



**University of Crete**  
**Department of Economics**

**25<sup>TH</sup> INTERNATIONAL CONFERENCE**  
**on**  
**MACROECONOMIC ANALYSIS AND INTERNATIONAL FINANCE**

**BOOK OF ABSTRACTS**

**July 29 - July 31, 2021**  
**University Campus, Rethymno**  
**Crete, Greece**



Dear Colleagues,

On behalf of the Organizing Committee, I welcome you to the 25<sup>th</sup> International Conference on Macroeconomic Analysis and International Finance organized by the Department of Economics of the University of Crete.

While we regret that the COVID pandemic prevented us from holding the conference in the University of Crete at Rethymno Campus, we are excited about the opportunities of holding an innovative hybrid conference. This is the first time the conference is organized in this form, and I take the opportunity to express my sincere appreciation to the technical, administrative, and scientific staff of the University who generously helped us make this event come together to become a success by organizing the Conference. Periclis Drakos, Dimitris Sakellariadis, Nikos Kapelonis and Ioanna Yotopoulou have provided us their skills and expertise on how to unify the Conference.

We believe we have created both an exciting program and conference structure which was designed to stimulate discussion and participation of attendees from different corners of the world. Our sessions will be live, and presenters will be there to answer questions and discussions will be encouraged. We certainly encourage all participants and attendees to attend and engage with sessions as though you were here in person. We do understand restrictions may be imposed by your time zone, however, the program has been designed to minimize such problems.

Over the years, this Conference has been honored by a number of prominent scholars whose papers have always been in the forefront of the research agenda. Your presence at this Conference contributes to its success, since the papers to be presented during the contributed sessions have been selected from a great number of innovative and original papers, using the highest academic merit criteria.

The aim of the Annual Conference is to provide a forum for the dissemination of the state-of-the-art research in macroeconomics, monetary economics, international finance and related fields by bringing together academics and policy makers from all over the world. Advances in both theoretical and empirical research are of high priority on our Conference Agenda, which I hope you will all find beneficial and productive. The Keynote Speakers and delegates of this year Conference will provide innovative and stimulating contributions. We are certain that you will agree that the conference program reflects this emphasis.

The prospects for the Conference are outstanding. There are 100 papers to be presented and much of the Conference has been scheduled with parallel sessions in order to give presenters a reasonable amount of time to present and discuss the results of their work. Our experience indicates that these annual meetings had also a significant impact on postgraduate students who are very keen in improving the quality of their research.

This year the well-respected Journal of Financial Stability has agreed to publish a Special Issue with selected papers of very high-quality presented at this conference. I would like to thank the editor Iftekhhar Hasan for his generous offer. This year, given the continuing uncertainties due to COVID pandemic, the rising unemployment in indebted countries and low and negative inflation in most of the European countries and elsewhere and the ever-changing global macroeconomic environment, there is a need for new contributions in both theoretical and empirical research. Our field of research drives the attention not only of the policy makers and politicians but also of the people in Europe, the U.S. and most of other countries who are looking for solutions to overcome the current economic crisis. This is the challenge which we face today. Our work became reputable because has provided policy solutions which overcame evolving crises in the past and because academic researchers and government policy makers share and use common tools. To achieve this, it took time and dispassionate analysis to understand the nature and scope of the problems and to develop effective solutions. In sum, our integrating world needs more co-operation and exchange of ideas in the macro, monetary and financial sphere, and to achieve that it needs stronger links between economists working in this area in central banks, international institutions, and universities.

This is precisely what our Conference is all about, and I am delighted that we have been successful in providing this forum at the University of Crete to exchange and discuss innovative ideas and policy recommendations.

Despite this year social restrictions, this Conference is more than a set of papers. It gives the opportunity to meet colleagues from all over the world and to give the opportunity to cooperate and discuss on research projects, to learn more about Rethymno and Crete and to enjoy the hospitality, provided by the University of Crete.

I wish you a fruitful and pleasant stay in Rethymno.

Athanasios P. Papadopoulos

Chairman of the Organizing Committee

## TABLE of CONTENTS

---

<b>PARALLEL SESSION 1A: MONETARY THEORY AND POLICY I</b> .....	<b>13</b>
A Meta Analysis of the Multiplier Effects of the Money Supply on Prices .....	13
The Preferential Treatment of Green Bonds .....	14
Monetary Policy and Cryptocurrencies .....	15
The Money-inflation Nexus Revisited .....	16
<b>PARALLEL SESSION 1B: FISCAL POLICY AND SOVERIGN DEBT</b> .....	<b>17</b>
A General Theory of Tax-smoothing .....	17
Supply of Sovereign Safe Assets and Global Interest Rates .....	18
The Public Investment Multiplier: Insights from a Tractable HANK Framework .....	19
Debt Sharing after Covid-19: How the Direct Involvement of EU Institutions could Impact the Recovery Path of a Member State .....	20
<b>PARALLEL SESSION 1C: EUROZONE I</b> .....	<b>21</b>
What Drives the German TARGET Balances? Evidence from a BVAR Approach .....	21
Back to the Present: Learning about the Euro Area through a Now-casting Model .....	22
The International Dimension of EMU Deepening .....	23
External Imbalances in the EU - the Effects of Structural and Cyclical Current Account Determinants 1995-2019 .....	24
<b>PARALLEL SESSION 1D: FINANCIAL MARKETS I</b> .....	<b>25</b>
What are Asset Price Bubbles? A Survey on Definitions of Financial Bubbles .....	25
Market Concentration and Bank M&As: Evidence from the European Sovereign Debt Crisis	26
Political Uncertainty, COVID-19 Pandemic and Stock Market Volatility Transmission .....	27
Private Equity Buyouts, Credit Constraints, and Firm Exports .....	28
<b>PARALLEL SESSION 1E: MACROPRUDENTIAL POLICY</b> .....	<b>29</b>
Macroprudential Policies in a New Keynesian Model with Investment Funds .....	29
Macroprudential Policy in the Euro Area .....	30
Fiscal and Macroprudential Policies in a Monetary Union .....	31
Assessing the Dynamic Effect of Macroprudential Policies on Income Inequality .....	32

## TABLE of CONTENTS

---

<b>PARALLEL SESSION 2A: FINANCIAL MARKETS II.....</b>	<b>33</b>
GDP-linked Bonds as a New Asset Class .....	33
Options Trading Activity and the Efficiency of Corporate Investment .....	34
Individual Discount Rates: A Meta-Analysis of Experimental Evidence.....	35
Corporate Inequality and Disadvantage in the Workplace: Payroll Evidence from a Financial Firm	36
<b>PARALLEL SESSION 2B: MONETARY THEORY AND POLICY II .....</b>	<b>37</b>
Taylor's Rule, Political Cycle and Latin America - An Analysis of Time Series in Search of Responsibility for Monetary Stabilization.....	37
Monetary Policy, Excess Reserves and Credit Supply: Old-Style vs. New-Style Central Banking	38
Experience-Based Heterogeneity in Expectations and Monetary Policy.....	39
Just Do IT? An Assessment of Inflation Targeting in a Global Comparative Case Study.....	40
<b>PARALLEL SESSION 2C: MACROECONOMIC THEORY AND POLICY I.....</b>	<b>41</b>
Joint Prediction of Recessions and Credit Crises: An International Perspective .....	41
Domestic versus Foreign Drivers of Trade (Im)balances: How Robust is Evidence from Estimated DSGE Models .....	42
The Asymmetric Effects of Housing Demand Shocks .....	43
Forbearance vs Foreclosure in a General Equilibrium Model.....	44
<b>PARALLEL SESSION 2D: FINANCIAL MARKETS III.....</b>	<b>45</b>
Skewed to the REIT: Regime-Switching Contagion in Securitized Real Estate Markets .....	45
Does Greater Financial Openness Promote External Competitiveness in Emerging Markets? The Role of Institutional Quality.....	46
Can Liquidity Forecast Asset Prices in the Globalization? Evidence from United States, Japan and Eurozone.....	47
Firm Heterogeneity and Capital Markets .....	48
<b>PARALLEL SESSION 2E: FINANCIAL ECONOMICS I.....</b>	<b>49</b>
Financial Innovation, Collateral Hedging and Macro-prudential Policies.....	49
The Impact of National Culture on Systemic Risk.....	50
Central Bank Balance Sheet and Systemic Risk .....	51
Macroprudential Policy and Financial System Stability: An Aggregate Study .....	52

## TABLE of CONTENTS

---

<b>PARALLEL SESSION 3A: MONETARY THEORY AND POLICY III</b> .....	<b>53</b>
Income Inequality as Long-term Conditioning Factor of Monetary Transmission to Bank Interest Rates in EA Countries .....	53
Monetary Policy in an Economy with Regional Heterogeneity: Approaches Based on Aggregated and Regional Information.....	54
What Goes around Comes Around: How Large Are Spillbacks from US Monetary Policy?..	55
The Euro Area credit Crunch Conundrum: Was it Demand or Supply Driven? .....	56
<b>PARALLEL SESSION 3B: MACROECONOMIC THEORY AND POLICY II</b> .....	<b>57</b>
Tight and Loose, and Red and Blue: A 'Dance' of Macro Policies in the US.....	57
No Country Is an Island. International Cooperation and Climate Change .....	58
World Interest Rates and Macroeconomic Adjustments in Developing Commodity Producing Countries .....	59
Education, Media and Free Market Economic Institutions .....	60
<b>PARALLEL SESSION 3C: FINANCIAL ECONOMICS II</b> .....	<b>61</b>
Financial Consolidation and the Cyclicity of Corporate Financing .....	61
Understanding Growth-at-Risk: A Markov-Switching Approach .....	62
The Macroeconomic Effects of a European Deposit (Re-)Insurance Scheme.....	63
Financial Cycles across G7 Economies: A View from Wavelet Analysis .....	64
<b>PARALLEL SESSION 3D: BANKING AND FINANCE I</b> .....	<b>65</b>
Bank Profitability in the Euro Area: The Asymmetric Effects of Common Supervision .....	65
Shadow Banking in Europe: Introducing step-by-step GVAR Causality with Theory and Asymptotic Properties .....	66
Market Structure, International Banking and New Technology: Case form the Loan Markets in the EU .....	67
20 Years With the Euro: Eurozone Banking Market Integration Revisited .....	68
<b>PARALLEL SESSION 3E: CENTRAL BANKING AND ECB</b> .....	<b>69</b>
ECB Monetary Policy and Commodity Prices.....	69
Evolving Monetary Policy in the Aftermath of the Great Recession .....	70
The Effect of ECB's Unconventional Monetary Policy on Credit.....	71
Monetary Policy over the Leverage Cycle: Evidence for the Euro Area .....	72



