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### **Academic References**

Pedro Brinca - Nova School of Business and Economics (Nova SBE), Portugal.

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João B. Duarte – Nova SBE, Portugal.

joao.duarte@novasbe.pt

Ellen R. McGrattan - Department of Economics, University of Minnesota, USA.

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Hans H. Holter - Department of Economics, University of Delaware, USA.

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João Amador - Deputy Head, Research Department, Banco de Portugal, Portugal.

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### Education

2022	PhD in Economics, Nova SBE.
2019	Visiting Student Researcher, University of Minnesota, Department of Economics, U.S.
2015	<b>Post-Graduation in Bank Regulation and Supervision</b> , Nova SBE and Banco de Portugal.
2014	Research Masters in Economics, Nova SBE.
2011	B.S. in Business Administration, Nova SBE.

## Professional and Teaching Experience

2023-	Research Economist, Bank of England, Prudential Policy Directorate.
2022-23	Lead Economic Analyst, Bank of England, Prudential Policy Directorate.
2013-18	<b>Economist</b> , Banco de Portugal (Portuguese Central Bank), Financial Stability Department.
2019	<b>Teaching Assistant</b> , Seminar in European Economics, Nova School of Business and Economics.
	• Teaching evaluations: 5.4 of 6.0 (school average of 4.9)
2018	<b>Grader</b> , Introduction to Programming with Python, Nova School of Business and Economics.

## Scholarships & Awards

Fullbright Research Grant, Fullbright Commission.
PhD Scholarship, Fundação para a Ciência e a Tecnologia, Ministry of Science, Technology and Higher Education, Portuguese Government.
Advanced Training Scholarship, Banco de Portugal.
Tuition waiver for merit, Nova SBE.

### Fields of interest

Quantitative Macroeconomics, Heterogeneous Agents.

### **Publications**

2017 Bank Profitability and Macroeconomic Factors, Financial Stability Papers, Banco de Portugal.

Joint with Ricardo Martinho (Banco de Portugal) and Vítor Oliveira (Banco de Portugal).

Abstract: Since 2000 the European banking sector experienced high earnings volatility both across time and among individual banks, culminating in a sharp decline in profitability in 2008, which remained thereafter at much lower levels compared to pre-crisis levels. In this paper, we use panel data on a sample of European banks to answer the following questions: (i) how does bank profitability respond to macroeconomic variables? (ii) Is there heterogeneity in that response? To identify the effect of GDP growth on profitability, we use an instrumental variable approach with world GDP growth as an instrument. We find that there is a positive association between real GDP growth and bank profitability due to the procyclicality of impairments. We also find that, on average, European banks benefit from higher reference rates and steeper yield curves.

### Work in Progress

Mortgage Borrowing Caps: Leverage, Default, and Welfare, Working Paper Series, Banco de Portugal.

Joint with Leonor Queiró (Banco de Portugal).

Abstract: We explore the transmission channels of macroprudential policy in the form of caps on household mortgage borrowing. We employ an overlapping generations model with uninsurable labor income risk, housing, and long-term defaultable loans to measure the long-run economic impact of loan-to-value (LTV) and debt payment-to-income (PTI) caps on mortgage contracts in an economy without aggregate risk. We calibrate the model to Portugal, which implemented a 90 percent LTV cap and a 50 percent PTI cap. We find that the leverage cap can lower mortgage debt to output by one-third and eliminate the default rate. However, this comes at the cost of a 2 percent reduction in household welfare, chiefly among income and wealth-poor agents. PTI limits reduce default by limiting debt service but increase indebtedness and household leverage. This mechanism stems from the interaction between labor market risk and the payment-to-income cap: Households fear future adverse income shocks may constrain their access to credit markets and borrow earlier with lower down payments. Finally, we find that the policymaker can achieve similar cuts in default relative to the policy with a smaller welfare cost by setting a less stringent LTV cap or a more restrictive PTI cap.

**Technological Change and Earnings Inequality in the U.S.: Implications for Optimal Taxation**, Available at SSRN - Revise and Resubmit at *The Review of Economic Studies*.

Joint with Pedro Brinca, João B. Duarte, and Hans H. Holter (University of Delaware).

