfers. To evaluate how progressive labour income taxation should be, Gianluca Violante reviewed arguments both in favour of progressivity, for instance missing markets, and against, for instance distortions linked to labour supply or human capital investment.

Gianluca Violante also looked into the importance of a type of agent relatively new to the literature, namely wealthy hand-to-mouth households, claiming that they represent a significant share of the population in some countries, for instance Germany. Standard hand-to mouth agents are simply characterized by consuming all their current labour income. Galí, López-Salido and Vallés (2007) emphasize that the presence of these households in standard new Keynesian models allows consumption to rise in response to an increase in government spending. Wealthy hand-to-mouth have also little liquid wealth, but in contrast have substantial illiquid wealth. Their marginal propensity to consume may therefore be conditional on the shock hitting the economy, and may decrease significantly in the presence of large shocks.

Although the course was primarily focused on fiscal policy, Gianluca Violante ended the course with a brief overview of monetary policy issues in Heterogeneous Agents New Keynesian (HANK) models. This relatively new class of models blends two workhorses of modern macroeconomics: the New Keynesian models, with limited heterogeneity, for instance the one used by Galí, López-Salido and Vallés (2007), and Aiyagari models with sticky prices.

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.

Conferences

May 9th | 2015

The Conference, titled **Growth and Reform in Europe in the Wake of Economic Crisis**, intended to encourage reflection on the recent process of adjustment and reform in Europe, as well as the prospects for growth and the institutional change needed to recover a sustained development path.

The Conference discussed the way forward for European countries as they face the challenges of a period of protracted growth in the wake of the economic and sovereign debt crisis.

The Conference offered three major contributions:

- An early evaluation of the response to the economic and sovereign debt crisis in Europe, in terms of the extent of the reforms and the outlook for sustained growth;
- A discussion of the role European institutions have played and can still play in the recovery and growth process in the continent, most notably the management of a single currency in a diverse economic space;
- The lessons Europe can learn from the response of the US economy, its structural characteristics, and its political, fiscal and monetary institutions.

June 11th/13th | 2015

Banco de Portugal 8th **Conference on Monetary Economics** took place on June 11th-13th, 2015. For this edition of the Conference ten papers from eminent researchers, on multiple issues in macroeconomics and finance were chosen. Each of the papers was presented by one of the authors and subsequently discussed by fellow colleagues.

The first paper of the Conference, "Debt Constraints and Employment", was presented by Patrick Kehoe and discussed by Veronica Guerrieri and Pedro Amaral. This paper aims at explaining why in the Great Contraction, the regions of the United States that experienced the largest declines in household debt to income also experienced the largest drops in consumption and employment. Using a search and matching model, it is shown that tighter debt constraints, due to the Great Contraction, raise workers' and firms' discount rates, thus reducing match surplus, vacancy creation, and employment. Two ingredients of the model, on-the-job human capital accumulation and worker debt constraints, greatly amplify the drop in employment. On-the-job human capital accumulation implies that the returns to posting a vacancy are deferred to a later date: the surplus from a match is thus more sensitive to changes in firm discount rates. Worker debt constraints amplify these effects further by preventing wages from falling too much.

George-Marios Angeletos presented his paper "Quantifying Confidence", which was discussed by Kristoffer Nimark and Juan Rubio-Ramirez. In this paper the standard macroeconomic model is extended with a mechanism that substitutes for strategic uncertainty and that manifests itself as waves of optimism and pessimism about the short-term economic outlook. The authors interpret this mechanism as variation in "confidence" and show that it helps account for many salient features of the data; it drives a significant fraction of the volatility in estimated models that allow for multiple structural shocks; it captures a type of fluctuations in "aggregate demand" that does not rest on nominal rigidities; and it calls into question existing interpretations of the observed recessions.

Andrea L. Eisfeldt presented her paper "Measuring the Financial Soundness of U.S. Firms, 1926-2012", which was discussed by Simon Gilchrist and Augustin Landier. This paper develops a measure of the distribution of firms' financial soundness over most of the last century for a broad cross section of firms. There are three main findings for this key aggregate state variable. First, the three worst recessions between 1926 and 2012 coincided with sharp deteriorations in the financial soundness of all firms, but other recessions did not. Second, fluctuations in total asset volatility, rather than fluctuations in leverage, appear to drive most of the variation in the distribution of firms' financial soundness. Finally, the distribution of financial soundness for large financial firms for the period 1962-2007 largely resembles that for large non-financial firms.