## TABLE of CONTENTS

---

<b>PARALLEL SESSION 4A: MACROECONOMIC THEORY AND POLICY III .....</b>	<b>73</b>
The International Distribution of FDI Income and Its Impact on Income Inequality .....	73
Merging Structural and Reduced-Form Models for Forecasting .....	74
Automation and Human Capital: Accounting for Individual-Level Responses .....	75
Investigating Government Spending Multiplier for the US Economy: Empirical Evidence Using a Triple LASSO Approach.....	76
<b>PARALLEL SESSION 4B: MONETARY THEORY AND POLICY IV.....</b>	<b>77</b>
The Aggregate Consequences of Forbearance Lending: Evidence from Japan .....	77
Monetary Policy and Portfolio Rebalancing: Evidence from Micro-Level Data on European Equity Mutual Funds.....	78
Political Monetary Cycles: An Empirical Study .....	79
Re-assessing International Effects of U.S. Monetary Policy Shocks .....	80
<b>PARALLEL SESSION 4C: EUROZONE II .....</b>	<b>81</b>
Capital Ratios and Banking Crisis in the European Union.....	81
Globalization and the Rise of Populist Radical Right in Europe.....	82
The Impact of the Asset Purchase Programme on Systemic Risk in the Euro Area: Is There a Threat?.....	83
Euro Area Banking and Monetary Policy Shocks in the QE Era: A Structural Credit Risk and Vector-autoregression Approach .....	84
<b>PARALLEL SESSION 4D: BANKING AND FINANCE II .....</b>	<b>85</b>
The Resilience of the Euro Area Banking System during the Pandemic .....	85
Carbon Risk in European Stock Market .....	86
Non-performing Loans and Inefficient Capital Reallocation.....	87
Natural Disasters and Financial Stress: Can Prudential Regulation Tame Green Swans? ...	88
<b>PARALLEL SESSION 5A: FINANCIAL MARKETS IV .....</b>	<b>89</b>
Financial Market Spillovers during the Euro-area Crisis: Intra-Country and Intra-Regional Estimates .....	89
Confidence as a Vector of Financial Contagion: How Does it Work, and How much Does it Matter?.....	90
Are Commodity Markets Segmented? Understanding Cross-Asset Interdependencies Using Stochastic Spanning.....	91

## TABLE of CONTENTS

---

Impact of Uncertainty on Firm Investments and Options to Mitigate its Effects .....	92
<b>PARALLEL SESSION 5B: MONETARY THEORY AND POLICY V .....</b>	<b>93</b>
The US Post-War Economic Dynamics and Intrinsic Inflation Persistence: A Regime-switching Perspective .....	93
Target Inflation and Forward Guidance.....	94
A Structural Investigation of Quantitative Easing.....	95
Asymmetry in Inflation Rates under Inflation Targeting .....	96
<b>PARALLEL SESSION 5C: BUSINESS CYCLES AND GROWTH .....</b>	<b>97</b>
Identification of Non-Rational Risk Shocks .....	97
The Financial Resource Curse Revisited: The Supply-Side Effect of Low Interest Rates.....	98
Measuring Capital-Labor Substitution: The Importance of Method Choices and Publication Bias	99
Secured and Unsecured Credit Cycles .....	100
<b>PARALLEL SESSION 6A: GLOBAL ECONOMY .....</b>	<b>101</b>
Global Uncertainty and the Dollar .....	101
Investment Funds, Monetary Policy, and the Global Financial Cycle .....	102
The Hidden Dragon: China's Contribution to the Global Cycle.....	103
Currency Depreciations in Emerging Economies: A Blessing or a Curse for External Debt Management? .....	104
<b>PARALLEL SESSION 6B: LABOUR MARKET AND EU ECONOMICS.....</b>	<b>105</b>
Assessing the Sources of Heterogeneity in Eurozone Response to Unconventional Monetary Policy.....	105
The Effects of Euro Area Labour Market Reforms: Evidence from a Narrative Panel VAR	106
Structural Changes in the Job Ladder and the Flattening of the Phillips Curve.....	107
Labour Shares in the EU: Cross-Country Heterogeneity and Cross-Sectional Dependence	108
<b>PARALLEL SESSION 6C: FINANCIAL ECONOMICS III.....</b>	<b>109</b>
Drivers of Portfolio Capital Flows before and after the Global Financial Crisis: Have They Changed? .....	109
Capital Flows-at-risk: Push, Pull and the Role of Policy .....	110
Feeling the Heat: Climate Risks and the Cost of Sovereign Borrowing.....	111

## TABLE of CONTENTS

---

Within-firm wage disparity: The important role of director tenure .....	112
<b>PARALLEL SESSION 6D: BANKING AND FINANCE III .....</b>	<b>113</b>
Bank Capital Requirements, Lending Supply and Economic Activity.....	113
On the Macroeconomic Effects of Shadow Banking Development.....	114
LSIs' Exposures to Climate Change Related Risks: An Approach to Assess Physical Risks .	115
Firm-Specific Shocks and Contagion: Are Global Banks Special?.....	116
Bank IPOs, Political Connections and De(Regulations).....	117
<b>PARALLEL SESSION 6E: BUSINESS CYCLES AND GROWTH II .....</b>	<b>118</b>
Uncertainty Shocks and Business Cycles in the US: New Insights from the Last Three Decades 118	
Financial System Heterogeneity and FDI Flows: Evidence from OECD Economies .....	119
Microfinance, Competition and Growth.....	120
Bubbles, Endogenous Growth and Financial Stability .....	121
<b>PARALLEL SESSION 7A: MACROECONOMIC THEORY AND POLICY IV .....</b>	<b>122</b>
The Optimal Level of Government Debt and Wealth Inequality .....	122
Macroprudential Policies and Brexit: A Welfare Analysis.....	123
When could Macroprudential and Monetary Policies be in Conflict?.....	124
Public Pension System and Fiscal Devaluation .....	125
<b>PARALLEL SESSION 7B: MONETARY POLICY AND EXCHANGE RATES.....</b>	<b>126</b>
Monetary Policy Announcements, Information Shocks, and Exchange Rate Dynamics..	126
Trilemma under the Yoke of Dominant Currency Paradigm?.....	127
Firm Turnover in the Export Market and the Case for Fixed Exchange Rate Regime.....	128
Foreign Exchange Market Effects of Monetary Policy Announcements .....	129
<b>PARALLEL SESSION 7C: BANKING AND FINANCE IV .....</b>	<b>130</b>
Bank IPOs and Regulations: Cross-Country Evidence .....	130
Verbal Interventions by Various Officials of the Bank of Russia and Interest Rate Dynamics 131	
The Diplomacy Discount in Global Syndicated Loans .....	132



## **A Meta Analysis of the Multiplier Effects of the Money Supply on Prices**

Christophe TAVERA, *University of Rennes I*  
Bui Dieu Thao NGUYEN, *University of Rennes I*

In this study, we apply the meta-analysis to find the true value of the underlying multiplier effect of the quantity of money on prices. We collect the studies estimating the coefficient of Friedman's quantity theory in the literature and retained a set of characteristics possibly impacting the estimated values. The sample of the multiplier effects of money on prices seems to have to be split into two subsamples: a sub-sample made up of multiplier effects obtained from dynamic linear models with or without error correcting mechanisms or from VECM models and the other sample consisting of the multiplier effects obtained from the static linear models of the simple linear model or cointegration relation or models with static simultaneous equations. Once the potential biases linked to the authors' publication strategies have been taken into account, the literature leads to two very distinct types of effects: an effect in which money has little or no impact on prices and an effect in which money plays on prices in accordance with what macroeconomic theory suggests, that is to say with a multiplier effect close to 1. On the other hand, the nature of the econometric model used to estimate these multiplier effects seems to play a major role in the explanation for this heterogeneity of the published results.

## The Preferential Treatment of Green Bonds

Francesco GIOVANARDI, *University of Cologne*

Matthias KALDORF, *University of Cologne*

Lucas RADKE, *University of Cologne*

Florian WICKNIG, *University of Cologne*

In this paper, we study the preferential treatment of green bonds in the central bank collateral framework. We evaluate the effects of preferential treatment in an augmented New-Keynesian model, in which green and conventional entrepreneurs issue defaultable bonds to banks that use them to collateralize short-term borrowing. Lenient collateral policy increases bond issuance and default risk, such that the central bank faces a tradeoff between increasing collateral supply and subsidizing entrepreneur leverage. When the central bank takes into account environmental concerns, optimal collateral policy features substantial preferential treatment, which decreases the green-conventional bond spread by 50bp and increases the green bond share by 0.6 percentage points, while the green capital share increases by 0.25 percentage points. The limited response of green investment is caused by higher risk taking of green entrepreneurs and the associated decline in the return on green capital due to higher default rates. When Pigouvian taxation is available, collateral policy does not feature preferential treatment, but can still be welfare-improving by addressing adverse collateral scarcity effects of taxation.

## Monetary Policy and Cryptocurrencies

Sören KARAU, *Deutsche Bundesbank*

I study the impact of monetary policy on cryptocurrency markets. Using both high-frequency data and a weekly proxy VAR, the paper shows that monetary shocks have sizable effects on Bitcoin prices, but that these differ in sign: whereas a monetary tightening by the ECB lowers valuations, a US monetary contraction increases Bitcoin prices. I document similar differences with respect to various other aspects of the Bitcoin ecosystem, such as trading and mining activity, and explore potential explanations. Exploiting both blockchain transaction data and differences in Bitcoin valuations across currencies, the paper shows that the increased demand for cryptocurrencies following a US monetary tightening seems to be primarily driven by emerging markets. I argue that this likely reflects the technological and institutional particularities of cryptocurrencies that make them sought after when global economic and financial conditions deteriorate.