Abstract: Since 1980, there has been a steady increase in earnings inequality alongside rapid technological growth in the U.S. economy. To what extent does technological change explain the observed increase in earnings dispersion? How does it affect the optimal progressivity of the tax system? To answer these questions, we develop an incomplete markets model with occupational choice. We estimate an aggregate production function with capital-occupation complementarity and four occupations that differ with respect to cognitive complexity and routine task intensity. We calibrate our model to resemble the U.S. economy in 1980 and find that technological transformation can fully account for the increase in earnings dispersion between 1980 and 2015. The main driver is the rising relative wage of non-routine cognitive occupations, which benefit the most from complementarity with capital. Although technological growth is associated with higher earnings inequality, it leads to a significant drop in optimal tax progressivity. Lower progressivity leads to an inflow of workers into higher-paid occupations. This increases output but also raises the wages of the occupations at the bottom of the wage distribution, dampening the redistributive gains from progressive taxation.

#### Inefficiency Distribution of the European Banking System, Working Paper Series, Banco de Portugal.

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

#### A Semi-Structural Framework for Measuring Credit Cycles in Europe

Joint with Ana Pereira (Banco de Portugal).

Abstract: We develop a parsimonious semi-structural framework for measuring credit cycles using an unobserved component model of credit to the private sector, which can be used for macroprudential policy activation, such as the Counter-Cyclical Capital Buffer. Credit cycle estimation is undertaken using only information available at the time policymakers have to decide on instrument activation. This contrasts with common practice in the literature, where models are estimated using the full sample rather than in real time. Our credit cycle measure's early-warning properties for predicting financial crises are compared against benchmark real-time indicators for several European countries. It performs well in shorter prediction horizons and provides more persistent signals when compared to benchmarks, especially in out-of-sample exercises.

### Unpublished Work

#### 2014 The Indiscriminate Shooter: Monetary Policy and State Income Inequality in the U.S.

Master Thesis. Supervisor: Francesco Franco (Nova School of Business and Economics).

Abstract: This paper focuses on the role of monetary policy in explaining the fluctuations of state income inequality and attempts to answer two questions: (i) how does monetary policy affect income inequality?; (ii) How does monetary policy affect the share of total income of earners at the top of the distribution? Using state level inequality data by Frank (2008) and a panel VAR method, we find that monetary contractions have a significant positive effect on income inequality and on the shares of top income earners across the U.S.

### **Complementary Education**

- Advanced Topics in Macroeconomics, taught by Ellen R. McGrattan and Loukas Karabarbounis (University of Minnesota) at the University of Minnesota, Minneapolis, U.S.
- 2019 **Computational Economics**, taught by Ellen R. McGrattan and Anmol Bhandari (University of Minnesota) at the University of Minnesota, Minneapolis, U.S.
- Financial Frictions in DSGE Models, taught by Paul Levine and Afrasiab Mirza (University of Surrey) at Banco de Portugal, Lisbon, Portugal.
- 2018 **Computational Economics with Python**, taught by João Duarte at Nova School of Business and Economics, Lisbon, Portugal.
- **Quantitative Methods in (Macro)economics: Applications in Macroeconomics**, taught by Pedro Brinca at Nova School of Business and Economics, Lisbon, Portugal.
- 2016 **Macroprudential Policies**, taught by Nobuhiro Kiyotaki (Princeton University) at the European University Institute, School of Banking and Finance, Florence, Italy.
- Applied Bayesian Econometrics for Central Bankers, taught by Andrew Blake (Bank of England), Gabor Pinter (Bank of England), and Haroon Mumtaz (Queen Mary University) at the Bank of England, London, U.K.
- 2016 **An introduction to DSGE modelling in Dynare**, taught by Vasco Gabriel (University of Surrey) at Banco de Portugal, Lisbon, Portugal.
- 2010 **Political Economy of Public Policy Summer School**, taught by Valentino Larcinese (London School of Economics) at the London School of Economics, London, U.K.

### Languages

Portuguese Native speaker

**English** Excellent proficiency, written and spoken

- 2006 University of Cambridge Summer School. Grade: A+.
- 2013 Test of English for International Communication (TOEIC). Grade: 990/1000.

**French** Basic proficiency, written and spoken

- 2011 - Lisbon Centre for Languages. Grade: A-.

Italian Basic proficiency, written and spoken

- 2009 - Lisbon Centre for Languages. Grade: A-.