The fourth paper of Conference, "Sovereign Default: The Role of Expectations", was presented by Juan Pablo Nicolini and was discussed by Mark Aguiar and Fernando Alvarez. This paper studies a variation of the standard model of sovereign default and shows that this variation is consistent with multiple interest rate *equilibria*. Some of those *equilibria* correspond to the ones identified by Calvo (1988), where default is likely because rates are high, and rates are high because default is likely. The model is used to simulate equilibrium movements in sovereign bond spreads that resemble sovereign debt crises. It is also used to discuss lending policies similar to the ones announced by the European Central Bank in 2012.

On Friday John Moore gave the last talk of the day. He presented his paper "Leverage Stacks and the Financial System". The paper studies two issues: why banks hold mutual gross positions and if these gross positions create systemic risk. The social benefit of banks lending and borrowing from each other sometimes even at the same rate of interest is investigated. In particular it is analyzed if a financial system without netting – where banks lend to and borrow from each other – is more fragile than a financial system with netting.

Robert E. Lucas open the Conference on Saturday with his paper "On the Stability of the Money Demand", which was discussed by Francesco Lippi. This paper shows that regulatory changes that occurred in the banking sector in the early eighties, that considerably weakened Regulation Q, can explain the apparent instability of money demand starting in the same period. The effects of the regulatory changes were evaluated using a model that goes beyond aggregates as M1 and treats currency and different deposit types as alternative means of payments. The model is used to construct a new monetary aggregate that performs remarkably well for all the period 1915-2012.

The second paper of Saturday, "Positive Long Run Capital Taxation: Chamley-Judd Revisited", was presented by Ludwig Straub and discussed by Chari and Luigi Lovino. This paper overturns the Chamley-Judd result, that capital should not be taxed in the long run. It is proven for the model in Judd (1985), that the long run tax on capital is positive and significant, whenever the intertemporal elasticity of substitution is below one. For higher elasticities, the tax converges to zero but may do so at a slow rate, after centuries of high tax rates. The model in Chamley (1986) imposes an upper bound on capital taxes. Straub's paper provides conditions under which these constraints bind forever, implying positive long run taxes.

The seventh paper of the Conference, "A Model of Secular Stagnation" was presented by Gauti Eggertsson and discussed by Patrick Kehoe and John Leahy. The paper proposes an overlapping generations New Keynesian model in which a permanent (or very persistent) slump is possible without any self-correcting force to full employment. The trigger for the slump is a deleveraging shock, which creates an oversupply of savings. Other forces that work in the same direction and can both create or exacerbate the problem include a drop in population growth, an increase in income inequality, and a fall in the relative price of investment.

The penultimate paper of the Conference, "Credit Supply and the Housing Boom" was presented by Giorgio E. Primiceri and discussed by Robert Hall and Sebastian Di Tella. The paper proposes a model in which an increase in credit supply driven by looser lending constraints in the mortgage market can explain four empirical features of the housing boom before the Great Recession: the unprecedented rise in home prices, the surge in household debt, the stability of debt relative to house values, and the fall in mortgage rates.

The last paper of the Conference, "Decomposing Duration Dependence in the Job Finding Rate in a Stopping Time Model", was presented by

Katarína Borovicková and discussed by Andreas Mueller and Pedro Portugal. The paper develops a dynamic model of a worker's transitions between employment and non-employment. The model implies that a worker finds a job at an optimal stopping time, when a Brownian motion with drift hits a barrier. The model has structural duration dependence in the job finding rate, in the sense that the hazard rate of finding a job changes during a non-employment spell for a given worker. A large panel of social security data for Austrian workers is used to test and estimate the model. The model is not rejected by the data, and the parameter estimates indicate that dynamic selection is critical for understanding the evolution of the aggregate job finding rate.

July 10th/11th | 2015

Banco de Portugal hosted the 6th **Conference on Financial Intermediation**, that brought together a group of promising young and senior established researchers in finance to discuss the most recent developments in the economics of financial intermediation, markets and regulation. The conference was divided into three sessions. The first session aimed to understand the origins of banks and banks' fragility. The second session addressed sources and effects of systemic risk. The last session focused on designing effective bank regulation. Each of the sessions saw three papers being presented.