## **The Money-inflation Nexus Revisited**

Leopold RINGWALD, *Vienna University of Economics and Business*

Thomas O. ZÖRNER, *Vienna University of Economics and Business*

This paper proposes a Bayesian Logistic Smooth Transition Autoregressive (LSTAR) model with stochastic volatility (SV) to model inflation dynamics in a nonlinear fashion. Inflationary regimes are determined by smoothed money growth which serves as a transition variable that governs the transition between regimes. We apply this approach on quarterly data from the US, the UK and Canada and are able to identify well-known, high inflation periods in the samples. Moreover, our results suggest that the role of money growth is specific to the economy under scrutiny. Finally, we analyse a variety of different model specifications and are able to confirm that adjusted money growth still has leading indicator properties on inflation regimes.



## **A General Theory of Tax-smoothing**

Anastasios KARANTOUNIAS, *University of Surrey and Federal Reserve Bank of Atlanta*

This paper organizes, reinterprets and extends the dynamic theory of optimal fiscal policy with a representative agent by using a generalized version of recursive preferences. I allow markets to be complete or incomplete and study a policymaker that acts under commitment or discretion. I highlight the underlying common principles that hide in each particular economic environment. The resulting theories are interpreted through the excess burden of taxation, a multiplier, whose evolution gives rise to different notions of “tax-smoothing.” Variants of a law of motion in terms of the inverse excess burden emerge in each environment when we allow for richer asset pricing implications through recursive preferences. The basic policy prescription is simple and intuitive and revolves around interest rate manipulation: issue new debt and tax more in the future if this can lead to lower interest rates today.

## Supply of Sovereign Safe Assets and Global Interest Rates

Thiago FERREIRA, *Federal Reserve Board*

Samer SHOUSA, *Federal Reserve Board*

We estimate that the supply of sovereign safe assets is a major driver of neutral interest rates--real rates consistent with both economic activity and inflation at their trends. We find this result using an empirical cross-country model with many economic drivers for the neutral rates of 11 advanced economies during the 1960-2019 period. The increasing availability of safe assets after 2008 has pushed up neutral rates, preventing them from continuing their previous decline because of other drivers. We also evaluate the "global savings glut" hypothesis. We estimate that since 1994 the global accumulation of international exchange reserves in safe assets has lowered the availability of these assets to the private sector and, thus pushed down neutral rates. Finally, we find that economies' neutral rates are subject to important global spillovers from developments in other economies.

## **The Public Investment Multiplier: Insights from a Tractable HANK Framework**

Jordan ROULLEAU-PASDELOUP, *National University of Singapore*

What is the output multiplier effect of investing in public infrastructure? To answer this question, I propose a new analytical framework embedded in a tractable HANK model. I show that having heterogeneous agents delivers two new mechanisms: better public infrastructure makes firms cut back on hours, which decreases the income of hand-to-mouth households. However, general equilibrium effects increase their consumption through higher aggregate income. I show that the general equilibrium effect dominates so that the presence of heterogeneous agents amplifies the effects of government investment. The model also matches the distributional effects of public investment that have been found empirically.

**Debt Sharing after Covid-19: How the Direct Involvement of EU Institutions could Impact the Recovery Path of a Member State**

Kieran McQUINN, *Economic and Social Research Institute and Trinity College Dublin*

Petros VARTHALITIS, *Economic and Social Research Institute, Trinity College Dublin and Athens University of Economics and Business*

The likely substantial impact of Covid-19 related measures on the public finances of European countries has prompted an unprecedented call for new and significant policies at a European level to alleviate the pressures on individual member states. The administrative closures adopted across a number of economies has resulted in a complete cessation of certain types of economic activity, a significant increase in unemployment and profound fiscal challenges for the countries in question. In this paper we use a SOE-DSGE model to assess the role European institutions can play in mitigating the negative economic and fiscal effects of the crisis for a particular member state by participating directly in the sovereign debt management of that country. Our results indicate that the direct involvement of EU institutions via sovereign bonds purchases increases the efficiency of the extraordinary fiscal stimulus packages undertaken by member states. A fiscal stimulus at the national level backed by EU financing reduces the output losses in the first year which would otherwise occur. The reduction in the output loss ranges from 0.8 per cent to 1.4 per cent depending on the mix of fiscal policies chosen by the member state. The cumulative reduction in output loss over a five year horizon could sum to 2.5 per cent to 4.1 per cent depending on the fiscal policy mix chosen.

## **What Drives the German TARGET Balances? Evidence from a BVAR Approach**

Timo BETTENDORF, *Deutsche Bundesbank*

Axel JOCHEM, *Deutsche Bundesbank*

Applying a BVAR model, the present paper first identifies the possible drivers of Germany's TARGET claims. In this context, in terms of potential causes, a distinction is made between a rise in the global risk assessment, tensions within the euro area, and European monetary policy. It becomes evident that the TARGET flows between 2015 and 2017 can be ascribed in large part to monetary policy and to a minor extent to the risk assessment within the euro area. At the peak of the European debt crisis between 2010 and mid-2012, the TARGET flows were affected by uncertainty in the euro area as a dominant factor, although global factors also played a key role according to the model. The BVAR model we use opens up the possibility of studying the causes of current fluctuations in Germany's TARGET claims.

**Back to the Present: Learning about the Euro Area through a Now-casting Model**

Danilo CASCALDI-GARCIA, *Federal Reserve Board*

Domenico GIANNONE, *Amazon.com*

Michele MODUGNO, *Federal Reserve Board*

Thiago R.T. FERREIRA, *Federal Reserve Board*

We build a model for simultaneously now-casting economic conditions in the euro area and its three largest member countries---Germany, France, and Italy. The model formalizes how market participants and policymakers monitor the euro area by incorporating all market moving indicators in real time. We find that area wide and country-specific data provide informative signals to now-cast the economic conditions in the euro area and member countries. The model provides accurate predictions of economic conditions in real time over a period that covers the past three recessions.

## The International Dimension of EMU Deepening

Demosthenes IOANNOU, *European Central Bank*

Maria Sole PAGLIARI, *European Central Bank and Rutgers University*

Livio STRACCA, *European Central Bank*

The debate over the completion of the European Economic and Monetary Union (EMU) has largely neglected the international repercussions of such a process. This paper aims at quantifying the economic effects that shocks to EMU cohesion can have on the rest of the world. With this purpose, we adopt an identification strategy to isolate (economic stress) shocks to the euro area which is based on the imposition of sign, magnitude and narrative restrictions on a daily Structural Vector Autoregression model with financial variables. The series of shocks thus identified are well disentangled from global risk aversion shocks. We further investigate the effects of euro area stress shocks on the rest of the world by means of panel local projections for a set of advanced and emerging economies. We find that the effects of a shock to EMU cohesion are a real issue not only for the euro area but also the rest of the world: a one standard deviation negative shock to euro area cohesion entails a slowdown of economic activity in the rest of the world, with industrial production dropping by 6% y-o-y in advanced economies, as well as a fall in imports/exports of both the euro area and the rest of the world. By contrast, a positive shock has more persistent and widespread effects on both economic performance and global trade activity, with a y-o-y boost of industrial production by 6% in advanced economies and 3.6% in emerging markets.

**External Imbalances in the EU - the Effects of Structural and Cyclical  
Current Account Determinants 1995-2019**

Kosta JOSIFIDIS, *University of Novi Sad*

Radmila DRAGUTINOVIĆ MITROVIĆ, *Univeristy of Belgrade*

Sladjana BODOR, *University of Novi Sad*

This paper analyzes the effects of the structural and cyclical factors on the current account imbalances in the European Union during the period 1995-2019. Given the existence of a high and persistent current account deficit in the European economies, the main purpose of this paper is to identify the causes of external imbalances in the European Union and, on that basis, provide recommendations to policymakers when making concrete decisions to reduce large external imbalances. Four categories of current account determinants are considered (macroeconomics, financial, demographic and institutional). Taking into account the importance of current account sustainability in the long run, current account determinants are divided into structural and cyclical components. Estimation results of dynamic panel models obtained by generalized method of moments (GMM) and the method of quasi maximum likelihood (QML) pointed out which specific factors had a pronounced impact on movements in the current account in the medium and short run, which is important in terms of assessing the nature of external imbalances. Five-year averages of data are formed for the analysis of structural factors on the current account dynamics in the medium term, while the estimation of impact of cyclical determinants was carried out on data which represent annual deviations from the five-year averages.



## **What are Asset Price Bubbles? A Survey on Definitions of Financial Bubbles**

Michael Heinrich BAUMANN, *University of Bayreuth*  
Anja JANISCHEWSKI, *Chemnitz University of Technology*

The popular press and news often report on financial bubbles, however, there is no precise definition of what is meant by this. Even in the scientific literature, this question has not been clearly clarified. Depending on the area of application, a wide variety of definitions of bubble are used, with some also distinguishing between positive and negative bubbles as well as fads. We compare definitions as they are used, e.g., in experimental economics, by policy makers, or in the mathematical discipline of stochastic processes, and examine them for their properties, especially for real-time applicability.

## **Market Concentration and Bank M&As: Evidence from the European Sovereign Debt Crisis**

Alexandros KONTONIKAS, *University of Essex*

George LELEDAKIS, *Athens University of Economics and Business*

Emmanouil PYRGIOTAKIS, *University of Essex*

Using a sample of 312 bank M&As announced between 1998 and 2016 in the EU-27 countries, this paper investigates the impact of market concentration and the European sovereign debt crisis on the way investors react to these corporate events. In Western European countries, we find results which contrast the conventional wisdom that acquiring banks lose around the merger announcement date. In fact, since 2009, acquiring banks shareholders gain approximately \$34 million around the announcement, a \$56 million improvement compared to the pre-crisis period. These documented shareholder gains are also accompanied by significant improvements in post-merger profitability. Markedly, we link this superior performance of the post-2008 acquirers with the degree of market concentration in the Western European region. Finally, results for the Eastern European countries indicate that the crisis did not have a significant impact on the quality of bank M&As in the region.