### Computer Skills

Matlab; LaTeX; Stata; R; Julia; Python; Fortran; MS Word, Excel and PPT.

### **Invited Talks and Seminars**

- 2023 Paris School of Economics Macro Days.
- 2018 PhD Student Workshop, European University Institute, Florence, Italy.

- 2017 Gabinete de Estratégia e Estudos, Portuguese Ministry of Economics, Lisbon, Portugal.
- 2016 ECB Macroprudential Analysis Group, Frankfurt, Germany.

### **Conference Participations**

- 2021 "14th Meeting of the Portuguese Economic Journal", (Household Borrowing Caps: Debt, Default, and Welfare), Porto, Portugal, July 2th-4th.
- 2021 "Annual Meeting of the Society for Economic Dynamics", (Household Borrowing Caps: Debt, Default, and Welfare), Minneapolis, U.S., June 1st-3rd.
- 2021 **"20th LAGV Conference", (Household Borrowing Caps: Debt, Default, and Welfare)**, Marseille, France, June 20th-21st.
- 2019 **"13th Meeting of the Portuguese Economic Journal", (Investment-specific Technological Change and Inequality in the U.S.)**, Évora, Portugal, July 6th-8th.
- "Annual Meeting of the American Economic Association", (Automation, Inequality and Taxation in the U.S.), Atlanta, U.S., January 4th-6th.
- 2018 **"12th Meeting of the Portuguese Economic Journal", (Automation, Inequality and Taxation in the U.S.)**, Lisbon, Portugal, July 6th-8th.
- 2018 "Advances in systemic risk analysis: theoretical and empirical approaches focussing on a crosscountry perspective", Joint Banco de Portugal/European Central Bank/European Systemic Risk Board Workshop, Organizing Committee and Scientific Committee, Lisbon, Portugal, July 4th.
- 2017 **"11th Meeting of the Portuguese Economic Journal" (Inefficiency Distribution of the European Banking System)**, Vila Real , Portugal, July 7th-9th.

### Refereeing

European Economic Review, Journal of Public Economics, Journal of Money, Credit and Banking, Journal of Macroeconomics.

### Other Relevant Activities

2019 The Future of Work in Portugal: The Imperative of Reskilling.

Portuguese Industrial Confederation report regarding the impact of automation on employment, industries and occupations, along with a cost-benefit analysis of reskilling for employees, employers and the government. Participated in the quantitative analysis and drafting of the report. Media reference (in Portuguese): Sapo.

2019 Automation and the Future of Jobs in Portugal.

McKinsey and Portuguese Industrial Confederation report regarding the impact of automation on employment, industries and occupations.

Participated in the drafting of the report. Media reference (in Portuguese): Observador.

#### 2018- Economics for Policy.

Affiliate. Economics for Policy at Nova School of Business and Economics is a knowledge center dedicated to applying fundamental tools from economics to relevant issues in business and public policy. The center will bring together scientific coherence and real world experience to analyze key challenges facing private and public sector organizations. It aims to produce conceptual and quantitative assessments relevant to organizations, companies, and the public at large.

#### 2012-13 Nova Economics Club.

Founding member and group coordinator. Student club dedicated to the development of research projects with academic or public interest, in close cooperation with national and international institutions and under the guidance of experienced researchers and faculty members. During my participation, we developed a partnership with the Portuguese government and the three institutions (IMF/ECB/European Commission) which provided funding under the Economic Adjustment Programme for Portugal. Concretely, our goal was to developing metrics and models to evaluate the implementation of the Memorandum of Understanding (MoU), i.e., the agreement between these institutions and the Portuguese Government. Our group was in charge of evaluating progress in the Justice System area of the MoU. We completed two reports (2) which were presented in two conferences (1; 2) at the Nova SBE. Our work was supervised by Nuno Garoupa (George Mason University). The Nova Economics Club was the subject of an article in Der Spiegel.

#### 2009-12 Research Assistant to Professor Jorge Braga de Macedo (Nova SBE).

Worked on the edition of Professor Kouri's collected works for the Centre for Globalization and Governance at Nova School of Business and Economics. Gathered the materials for the publication and permissions for their printing, among other tasks. Final work with the title: Pentti Kouri, "Open Economy Dynamics", 2011, Eds. Jorge Braga de Macedo and Urho Lempinen.

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