The first paper "Warehouse Banking", presented a model where banks, while operating as proper deposit-taking institutions, can also create extra liquidity by granting loans. By linking banks to their origins as warehouses, the paper challenges the views of other models of liquidity creation. The second paper "Self-Fulfilling Fire Sales: Fragility of Collateralized Short Term Debt Markets", presented a mechanism by which fire selling of assets and fall in asset prices can be self-fulfilling, thereby producing severe real effects. The main message of this paper was that pecuniary externalities could be an important source of bank fragility, leading to overall inefficiency and multiple *equilibria*. Finally, the last paper in this session, "Transparency and Bank Runs", highlighted the conditions under which opacity in the financial system can be beneficial. When information is scarce, depositors are less sure about the solvency of the banking system, and this might reduce their incentives to coordinate a bank run.

After having understood the origins of banks fragility, the next natural step is to understand the sources and effects of systemic risk, which was the theme of the second session. The first paper of this session, "Uncertainty Aversion and Systemic Risk", essentially showed that idiosyncratic risk might easily become systemic, as bad news on a particular asset might generate a "snowball effect", and lead to pessimistic views on other assets as well. The second paper "Intermediation and Voluntary Exposure to Counterparty Risk", presented a network model of banking, where a "core-periphery structure" emerges endogenously, and might lead to an increase in systemic risk. The third paper "Bank Bias in Europe. Effects on Systemic Risk and Growth" documented the larger size of the banking sector relative to private equity and bond markets in Europe, compared to the US. The paper also stated that banks increase (decrease) credit substantially as asset prices rise (fall).

In turn, the excessive provision of credit can also lead to misallocation issues.

The last session of the conference discussed the design of effective bank regulation. The first paper of this session, "Rules versus Discretion in Bank Resolution", showed how a discretionary regulator, with private information about the aggregate state of the financial system, might conceal negative news in order to prevent bank runs, and in turn discussed the optimality of this behavior. The second paper, "Towards Time-Consistency in Bank Regulation", highlighted the time consistency problem that a regulator faces in its decision to bail out versus liquidate a bank in distress: a bail out, though not optimal ex ante, might be optimal ex post, due to the costs that bankruptcy imposes on the whole economy. Finally, the last paper of the conference, "Capital Requirement, Risk Choice, and Liquidity Provision in a Business Cycle Model" presented a dynamic general-equilibrium model with banking frictions, where households (i.e. the purchasers of bank liabilities) value more a safe and liquid asset in their portfolios. Thus, following a rise in capital requirements, a higher demand for such instruments leads to lower interest rates, lower bank funding costs, and an increase in the provision of credit.

From the conference proceedings, one can draw a series of policy prescriptions. The first one is related to the effect of increasing bank capital requirements. The financial literature highlights that capital requirements, while making financial institutions more resilient to idiosyncratic and systemic shocks, might reduce bank lending. However, the conference highlighted that the increased safeness of the financial system has value per se, and policy makers should take that into account when evaluating the pros and cons of more stringent financial regulation.

The second policy message is concerned with how the flow of information can affect the stability and resilience of the financial system. On one side, better circulation of information, especially at times of high perceived uncertainty, can be beneficial for the stability of the system, by limiting the snowball effect mentioned above. On the other side, at times of financial turmoil, limiting transparency can make the bank depositors less sure about the solvency of the system, and thus the whole system less prone to expectations-driven runs. Therefore, the dissemination of information should be analyzed on a case-by-case basis, and carefully tailored to the specific conditions of the financial system. This notion is illustrative of a more general point: sometimes, a regulation that sounds optimal from an ex ante point of view might turn out to be suboptimal ex post. In other words, financial regulation might be time-inconsistent. This leads us to the third policy implication: optimal financial regulation should be designed such that the regulator is unbound when public news is favorable, but limited in its actions following bad news, for example with the introduction of contingent capital instruments.

The fourth policy implication is related to the interconnectedness of the banking system: the banks that make risky investments "overconnect", exposing themselves to excessive counterparty risk, while banks that mainly provide funding end up with too few connections. Thus, the policymakers should limit counterparty risk, by examining the linkages across the banks and trying to limit their mutual exposures. Finally, because of the inefficiencies prevailing in the collateralized debt market, there is the need for a credible commitment from the central bank to purchase assets at times of financial distress. This would mitigate fire sales and pecuniary externalities, which can be detrimental for the whole economy.