**Political Uncertainty, COVID-19 Pandemic and Stock Market Volatility  
Transmission**

George N. APOSTOLAKIS, *University of Crete*  
Christos FLOROS, *Hellenic Mediterranean University*  
Konstantinos GKILLAS, *University of Patras*  
Mark WO HAR, *University of Nebraska at Omaha*

News about referendums and the ongoing evolution of a global contagious increase uncertainty about the development of economic fundamentals reflected by increased volatility in the financial markets. In this paper, employing volatility impulse response functions and assessing the volatility spillovers we examine intra-market volatility transmission in the Athens stock market. We employ a large sample period of daily data that spans from December 1999 to December 2020 and captures major events of the last 20 years especially related to the announcement of the two referendums during the Greek government-debt crisis in 2010 and the economic and political turmoil that increased country instability, the following years, the BREXIT referendum and the COVID-19 pandemic of 2020. Our results demonstrate that negative shocks during the announcement of the referendum produce larger impulse responses than during the announcement of the country lockdowns. Furthermore, we shed light on the existence of the dynamic relationship of volatility spillovers. Volatility spillovers peaked during the COVID-19 pandemic. Dynamic spillover plots demonstrate that during the COVID-19 pandemic, more volatility is transmitted by mid cap firms to large cap firms. Our findings have implications to market participants, policy makers and market regulators.

## Private Equity Buyouts, Credit Constraints, and Firm Exports

Paul LAVERY, *University of Glasgow*

Jose-Maria SERENA, *Bank for International Settlements*

Marina-Eliza SPALIARA, *University of Glasgow*

Serafeim TSOUKAS, *University of Glasgow*

Using a panel of UK firms over 2004--2017, we analyze the links between firm exports and private equity buyouts. The analysis indicates that private equity ownership increases firm exports at both the extensive and intensive margin. We also find that the benefit of private equity ownership is more pronounced for private-to-private deals and companies more likely to be constrained in the pre-buyout period. Our results are robust to various respecification models.

## Macprudential Policies in a New Keynesian Model with Investment Funds

Florian WICKNIG, *University of Cologne*  
Christoph KAUFMANN, *European Central Bank*  
Giovanni di IASIO, *European Central Bank*

The relevance of the investment fund sector in the euro area is increasing and the real economy is becoming progressively more reliant on fund intermediation. We find that a one percent outflow from euro area bond funds reduces industrial production by 0.3% after five months. This paper builds a New Keynesian dynamic stochastic general equilibrium model with banks and funds that allocate credit to non-financial corporates. Banks grant loans and issue safe deposits, while funds hold corporate bonds and cash, and issue redeemable shares that expose them to redemption risk. In the market solution, funds hold too little cash and, when hit by a redemption shock, are forced to liquidate corporate bonds. The ensuing fire-sale mechanism restricts investment funds' ability to finance the real economy. We show that regulatory minimum cash buyers mitigate the effects of adverse financial shocks to the macro economy.

## **Macprudential Policy in the Euro Area**

Álvaro Fernández-Gallardo ROMERO, *University of Alicante*  
Iván Payá SASTRE, *University of Alicante and Lancaster University*

Macprudential regulation has become an integral part of the monetary authority's policy to achieve financial stability. However, our understanding of the effectiveness of macroprudential policies and their impact on monetary policy target variables and, more broadly, on macroeconomic outcomes, is still limited. This paper addresses that gap and examines the development and impact of macroprudential policies in the euro area. The contribution of the paper is twofold. First, we construct a novel index that captures the stance of the macroprudential policy and we highlight its main stylised facts since the inception of the euro in 1999. Second, we employ a combination of a narrative approach and a structural VAR method to identify both unanticipated and anticipated exogenous variations in macroprudential policies. Our results show that both unanticipated or surprise shocks and anticipated or news shocks contribute over the medium term to safeguard financial stability. We suggest that the differential effects between the two shocks is due to an anticipation period of around two years generated by progressive communication about the future direction of macroprudential policies. We also find significant linkages between monetary and macroprudential policies that enhance the policy mix.

## **Fiscal and Macroprudential Policies in a Monetary Union**

Jose E. BOSCA, *University of Valencia*

Margarita RUBIO, *University of Valencia*

Javier FERRI, *University of Valencia*

In the European Monetary Union (EMU), monetary policy is decided by the European Central Bank (ECB). This can create some imbalances that can potentially be corrected by national policies. So far, fiscal policy was the natural candidate to adjust those imbalances. Nevertheless, after the global financial crisis (GFC), a new policy candidate has emerged, namely national macroprudential policies. This issue gives rise to an interesting research question: how do macroprudential and fiscal policies interact? By affecting real interest rates and the level of activity, a discretionary macroprudential policy alters the evolution of public debt and can impose a fiscal cost when the government is forced to increase tax rates to stabilize the public debt to GDP ratio. In a monetary union a domestic macroprudential shock creates substantial cross-border financial effects and also influences the foreign country fiscal stance. Moreover, a discretionary government spending policy affects housing prices, so the strength with which macroprudential policy reacts to a change in the price of houses impacts on the fiscal multiplier. More particularly, we find that after a macroprudential policy in Spain there is a change in the Spanish lenders portfolio of assets, from bonds to houses. There is also a deviation of Spanish bond holdings from national to foreign investors. Lower inflation rates and a weaker level of activity move government debt up. The increase in the government-debt-to-GDP ratio is even higher, so the fiscal authority reacts by rising the marginal tax according to a fiscal rule. German exports fall due to weaker Spanish demand, and so does aggregate output. The rise in public-debt-to-GDP compels the German government to lift the tax rate. Thus, an asymmetric macroprudential intervention creates a positive footprint in the whole monetary union. The effects of a symmetric macroprudential intervention in the monetary union, including the fiscal footprint, can be replicated, up to the effect on private debt, by means of a positive shock on the interest rates by the European Central Bank. A negative government spending shock affects positively housing prices so, when macroprudential policy is tight, private debt is more negatively affected and borrowers consumption falls by more.

**Assessing the Dynamic Effect of Macroprudential Policies on Income Inequality**

Panagiotis KONSTANTINOU, *Athens University of Economics and Business*

Anastasios RIZOS, *Athens University of Economics and Business*

Artemis STRATOPOULOU, *Athens University of Economics and Business*

We study the dynamic effects of the adoption of macroprudential policies on income inequality over the period 1990 - 2015. We utilize the local projections method for a 5-year horizon ahead and we find that implementation of specific financial institution targeted instruments result in a more equal distribution of income.



### **GDP-linked Bonds as a New Asset Class**

Nikolas TOPALOGLOU, *Athens University of Economics and Business*

PAPAVASSILIOU Ellie, *Athens University of Economics and Business*

Stavros ZENIOS, *University of Cyprus*

We show that GDP-linked bonds can provide diversification benefits to investors. We use a stochastic spanning methodology which makes no assumptions on the distributional characteristics of the returns of these innovative instruments and apply to test both floaters and linkers. We find that both types of GDP-linked bonds are not spanned by a benchmark set of stocks, bonds, and cash assets, thus providing a new asset class. Spanning is ruled out for a wide and reasonable range of bond design parameters. In out-of-sample testing we find significant diversification benefits for investors, with strongly statistically significant increases in Sharpe ratios in the range 0.10-0.43 for floaters and 0.05-0.17 for linkers over an optimal benchmark portfolio. The results for linkers depend on the risk premium that these instruments will trade, while floaters are less sensitive to the premium, but the benefits remain for the range of premia estimated in existing literature. Our findings are further explained by documenting the finance and macro factors that drive the performance of GDP-linked bonds, using generalised method of moments regressions.

## **Options Trading Activity and the Efficiency of Corporate Investment**

Seraina ANAGNOSTOPOULOU, *University of Piraeus*

Lenos TRIGEORGIS, *University of Cyprus*

Andrianos E. TSEKREKOS, *Athens University of Economics and Business*

We examine the relation of active options market trading and the (in)efficiency of corporate investment in terms of deviation from optimal investment levels. Past research considers the volume of options trading as contributing to firms' informational efficiency. Investment efficiency is partly driven by information asymmetries between firm managers and capital providers, aggravating moral hazard concerns. We test whether the enhancement in firms' information environment associated with higher volume of options trading activity is positively related to optimizing investment at the firm level. Our results indicate that the volume of options trading by firms is positively and significantly associated with firm-level investment efficiency. This relation is associated with the enhancement in the firms' information environment stemming from active options trading. Overall, our findings suggest that the managerial skills associated with active trading in derivatives markets also benefit firms' investment decisions through enhancing the optimal allocation of firm resources and investment efficiency.

## Individual Discount Rates: A Meta-Analysis of Experimental Evidence

Jindrich MATOUSEK, *Charles University*

Tomas HAVRANEK, *Charles University*

Zuzana IRSOVA, *Charles University*

A key parameter estimated by lab and field experiments in economics is the individual discount rate—and the results vary widely. We examine the extent to which this variance can be attributed to observable differences in methods, subject pools, and potential publication bias. To address the model uncertainty inherent to such an exercise, we employ Bayesian and frequentist model averaging. We obtain evidence consistent with publication bias against unintuitive results. The corrected mean annual discount rate is 0.33. Our findings also suggest that discount rates are independent across domains: people tend to be less patient when health is at stake compared to money. Negative framing is associated with more patience. Finally, the results of lab and field experiments differ systematically, and it also matters whether the experiment relies on students or uses broader samples of the population.

**Corporate Inequality and Disadvantage in the Workplace: Payroll  
Evidence from a Financial Firm**

Barbara EBERTH, *Newcastle University Business School*  
Theodore KOUTMERIDIS, *University of Glasgow and IZA*

We analyse the determinants of earnings for both managerial and staff employees, using a unique dataset from a large financial sector firm. The returns to college are associated with 9% higher salaries compared to workers with lower education, even after controlling for general and firm experience, hierarchical position, performance ratings, gender, ethnicity and several other factors. Returns to college are larger for inexperienced workers, while returns to experience are greater for low-educated workers. Managers have higher returns to general experience compared to staff workers and negative returns to firm tenure. When performance is good wages are almost two times higher for college graduates and for managers, whereas only low-educated workers are penalized for bad performance. A large fraction of the returns to education functions through job hierarchy, while the inclusion of performance measures does not influence the impact of schooling on earnings. Returns to experience and firm tenure are similar for high and low-educated workers in the first five years but become insignificant subsequently for highly educated workers. Asymmetric information is a key factor explaining the combination of these findings related to earnings inequality.