Begenau, J. "Capital Requirements, Risk Choice, and Liquidity Provision in a Business Cycle Model". March 2015, *mimeo*.

Dicks, D.L. and P. Fulghieri, "Uncertainty Aversion and Systemic Risk". March 2015, *mimeo*.

Donaldson, J.R., G. Piacentino, and A. Thakor. "Warehouse Banking". June 2015, *mimeo*.

Farboodi, M. "Intermediation and Voluntary Exposure to Counterparty Risk". June 2015, *mimeo*.

Kahn, C.M. and J. Santos. "Towards Time-Consistency in Bank Regulation". July 2015, m*imeo*.

Kuong, J.C. "Self-Fulfilling Fire Sales: Fragility of Collateralised Short-Term Debt Markets", *INSEAD Working Paper No. 2015/37/FIN*. April 2015.

Langfield S. and M. Pagano. "Bank bias in Europe: Effects on Systemic Risk and Growth". May 2015, *ECB Working Paper Series No. 1797*.

Parlatore Siritto, C. "Transparency and Bank Runs". April 2015, mimeo.

Walther, A. and L. White. "Rules versus Discretion in Bank Resolution". June 2015, *mimeo*.

Meet our researchers

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

Luísa Farinha is an economist in the Economics and Research Department at Banco de Portugal since 1985. She has a M.A. degree in economics and finance from Centro de Estudios Monetarios y Financieros (CEMFI), Madrid. Her work has been published in the *Journal of Financial Intermediation,* the Finance Research Letters, as well as book chapters and in several Banco de Portugal and European Central Bank publications.

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

My main research projects have covered several topics on both household and corporate finance benefitting from the richness of the micro databases available at Banco de Portugal.

I have looked at the indebtedness patterns of Portuguese households and also at credit risk emerging from households' debt. Research on households finance has benefitted from the fact that Banco de Portugal has been committed since 1994 in collecting high quality and comprehensive survey data on households' wealth, debts, income, consumption and complimentary socio-demographic information. Since 2010, this data has been collected using harmonized questionnaires and methods by almost all the euro area central banks.

I have also looked at access to credit by non-financial corporations and its relation with their investment decisions and their cash-holding policies. I found particularly interesting the investigation on how access to bank finance by start-ups may affect their future performance and survival.

Recently, I have been interested in trying to disentangle the importance of both credit demand and credit supply-related factors in explaining access to credit by corporations, mainly Small and Medium Enterprises, during the recent financial crisis. This distinction is particularly relevant for policy. If the friction impeding financing is not the fact that banks are weak but the fact that firms are highly indebted, policy should focus on promoting debt restructuring and corporate deleveraging. My most recent research is related with the effect of debt overhang on investment and employment decisions of corporations.

Upcoming events and announcements

Seminars

October 20th | 2015
Austerity • Harris Dellas, University of Bern

November 2nd | 2015
Bank Opacity and Financial Crises • Joachim Jungherr, Universitat Autònoma de Barcelona

November 9th | 2015
Lending-of-last-resort is as lending-of-last-resort does: Central bank liquidity provision and interbank market functioning in the euro area • Florian Heider, European Central Bank

November 23rd | 2015
to be announced • Sérgio Rebelo, Northwestern University

November 27th | 2015
The transmission of foreign monetary policy shocks into the United States through foreign banks • Judit Temesvary, Hamilton College

November 30th | 2015
to be announced • Samuel Reynard, Swiss National Bank

December 15th | 2015
to be announced • José-Víctor Ríos-Rull, University of Minnesota

December 21th | 2015
to be announced • Mariacristina De Nardi, University College London and Fed Reserve Bank of Chicago

February 1st | 2016
to be announced • Fabrizio Mattesini, Università di Roma

April 11th | 2016
to be announced • Antonella Trigari, Università Bocconi

Courses

October 19th/23th | 2015
Coordination, Information, and Beliefs in Macroeconomics • George-Marios Angeletos, Massachusetts Institute of Technology