**Taylor's Rule, Political Cycle and Latin America - An Analysis of Time Series in Search of Responsibility for Monetary Stabilization**

Paulo MOURAO, *University of Minho*

Nadja MENEZES, *Universidad del Valle*

The decades before 1990 were dramatic for Latin American economies. However, from 1990 onwards, a set of policies followed by the various states in the region achieved economic stabilization with real income recovery. The attribution of this success has been disputed by politicians, economists and officials from international economic support institutions. This work will analyze the responsibility for this success in 4 economies in the region (Brazil, Colombia, Mexico and Peru). Through the combined analysis of ARDL, Markov states and structural breaks, we highlight different sources of responsibility in different periods. Additionally, detailing the states of each regime, we verify the duration of the regimes inflation rates and to interest rates in the region. We identify certain governments as associated with moments of economic stabilization in the region, so the hypothesis of the political cycle cannot be rejected for the set of results achieved.

**Monetary Policy, Excess Reserves and Credit Supply: Old-Style vs. New-Style Central Banking**

Mauricio SALGADO-MORENO, *Humboldt-University of Berlin*

The operational framework in the U.S. changed from a corridor to a floor system in 2008 as a consequence of unconventional policies implemented to mitigate the Great Financial Crisis. In this paper I examine the effects of this switch on the monetary transmission mechanism. Concretely, I analyze if the bank-lending channel changed due to the alterations in the operational system. To this end, I develop a regime-switching two-agent New-Keynesian (TANK) model with an interbank market to compare both systems. I find that under a corridor system real activity declines after a monetary contraction. However, under a floor system, monetary tightening stimulates credit supply, and hence aggregate demand. The results support the Fed's decision to keep a floor system, since a run on the non-bank money market participants has no consequences for aggregate demand under the new framework. Finally, I assess the Fed's newest plan to increase the level of excess reserves and conclude with a word of caution: under the new system, monetary expansion could affect real economic activity in a contractionary manner.

## Experience-Based Heterogeneity in Expectations and Monetary Policy

Lucas RADKE, *University of Cologne*  
Florian WICKNIG, *University of Cologne*

If individuals' life-time experiences influence their expectations of macroeconomic outcomes, expectations across generations are heterogeneous. We embed experience-based learning (EBL) into a New Keynesian model with overlapping generations to study how EBL affects the effect of monetary policy relative to a model with rational expectations (RE) and age-independent constant gain learning (CGL). Relative to these models, we find that EBL decreases the persistence that agents ascribe to output and inflation, which weakens the pass-through of monetary policy on aggregate demand. The latter effect makes output less volatile under EBL compared to RE or CGL. Further, monetary policy shocks are less pronounced, but more persistent under EBL. We further show that EBL gives rise to a novel channel by which the demographic structure of an economy affects monetary policy: the Experience Channel. Under EBL, the age-distribution directly affects the average expectations in the economy which alters the pass through of monetary policy. This affects both the stabilisation trade-off and the transmission of monetary policy. We show that the Experience Channel weakens monetary policy's trade-off and reduces the impact response of inflation and output to a monetary policy shock.

## Just Do IT? An Assessment of Inflation Targeting in a Global Comparative Case Study

Roberto DUNCAN, *Ohio University*

Patricia TOLEDO, *Ohio University*

Enrique MARTINEZ-GARCIA, *Federal Reserve Bank of Dallas*

The literature on the effects of inflation targeting (IT) remains open to question. Putting aside panel regression analyses, the literature has mostly used difference-in-differences estimators to evaluate the causal effects of IT. This paper addresses the concerns with those techniques using synthetic control methods for causal inference in a (large) sample of advanced economies (AEs), and emerging market and developing economies (EMDEs). First, we find that IT was relatively effective in reducing the inflation rate in AEs that pursued lower inflation, with falls between 0.3 and 0.5 percent points over the first five years of the post-intervention period. Among EMDEs, the average reduction in inflation fluctuates in the range of 2 and 3 percent points per year. That said, these gains are statistically significant in approximately one out of three economies within our final sample (namely, Canada, UK, Colombia, Peru, Philippines, Poland, and South Africa). Interestingly, the IT regime contributed to fight deflation in Japan and raise its inflation rate compared with its estimated counterfactual. Second, we evaluate whether IT helps cushion the external shocks related to the commodity price boom and the Global Financial Crisis. During the 2007-09 period, the gains in lower inflation are almost negligible in AEs and between 3 and 4 p.p. lower than that of the comparison group among EMDEs. Statistically, however, our estimates indicate little causal differences with respect to the control groups. Third, we investigate the correlates behind the (relatively low) IT success over the full post-treatment periods. We find that the IT effectiveness---measured by the dynamic treatment effect---is significantly associated with proxies of the degree of central bank independence. Among AEs, policy formulation attributions seem to play an important role. In contrast, the central bank's ability on lending to the public sector appears as a statistically relevant covariate in EMDEs.



## Joint Prediction of Recessions and Credit Crises: An International Perspective

Mikhail MAMONOV, *MGIMO-University and CERGE-EI*

Anna PESTOVA, *MGIMO-University and CERGE-EI*

Vera PANKOVA, *Center for Macroeconomic Analysis and Short-term Forecasting, Russia and NRU HSE*

Renat AKHMETOV, *Center for Macroeconomic Analysis and Short-term Forecasting and NRU HSE*

In this paper, we predict joint macroeconomic recessions and credit crises and show that switching from a combination of the two (separate) independent probit regressions to a bivariate probit model of business cycle (BC) and credit cycle (CC) downturns have substantial added value in terms of forecasting performance. In a setting of 22 developed and developing countries over the past three decades we develop a dynamic bivariate probit model that, under the calibrated threshold, is able to correctly capture 93% of joint crisis events and 91% of joint non-crisis episodes in-sample and 90% and 95% out-of sample, at the one quarter horizon. We find that switching from independent to bivariate models considerably improves the ratio of correctly predicted joint crisis events (by 10 percentage points out-of-sample) while leads to smaller reduction in the ratio of correctly predicted non-crisis events (by 1 percentage point out-of-sample). These differences are fully attributed to accounting for the unobserved forces that drive BC and CC, which are captured by the cross-correlation between the estimated regression error terms. Further, by tracking dynamics of the predicted probabilities from independent and bivariate models of joint crisis at the country level, we find that the latter predicts the crisis episodes faster than the former, on average by 1.5 quarters, for many countries in the sample. Our findings contribute to the literature on recession and credit crises forecasting in a cross-country framework.

**Domestic versus Foreign Drivers of Trade (Im)balances: How Robust is Evidence from Estimated DSGE Models**

Stefan HOHBERGER, *European Commission - Joint Research Centre*

Roberta CARDANI, *European Commission - Joint Research Centre*

Philipp PFEIFFER, *European Commission*

Lukas VOGEL, *European Commission*

Estimated DSGE models tend to ascribe a significant and often predominant part of a country's trade balance (TB) dynamics to domestic drivers ("shocks"), suggesting foreign factors to be only of secondary importance. This paper revisits the result based on more agnostic approaches to shock transmission and using "agnostic structural disturbances". We estimate multi-region models for Germany and Spain as countries with very distinct TB patterns since 1999. Results suggest that domestic drivers remain dominant when theory-based restrictions on shock transmission are relaxed, although the transmission of foreign shocks is strengthened.

## The Asymmetric Effects of Housing Demand Shocks

Kostas VASILOPOULOS, *Lancaster University*

Alexandros SKOURALIS, *Lancaster University*

We apply a non-linear (Interacted) Panel VAR model to explore the factors that drive potential asymmetries in the transmission of housing demand shocks. The empirical findings suggest that the impact of a house price shock depends on the phase of the housing and business cycle. In recession periods, periods of financial stress, or periods of distress in the housing market, the response of consumption and residential investments is considerably higher than normal times. An unexpected drop in house prices leads to financial instability in high stressed periods, whereas the link between the two markets is weak under normal times. Finally, our findings suggest that adverse house price movements have a stronger impact on the macro-financial environment than positive changes.

## Forbearance vs Foreclosure in a General Equilibrium Model

Bianca BARBARO, *University of Milan Bicocca*

Patrizio TIRELLI, *University of Pavia*

We build a business cycle model characterized by endogenous firms dynamics, where banks may prefer debt renegotiation, i.e. non-performing exposures, to outright borrowers default. We find that debt renegotiations only do not have adverse effects in the event of financial crisis episodes, but a large share of non-performing firms is associated with a sharp deterioration of economic activity in two cases. First, if there are congestion effects in banks' ability to monitor non-performing loans. Second, if such loans adversely affect the commercial banks' moral hazard problem due to their opacity. Aggressive interest rate reductions and quantitative easing limit defaults and the output contraction caused by a financial crisis, without adverse effects on the entry of new, more productive firms. The model shows that the observed long-run trend in the share of non-performing loans might be caused by the persistent reduction in technological advancements which drive firm entry rates and firms turnover.

**Skewed to the REIT: Regime-Switching Contagion in Securitized Real Estate Markets**

Michael O'GRADY, *Central Bank of Ireland*

We investigate contagion in the returns of real estate investment trust (REIT) indices across global financial markets. Using the multivariate regime-switching skew-normal model of Chan et al. (2019), we distinguish between the Great Moderation and Global Financial Crisis (GFC) periods in our sample, and test for bivariate (US-pairings) and multivariate correlation and coskewness contagion across markets. While our results suggest correlation contagion dominates coskewness contagion, coskewness contagion is present bilaterally in the US-Japan market pair, and in the multivariate tests across all markets. Testing for structural breaks in the mean, variance and skewness of our data, we identify patterns consistent with a "flight-to-safety" effect in the Canadian REIT market. Overall, we find evidence to support the relevance of including higher order moments and co-moments in the identification of contagion, in addition to the importance of multivariate analysis in identifying moment changes from the distribution of financial market returns.

**Does Greater Financial Openness Promote External Competitiveness in Emerging Markets? The Role of Institutional Quality**

Ilayda NEMLIOGLU, *Cardiff Business School*

It is widely accepted in the literature that financial liberalisation can expand capital flows and contribute to cross-country economic prosperity. Nevertheless, in the case of developing and emerging economies (DEE), currency instability may hamper external competitiveness but, financial liberalisation alone is not sufficient to reduce misalignment. Therefore, this paper uses annual panel data for 35 DEEs between 1975 and 2014 to explore whether financial openness may help preserving the external competitiveness across countries even in the presence of trade liberalisation and better institutional quality. Our results are as follows. First, financial openness does not help export competitiveness alone unless supported by greater trade openness. Second, both cross country and regional analysis have shown that financial openness can benefit economies in maintaining the degree of export competitiveness if they have higher levels of institutional quality. Capital inflows, as an alternative financial openness measure, don't help currency competitiveness at aggregate level, but some disaggregate components such as FDI, debt, and ODA can help at the regional level. Therefore, we conclude that that financial openness alone is not sufficient to improve external competitiveness of an emerging economy, but it does help only in the presence of greater trade openness or better institutions.

## **Can Liquidity Forecast Asset Prices in the Globalization? Evidence from United States, Japan and Eurozone**

Jean Jacques DURAND, *University of Rennes I*

Christophe TAVERA, *University of Rennes I*

Bui Dieu Thao NGUYEN, *University of Rennes I*

The study can be submitted in two parts : a national analysis and a global analysis. The first part studies the impacts of monetary policy in the United States with a VAR-VECM model containing a cointegration relationship between nominal income and money supply. The second extended the analysis by examining the role of monetary policy in three economies (United States, Japan, Eurozone) and by analyzing the global effects and spillover effects via the SVAR models. The main result is that money plays an extremely important role in supporting economic growth and in price dynamics. There is an asymmetrical impact of global liquidity on price classes, with a much stronger effect on stock prices compared to the prices of goods and services and commodities. These results complement the literature on the impact of global liquidity on asset prices and are broadly consistent with the findings of other studies in the literature. Furthermore, the most striking result of the spillover analysis is that national factors, notably monetary policy play a much more important role than global factors in the evolution of prices, in particular asset prices. This suggests that, contrary to the views of policy makers in several countries, including the United States, monetary policy tools could have been effective in dealing with the risks associated with the housing and equity market.

## **Firm Heterogeneity and Capital Markets**

Tobias KÖNIG, *Humboldt-University of Berlin and DIW Berlin*

Capital markets play an increasingly important role for firms' acquisition of funds in the most recent years. I identify external equity financing shocks by applying a novel approach, so called granular instrumental variable, to infer a shock sequence without having to rely on specifying a theoretical model. The paper analyzes the heterogeneous responses of firms investment, sales, and debt choices along several dimension of the firm distribution. I find financially constrained firms, measured as young non-dividend-paying firms, benefit relative more when equity financing conditions are endogenously improved. After controlling for the cyclicity of equity issuance along the firms size dimension, I find smaller firms increase their sales by more relative to large firms.



## **Financial Innovation, Collateral Hedging and Macro-prudential Policies**

Lingsi WEI, *University of Bath*

This paper features an economy with incomplete markets, collateralised lending and investors that hold heterogeneous beliefs about the states of the world. Financial innovation takes the form of collateral hedging, which enables collateral protection insurance (CPI) contracts together with existing investment in capital to back loans. The contribution of this paper is to characterize the effectiveness of two macro-prudential policies, namely higher collateral requirements on CPI or capital, towards mitigating default friction and maximizing social welfare. The degree of belief disagreement is an important factor determining the effectiveness of policy. When disagreement is extreme, then the policy via financial innovation is not effective, unless it is not costly, and macro-prudential interventions call for higher collateral requirements on capital; while under moderate levels of disagreement, increasing collateral requirements on capital is not effective, and policy interventions call for financial innovation.

## The Impact of National Culture on Systemic Risk

Alin Marius ANDRIES, *Alexandru Ioan Cuza University of Iasi and Romanian Academy*

Daniela BALUTEL, *Alexandru Ioan Cuza University of Iasi and Laboratoire d'Économie d'Orléans*

This paper investigates the effects of national culture on systemic risk using a comprehensive dataset for the period 2003-2016. The results of this paper emphasize the importance of national culture on explaining systemic risk by showing: in countries with low power distance the contribution of banks to systemic risk is larger than in countries with high power distance; in countries with a higher level of collectivism the effects on systemic risk are smaller than in countries with high levels of individualism; countries characterized by femininity have higher exposure to systemic risk than countries characterized by masculinity, while the reverse is true when we talk about the contribution to systemic. Our results reveal that between national culture and systemic risk measures exists a statistically significant and nonlinear relationship driven by the duality information of national culture indexes, but also driven by the skewness of the systemic risk measures. Moreover, using the quantile analysis, empirical results show that during the crisis when are recorded higher values of systemic risk, the impact of national culture is different than during normal times.

## Central Bank Balance Sheet and Systemic Risk

Maëlle VAILLE, *Université de Bordeaux*

Central banks' balance sheet policies, while intended to address financial market dislocations and stimulate the economy, may have unintended persistent effects on systemic risk. Using a structural bayesian vector autoregressive model, this paper estimates the impacts of exogenous innovations to the central banks' balance sheet on the aggregate systemic risk in the euro area, United States and Japan. Our results suggest that these policies have positive effects on financial stability in the short and medium term and seems to have no effects in the long term. Moreover, we study the effects of central balance sheet policies shocks on financial institutions' systemic risk through a panel VAR and highlight the role of leverage in the transmission of unconventional monetary policy to financial firms' systemic risk.

## **Macroprudential Policy and Financial System Stability: An Aggregate Study**

Hamdi JBIR, *University of Poitiers 2*

Cornel OROS, *University of Poitiers 2*

Alexandra POPESCU, *University of Poitiers 2*

This paper investigates the impact of macroprudential policy announcements on financial stability in Europe between 2001 and 2017 at the aggregate level. Our three financial (in)stability proxies are systemic and systematic risk measures that cover not only banks, but of all types of financial institutions and consider various financial market segments. The macroprudential policy index is computed based on the European database MaPPED. Using a dynamic panel at monthly frequency, we find that the announcements of macroprudential policy actions only contain banking systemic risk with the latter computed based on market data. However, when measuring systemic risk by including both market and balance sheet data, we observe an increase in the systemic risk of all financial institutions, banks and non-banks. This last result is confirmed when considering the systematic risk measure which captures the non-diversifiable risk across financial market segments. These findings suggest that macroprudential policy announcements tend to increase financial instability throughout the system at the aggregate level. These results have implications for the optimal targeting and scope of the macroprudential framework.

**Income Inequality as Long-term Conditioning Factor of  
Monetary Transmission to Bank Interest Rates in EA Countries**

Tomas DOMONKOS, *Slovak Academy of Sciences and Comenius University in  
Bratislava*

Borris FISERA, *Slovak Academy of Sciences, Charles University and University of  
Economics in Bratislava*

Maria SIRANOVA, *Slovak Academy of Sciences*

In this paper we investigate the effect of income inequality on the transmission of standard and unconventional monetary policy shocks to bank loan rates. We hypothesize that income inequality might encapsulate important characteristics of credit market demand. We use an interacted panel error correction model to examine a set of EA countries over the years 2008-2016. Our findings suggest that higher income inequality hinders the transmission of standard monetary policy to consumer loans and limits the use of unconventional monetary policy in the housing loans segment. Conversely, more unequal societies are characterized by stronger monetary transmission in the small firm loans segment.

**Monetary Policy in an Economy with Regional Heterogeneity: Approaches Based on Aggregated and Regional Information**

Andrei SHULGIN, *Bank of Russia*

Anna NOVAK, *Bank of Russia*

We analyze monetary policy in presence of regional heterogeneity for inflation forecast targeting regime. The approach based on aggregated information exaggerates the inertia of the inflation response to a shock, if a shock originates in a region with low price rigidity. Regional approach overestimates foreign exchange rate response to regional shocks, resulting in exaggerated need to change the policy rate in a region with low price rigidity. Both approaches confirm elemental Benigno's inference about the need to increase weights of regions with high price rigidity. Weighting aggregated and regional approaches to monetary policy can decrease errors related to regional heterogeneity.

## **What Goes around Comes Around: How Large Are Spillbacks from US Monetary Policy?**

Max BREITENLECHNER, *University of Innsbruck*

Georgios GEORGIADIS, *European Central Bank*

Ben SCHUMANN, *Free University of Berlin*

We quantify spillbacks from US monetary policy based on structural scenario analysis and minimum relative entropy methods applied in a Bayesian proxy structural vector-autoregressive model for the time period from 1990 to 2019. We find that spillbacks account for up to half of the overall slowdown in domestic real activity in response to a contractionary US monetary policy shock. Moreover, spillbacks materialise as stock market wealth effects impinge on US consumption, and as Tobin's q effects impinge on US investment. In particular, a contractionary US monetary policy shock depresses global equity prices, weighing on the value of US households' portfolios; and it depresses earnings of US firms through declines in foreign sales inducing them to cut back investment. Net trade does not contribute to spillbacks because US monetary policy shocks affect exports and imports similarly. Finally, spillbacks materialise through advanced rather than through emerging market economies, consistent with their relative importance in US foreign equity holdings and US firms' foreign demand.

## **The Euro Area credit Crunch Conundrum: Was it Demand or Supply Driven?**

Fausto PACICCO, *LIUC - University Carlo Cattaneo*  
Massimiliano SERATI, *LIUC - University Carlo Cattaneo*  
Andrea VENEGONI, *LIUC - University Carlo Cattaneo*

Understanding which mechanism has contributed the most to impair the credit market functioning during the recent financial crises is a crucial issue for economic policy. To shed light on it, this work provides a comprehensive assessment of the forces that shape the eurozone credit market. Employing a Bayesian TVP-FAVAR model with a novel identification strategy, which overcomes the existing limitations in the related empirical literature, we aim to (i) study the role played by demand and supply factors in the Euro Area credit market, (ii) describe the time evolution of its dynamics, (iii) investigate the existence of cross-country asymmetries. Results show that relevant heterogeneities appear both in time and across countries. Indeed, the different structures of the banking and industrial systems of the eurozone economies triggered divergent dynamics in the national credit markets. Policy-wise, these results evidence the extent of the exposure of Euro Area credit markets to financial shocks and the existence of relevant cross-country asymmetries, calling for structural interventions aimed at promoting the soundness and resilience of the banking system, particularly in GIIPS countries, and furtherly develop the homogeneity of the financial and industrial structures among the currency union.