João Valle e Azevedo is an economist in the Economics and Research Department of Banco de Portugal since 2007, being also Invited Assistant Professor at Nova SBE. João holds a PhD in Economics (Stanford University) a M.Sc. in Statistics (London School of Economics) and a Licenciatura in Mathematics Applied to Economics and Business (Technical University of Lisbon – ISEG). His work has been published in the *Journal of Business and Economic Statistics, Oxford Bulletin of Economics and Statistics, Journal of the Royal Statistical Society, International Journal of Forecasting, Journal of Economic Dynamics and Control, Macroeconomic Dynamics and The Economic Journal.*

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

My research interests are in time series econometrics and empirical macroeconomics. Within Time series I spend some time getting rid of the noisy fluctuations one finds in macroeconomic data to improve forecast accuracy. In fact, at least for long forecast horizons, it seems a bit hopeless to try nailing such fluctuations. I see the development of these statistical forecasting tools as a cool game, one where we wait a few months to see who wins. It's like searching for a crystal ball! But I would have a hard time if I had to play this game all the time (and well, these crystal balls are quite fuzzy at times...). For this reason, I like to use these games to try informing economic theory. e.g., if measures of money growth properly adjusted by what (some) economic theory suggests are more useful than other measures to forecast inflation, this hints at the validity of such theory. But that's not enough (well, nothing will ever be enough...). Still, try to falsify the same theory from a different angle, say, confronting its implications with the behavior of the data in a set of countries.

Uncovering how the economy works, or which (necessarily) simple model most resembles it, is a huge but exciting challenge in which I try to be involved. With this objective in mind, recent research questions include: Is public investment productive? Do agents substitute, and in what degree, private consumption by newly available public consumption? The answer to these questions seems crucial to understand and thoroughly measure the expected impact of fiscal stimuli and consolidations (in particular under a liquidity trap), as well as to conduct welfare analyses of fiscal policy.

November 23rd/27th | 2015
On Public Debt • Deborah J. Lucas, MIT Sloan School of Management

March 21th/24th | 2016
Topics Related to Macro Prudential Policies • Anjan Thakor, Washington University in St. Louis

Workshop

November 16th | 2015
Challenges of Microdata Research Labs

Visitors

Andrada Bilan •
Phd student in the University of Zurich

Laura Blattner •
Phd student in Harvard University

Miguel de Faria e Castro •
Department of Economics, New York University

Federico Esposito •
Department of Economics, Yale University

Pedro Freitas •
Phd student in Nova School of Business and Economics

Beatriz Mariano •
London School of Economics

Arne J. Nagengast •
Deustche Bundesbank

Juan Pablo Nicolini •
Federal Reserve Bank of Minneapolis

Teodora Paligorova •
Financial Markets Department, Bank of Canada

Omar Rachedi •
Banco de España

Philipp Sibbertsen •
University of Hannover

Oreste Tristani •
European Central Bank

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.

Andre C. Silva is Associate Professor in Nova School of Business and Economics. He holds a PhD in Economics from the University of Chicago. Before working at Nova SBE, Andre Silva worked as consultant at Accenture and taught at the Pontifical Catholic University of Rio de Janeiro and at the University of Chicago. Andre Silva's research is on Finance and Macroeconomics. He has research on monetary policy, innovation and fiscal policy. Andre Silva has published in journals such as the Review of Financial Studies, the Journal of Development Economics, and the American Economic Journal: Macroeconomics.

Financial Markets and Monetary Policy

Monetary policy is influenced by how firms and households react to changes in inflation and interest rates. In the research project "Government Financing with Taxes or Inflation," carried over with Bernardino Adão, from the Banco de Portugal, we study how the behavior of firms and households toward the demand for money changes the impact of monetary policy and of government financing. Changes in the demand for money are made possible through financial markets, where investors trade bonds and money.

We find that taking into account changes in the demand for money increases substantially the welfare cost of financing the government through inflation. Also, we find that the increase in firm cash holdings in the last 30 years prolongs the impact of monetary policy shocks.

In the paper "Government Financing with Taxes or Inflation," which gives the name to the project, we study the difference of financing an increase in government expenditures through distortionary taxation or through inflation. We show that for relevant cases for the policy maker, such as when changing all taxes simultaneously is not available, a standard cash-in-advance model implies that it is better to rely on inflation. We modify the original framework by considering changes in the financial sector and show that it is optimal to use taxes.

Using a standard cash-in-advance model, an analyst may be persuaded that inflation is a better method of financing government. We reverse this result. We obtain welfare costs about 1 percentage points higher than estimates of standard cash-in-advance models. Our conclusions give support to a low target for the inflation rate.

In the paper "The Effect of Firm Cash Holdings on Monetary Policy," we study the consequences of the increase in firm cash holdings for monetary policy. Firm cash holdings corrected for inflation increased 5 times from 1980 to 2010. We calculate the effects of a monetary policy shock, given by an increase in the nominal interest rate, taking into account the observed distribution of cash holdings over the years. We find that the real interest rate takes 3.4 more months in 2013 than in 1980 to revert to its initial value after monetary policy shock. A consequence of our findings is that any increase in interest rates should be made gradually, as changes in interest rates imply strong effects in the economy given the current distribution of cash holdings.

Our research project attributes a prominent role to the decisions on monetary variables. Both for the effects of macroeconomic policy and monetary policy. Our findings show that the decisions on monetary variables are relevant for policy.

Ana Rute Cardoso is Associate Professor of Research in 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 PhD 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 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 2015, 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". The literature on the returns to schooling has made remarkable progress over the past decades, but nevertheless the role of the employer has remained absent from the analysis. This project aims at redressing that neglect. It also fits into the controversial line of investigation on the social returns to education, which has seen little evidence reported at the firm level. 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? Additionally, does worker allocation to tasks matter? 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? In synthesis, we are empirically modelling the wage distribution – more precisely, the returns to schooling – taking into account who the worker is, what he does (the detailed job), for whom (the employer), and with whom (the peers).

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.

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

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

Filomena Garcia is an Assistant Professor in the Department of Economic of Indiana University in Bloomington and an Assistant Professor with tenure (on leave) at ISEG (School of Economics and Management) of the University of Lisbon. She earned her PhD in Economics from Université Catholique de Louvain (Belgium) – Center of Operations Research and Econometrics (CORE) with a thesis on network effects and strategic complementarities. She has a Master of Philosophy in Economics from the University of York and a Master of Science in Economics and Finance from Universitat Pompeu Fabra (Barcelona), on top of a BA in Economics from Universidade Nova de Lisboa. Her fields of interest are Industrial Organization, Game Theory, Matching, Networks, and Banking. Her work has been published in the Journal of Economic Theory, the B.E. Journal of Theoretical Economics, the Journal of Economics and Management and Strategy, Economics Letters, the Manchester School, the International Journal of Economic Theory, and the Review of Network Economics, among others.

She visited Banco de Portugal during the summer of 2015, to work with Luca David Opromolla and Sudipto Karmakar on the project "Banks' sectoral specialization, and inter-sectoral linkages in credit demand", with Ettore Panetti on the project "Optimal Deposit Insurance with Heterogeneous Depositors", and with Luca David Opromolla and Andrea Vezzulli on the project "An optimal loan contract for start-up innovation with patenting and recontracting".

Filomena recently started a new theoretical and empirical research agenda on bank and firm industry dynamics. The literature on models of banking industry dynamics is very recent. The goal is to develop general *equilibrium* models of banking and firm industry dynamics where both bank and firm heterogeneity can play a role. The project "Banks' sectoral specialization, and inter-sectoral linkages in credit demand" (with Sudipto Karmakar and Luca David Opromolla) aims at quantifying the transmission of financial shocks through the economy when firms that operate in different sectors are linked through the use of intermediate inputs, and banks operate in multiple sectors. Filomena and her co-authors are developing a structural model to be taken to the data and used to perform counterfactuals that would shed light on the role, for example, of capital requirements.

Filomena's research in game theory, focused on supermodular games and matching, proves to be very useful in her projects related to banking, as in the project "Optimal Deposit Insurance with Heterogeneous Depositors" developed together with Ettore Panetti, and the project "An optimal loan contract for start-up innovation with patenting and recontracting" with Andrea Vezzulli and Luca David Opromolla.

More generally, Filomena's other work in industrial organization focus on the study of firms' and consumers' interaction in the presence of strategic complementarities. Network industries and R&D investment problems are two examples of settings where an agent's marginal utility from undertaking a certain action positively depends on the other agents' undertaking the same action.

https://sites.google.com/site/filosgarcia/

https://economics.indiana.edu/home/people/figarcia/

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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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