## **Tight and Loose, and Red and Blue: A 'Dance' of Macro Policies in the US**

Tatiana KIRSANOVA, *University of Glasgow*

Celsa MACHADO, *Polytechnic of Porto*

Ana Paula RIBEIRO, *University of Porto*

Using an optimising policy framework, we build and estimate a small-scale DSGE model of the US, and present a narrative of monetary and fiscal policy interactions in 1955-2020. We find that fiscal policy is important to identify shifts in monetary policy preferences, and it is shaped by the political color. We use this model to analyse the episode of zero lower bound on interest rate in 2008-15. We find that the bound constrained monetary policy, explain some observed irregularities in macroeconomic data, and demonstrate that a change to price level targeting could have generated a strong lift-off from the constraint.

## **No Country Is an Island. International Cooperation and Climate Change**

Massimo FERRARI, *European Central Bank*

Maria Sole PAGLIARI, *Banque de France*

In this paper we explore the cross-country implications of climate-related mitigation policies. Specifically, we set up a two-country, two-sector (brown vs green) DSGE model with negative production externalities stemming from carbon-dioxide emissions. We estimate the model using US and euro area data and we characterize welfare-enhancing equilibria under alternative containment policies. Three main policy implications emerge: i) fiscal policy should focus on reducing emissions by levying taxes on polluting production activities; ii) monetary policy should look through environmental objectives while standing ready to support the economy when the costs of the environmental transition materialize; iii) international cooperation is crucial to reach the first-best allocation under all the proposed policies. We finally find that the objective of reducing emissions by 50%, which is compatible with the Paris agreement's goal of limiting global warming to below 2 degrees Celsius with respect to pre-industrial levels, would not be attainable in absence of international cooperation even with the support of monetary policy.

## **World Interest Rates and Macroeconomic Adjustments in Developing Commodity Producing Countries**

Erica PEREGO, CEPII

Vincent BODART, *IRES, Université Catholique de Louvain*

François COURTOY, *IRES, Université Catholique de Louvain*

With commodities becoming international financial securities, commodity prices are affected by the international financial cycle. With this evidence in mind, this paper reconsiders the macroeconomic adjustment of developing commodity-exporting countries to changes in world interest rates. We proceed by building a model of a small open economy that produces a non-tradable good and a storable tradable commodity. The difference with standard models of small open economies lies in the endogenous response of commodity prices which -due to commodity storage- adjust to variations in international interest rates. We find that the endogenous response of commodity prices amplifies the reaction of commodity exporting countries to international monetary shocks. This suggests that commodity exporting countries are more vulnerable to unfavourable international monetary disturbances than other small open economies. In particular, through the commodity price channel, even those small open commodity-exporting economies that are disconnected from international financial markets can be affected by the international financial cycle.

### **Education, Media and Free Market Economic Institutions**

Sotiris PAPAIOANNOU, *Centre of Planning and Economic Research, Greece*

Education is a well-known determinant of many economic and social outcomes. However, its role in shaping economic institutions is an issue that has been overlooked so far. The main channel through which education should have an impact is the rationalization of economic beliefs. Also, patience and co-operation are essential traits of knowledgeable individuals who contribute to the provision of high quality economic institutions. This study explores if schooling promotes free market economic institutions conditional on the extent of media freedom. Econometric estimates suggest that the educational level of a country, as measured by the average years of schooling, raises economic liberty. Lack of media freedom causes a negative effect on economic freedom. An indirect effect that stems through its interaction with education suggests that the adverse effect of media restrictions is weaker in countries with high educational levels. Non-robustness analysis confirms that these findings hold even in case of extreme endogeneity.

## Financial Consolidation and the Cyclicity of Corporate Financing

Sotirios KOKAS, *University of Essex*

Raoul MINETTI, *Michigan State University*

Timothy MORELAND, *Michigan State University*

We study the impact of the financial structure, especially the concentration and complexity of the banking sector, on firms' financing and investment behavior over the business cycle. We find that, following the late 1990s, while debt issuance remained procyclical for U.S. firms of all sizes, equity issuance and liquidity accumulation switched from countercyclical to procyclical for small and medium-sized publicly-traded firms. Using matched firm-bank data, we provide evidence that the consolidation of the U.S. banking sector contributed to this change. We rationalize these findings by simulating financial consolidation in a general equilibrium business cycle model. After financial consolidation, the decrease in firms' bargaining power vis-a-vis lenders and the dilution in lenders' ties to customary borrowers enhance firms' precautionary demand for liquidity and equity issuance incentives following positive shocks. The change in corporate financing behavior induced by financial consolidation significantly increased the sensitivity of firms' investment and employment to aggregate productivity shocks.

## Understanding Growth-at-Risk: A Markov-Switching Approach

Francesca LORIA, *Federal Reserve Board*

Dario CALDARA, *Federal Reserve Board*

Pablo CUBA-BORDA, *Federal Reserve Board*

Danilo CASCALDI-GARCIA, *Federal Reserve Board*

Both financial and macroeconomic conditions matter for downside risks to the economic outlook. In this paper, we show that the deterioration of the financial and real sides dramatically increases the probability of tail risks of large negative growth over the next year. We propose a real-time measure of financial conditions and economic activity for the United States, and use these measures to construct conditional quantiles and predictive distributions of average GDP growth over the next 12 months. We find that periods of high macro and financial distress, such as the Global Financial Crisis and the COVID-19 pandemic, are associated with a low average future growth, high uncertainty, and risks tilted to the downside. This methodology is a powerful tool to assess the risk of tail events, such as recessions, and to evaluate the likelihood of point forecasts.

## The Macroeconomic Effects of a European Deposit (Re-)Insurance Scheme

Marius CLEMENS, *DIW Berlin*

Stefan GEBAUER, *Banque de France*

Tobias KÖNIG, *DIW Berlin, Germany and Humboldt-University of Berlin*

While the first two pillars of the European Banking Union have been implemented, a European deposit insurance scheme (EDIS) is still not in place. To facilitate its introduction, recent proposals argue in favor of a reinsurance scheme. In this paper, we use a regime-switching open-economy DSGE model with bank default and bank-government linkages to assess the relative efficiency of such a scheme. We find that reinsurance by both a national fiscal backstop rule and EDIS is efficient in stabilizing the macroeconomy, even though welfare gains are slightly larger with EDIS and debt-to-GDP ratios rise under the fiscal backstop. We demonstrate that risk-weighted contributions to EDIS are welfare-beneficial for depositors and discuss trade-offs policy makers face during the implementation of EDIS.

## Financial Cycles across G7 Economies: A View from Wavelet Analysis

Martin MANDLER, *Deutsche Bundesbank*  
Michael SCHARNAGL, *Deutsche Bundesbank*

We analyse the cross-country dimension of financial cycles by studying cyclical co-movements in credit, house prices, equity prices and interest rates across the G7 economies. We use wavelet-based statistics to assess at which frequencies cyclical fluctuations and their cross-country co-movements are important and how these change over time. We show cycles in interest rates and equity prices to be at least as synchronised as cycles in real GDP while cycles in credit and house prices are less synchronised. As a result, cross-country common cycles in equity prices and long-term interest rates account for a larger share of the volatility of these variables at the country level than common cycles in credit aggregates and house prices. A cluster analysis shows a high degree of similarity in the spectral characteristics of cycles in interest rates and equity prices across all countries but less similarities for cycles in credit and house price. For credit and house price cycles country-specific developments turn out to be more important than the common cross-country cycles.



## **Bank Profitability in the Euro Area: The Asymmetric Effects of Common Supervision**

Ioanna AVGERI, *Athens University of Economics and Business*

Helen LOURI, *Athens University of Economics and Business*

Yiannis DENDRAMIS, *Athens University of Economics and Business*

The scope of this paper is to examine the effect that the establishment of the Single Supervisory Mechanism (SSM) in 2014 has had throughout the profitability distribution of 78 directly supervised euro area banks. We employ unconditional quantile regression analysis with data covering the period 2011-2017. Our main findings indicate a robust positive effect of the SSM in the lower quantiles of the bank profitability distribution, while the effect in the upper quantiles depends on the profitability index examined. The introduction of the SSM was also found to reduce the probability of bank insolvency, the effect being stronger for weaker banks. Such positive consequences for profitability and stability should be taken into account by policy makers as we move towards the next reforms of the European Banking Union.

**Shadow Banking in Europe: Introducing step-by-step GVAR Causality with Theory and Asymptotic Properties**

Panayotis G. MICHAELIDES, *National Technical University of Athens*

Efthymios G. TSIONAS, *Lancaster University Management School*

Konstantinos N. KONSTANTAKIS, *National Technical University of Athens*

Dimitris KOSMAS, *Bank of Greece*

The purpose of this paper is to set up a novel methodological framework that would be capable to uncover stepwise causality among economic entities in global systems, by overcoming the dimensionality problem that arises due to the large number of interconnections among the entities. In this context, the present paper builds on the notion of stepwise causality introduced by Dufour and Renault (1998) and utilizes the Global Vector Autoregressive schemes with dominant entities introduced by Chudik and Pesaran (2011). This novel methodological framework is then applied to a selected panel of EU economies in order to uncover the causal relationships among the shadow banking and the banking sector of these economies at various horizons. Based on findings, the Italian shadow banking sector is the most central in terms of causal interconnection in our sample since it statistically significantly causes the evolution of the financial systems of the majority of the economies in our sample.

**Market Structure, International Banking and New Technology: Case form the Loan Markets in the EU**

Małgorzata PAWŁOWSKA, *SGH Warsaw School of Economics*

Georgios P. KOURETAS, *IPAG and Athens University of Economics and Business*

The aim of this research is to investigate the impact of market structure and new technology on the grow of different type of bank loans (residential mortgage, corporate and consumer loan) in EU in the context of microprudential capital regulation and macroprudential policy instruments. Furthermore, we try to investigate the impact of Fintech on the level of competition in the in the European Union (EU) banking sector and further for credit grow. The resent ten years after the crisis saw the development of electronic technology which has an impact on the EU banks. Information technologies have transformed banking practices and products. Entities creating new business models based on Fintech (including technology based on distributed ledger or artificial intelligence) completely redefine the way consumers meet their financial needs which has impact on the credit grow. In the era of a dynamically changing world, the young generation of consumers is receptive and open to digitization, freely using innovative solutions with electronic channels that allow remote access to financial services (internet, mobile devices). The offering of virtual banks includes attractive terms and conditions of bank accounts, such as free of charge account maintenance, free payment cards, free bank transfers, and free of charge ATM services. There are two types of variables in the model (in side and out side of banking sector) concerning Fintech. The variables from in side banking sector variables come from the Payments Statistics and electronic banking from European Central Bank. Annual country-level data and macroeconomic data are collected from ECB, Eurostat, World Bank, European Central Bank, Payment Statistics. We merge country level data with annual bank-level data, which are collected from the Orbis Bank Focus and Bankscope database. Panel data includes commercial banks, savings banks, and cooperative banks that were operating in the EU. The (unbalanced) panel data set covers the period 2008-2019. Using the methodology of panel regression (GMM, fe), this study finds the impact on new technology on the growth of loans for EU countries, in particular, for a consumer loan.

## **20 Years With the Euro: Eurozone Banking Market Integration Revisited**

Stefanie KLEIMEIER, *Maastricht University*

Harald SANDER, *TH Köln – University of Applied Sciences*

This paper scrutinizes the progress in Eurozone banking market integration on the occasion of the 20th anniversary of the common European currency. Instead of relying on the law of one price, we argue in favor of integration measures derived from cointegration and causality analyses. Using on these measures, we apply network analysis to bilateral banking market relations within the Eurozone and show how this network has evolved before, during and after the Eurozone crisis. Our results confirm that convergence towards the law of one price is not necessarily integration and that the recent rebound in correlations of national bank interest rates should not be misread as an emergence of a deep European banking network. Instead, the Eurozone crisis has fundamentally and persistently disrupted this network. Creating deep banking market integration in the Eurozone will thus remain a major challenge for policy makers in the future.

## **ECB Monetary Policy and Commodity Prices**

Shahriyar ALIYEV, *Institute of Economic Studies, Charles University*

Evžen KOČENDA, *Institute of Economic Studies, Charles University*

We bring the first assessment of the impact of ECB monetary policies on global aggregate and sectoral commodity prices over 2001 - 2019. We employ a SVAR model and separately assess a period of conventional monetary policy before the global financial crisis (GFC) and a period of unconventional monetary policy during the post-crisis period. Our key results indicate that contractionary monetary policy shocks have positive effects on aggregate and sectoral commodity prices during both conventional and unconventional monetary policy periods. The effect is statistically significant for aggregate commodity prices during the post-crisis period. In terms of sectoral impact, the effect is statistically significant for food prices in both periods, for metal prices during the pre-crisis period, and for beverage and fuel prices during the post-crisis period; other commodities display positive but statistically insignificant responses. Further, we demonstrate that the impact of ECB monetary policy on commodity prices increased considerably after the GFC, indicating effectiveness of unconventional monetary policy tools. Our results also suggest that the effect of ECB monetary policy on commodity prices transmits through the exchange rate channel, which influences European market demand, and we support this by further tests.

## **Evolving Monetary Policy in the Aftermath of the Great Recession**

Aymeric ORTMANS, *Université Paris-Saclay, Univ Evry*

A Taylor-type monetary policy rule is estimated using a time-varying parameter vector autoregressive model to assess changes in central banks' behavior during and after the Great Recession. Based on US and euro area data, the results show that both the Fed and the ECB have changed their behavior after the 2008 crisis. Contemporaneous coefficients have increased with expansionary monetary policy at the ZLB. Although they do not indicate clear evidence of significant changes in the systematic component of monetary policy, estimated response coefficients suggest dramatic shifts in monetary policy shocks after the Global Financial Crisis. These departures from rule-based behavior – i.e. monetary policy discretion – are increasingly larger with the implementation of non-standard measures. Unconventional monetary policy shocks are shown to strongly affect the US macroeconomy and to contribute to the variance of inflation and output even more importantly when the Fed eased its monetary policy at the ZLB. This is not the case in the euro area, despite increasing monetary policy shocks in unconventional times. A counterfactual analysis shows however that the shift in the systematic component of monetary policy appears to be a key determinant of the level of inflation and output at the ZLB, especially in the euro area that would have suffered a continuous period of deflation from 2014:1 to 2018:1 without any change in ECB's behavior after the 2008 crisis.

## The Effect of ECB's Unconventional Monetary Policy on Credit

Yacoub SLEIBI, *Newcastle University*

Giorgio FAZIO, *Newcastle University*

Fabrizio CASALIN, *Newcastle University*

The macroeconomic effect of unconventional monetary policy on credit is a distinctive topic in recent research. We employ Bai and Ng's (2004) Panel Analysis of Non-stationarity in Idiosyncratic and Common components (PANIC) methodology to uncover the convergence properties of private credit in a panel factor model of 12 Euro-zone and 8 European countries. We find evidence of credit convergence. We then focus on the first principal component of credit, credit-to-GDP ratio and credit-to-GDP gap series, and find the occurrence of long-run relationships between these last and measures of ECB's unconventional monetary policy such as total assets and the shadow interest rate

## Monetary Policy over the Leverage Cycle: Evidence for the Euro Area

Gerhard RÜNSTLER, *European Central Bank*

Leonie BRÄUER, *Universite de Geneve*

We study state dependence in the impact of monetary policy shocks over the leverage cycle for a panel of 10 euro area countries. We use a Bayesian Threshold panel SVAR with regime classifications based on credit and house price cycles. We find that monetary policy shocks trigger a smaller response of GDP, but a larger response of inflation during low states of the cycle. The shift in the output-inflation trade-off may result from higher macro-economic uncertainty in low leverage states. For an alternative regime classification based on turning points we find larger effects on GDP during contractions.



## **The International Distribution of FDI Income and Its Impact on Income Inequality**

Joseph P. JOYCE, *Wellesley College*

Income generated by foreign direct investments (FDI) has grown since the 1990s, and now represents a substantial portion of many countries' current accounts. Some of these flows are routed through Special Purpose Entities in financial centers that multinational firms use to minimize their tax liabilities. We use IMF and OECD data to ascertain which countries receive FDI-generated income, and find that a few large countries are the recipients of the largest shares. We also distinguish between FDI equity income and FDI interest income arising from intra-firm lending. Equity income is the source of FDI income for the advanced economies, and interest income the source of income for financial centers. We investigate the impact of these flows on income distribution within the recipient countries. FDI equity income contributes to the income share of the top 1% of households in advanced economies. FDI interest income, on the other hand, has no impact in these economies. FDI equity income also contributes to the income share of the top 1% in financial centers, but interest income is inversely linked to their income share and there is no overall impact.

## Merging Structural and Reduced-Form Models for Forecasting

Jaime MARTINEZ-MARTIN, *Banco de España*

Richard MORRIS, *European Central Bank*

Luca ONORANTE, *Joint Research Centre, European Commission*

Fabio M. PIERSANTI, *University of Milano-Bicocca*

The post-crisis environment has posed important challenges to standard forecasting models, in particular, for highly criticized DSGE models. The need for flexible tools able to capture volatility episodes and non-linear trends have become paramount. In this paper, we exploit several combinations of a large-scale DSGE model with standard reduced-form methods such as (B)VAR (i.e. DSGE-VAR and Augmented-(B)VAR-DSGE methods) and assess their use for forecasting a challenging euro area economy. Our empirical findings suggest that: (i) the DSGE model underestimates the growth of real variables due to its mean-reverting properties in the context of a sample that is difficult to deal with; (ii) in spite of this, reduced-form VARs benefit from the imposition of an economic prior from the structural model; but (iii) pooling information in the form of variables extracted from the structural model with (B)VAR methods does not give rise to any relevant gain in terms of forecasting accuracy. Furthermore, by analysing the quantiles of the predictive distributions, we provide evidence that merging models can help to mitigate the effects of structural breaks, especially during the Great Recession.

## **Automation and Human Capital: Accounting for Individual-Level Responses**

Daniil KASHKAROV, *CERGE-EI*

This study tests the contribution of individual human capital responses to earnings inequality arising in the process of automation. Automation creates incentives for routine workers to accumulate human capital and to eventually join the pool of abstract workers. At the same time, higher returns on human capital associated with a rise in automation technology make workers initially employed in abstract occupations to accumulate even more of human capital, therefore contributing to a relative rise in their earnings. Additionally, routine workers can be limited in their mobility towards abstract occupations due to lower learning ability and/or stock of human capital. The paper develops a life cycle model of human capital and occupational choice and tests its implications on the NLSY79 data. The results suggest a considerable positive effect of a rise in returns on human capital on the variance of log lifetime earnings, with a part of this effect coming from individual human capital responses. Human capital responses of the highly-able agents drive a rise in the variance of log earnings in the second half of the life cycle. The inequality dampening effect of the human capital responses turns to be negligible, as compared to the inequality worsening effect.

**Investigating Government Spending Multiplier for the US Economy:  
Empirical Evidence Using a Triple LASSO Approach**

Dimitrios PANAS, *Tilburg University and Systemic RM, Greece*

Zacharias BRAGOUDAKIS, *Bank of Greece and National and Kapodistrian  
University of Athens*

An essential dilemma in economics that has yielded ambiguous answers is whether governments should spend more in recessions. This paper provides an extension of the work of Ramey & Zubairy (2018) for the US economy according to which the government spending multipliers are below unity, especially when the economy experiences severe slack. Nonetheless, their work suffered from some limitations with respect to invertibility and weak instrument problem. The contribution of this paper is twofold: Firstly, it provides evidence that a triple lasso approach for the lag selection is a useful tool in removing the invertibility issues and the weak instrument problem. Secondly, the main results using a triple lasso approach suggest multipliers below unity for most cases with no evidence for differences between different states of the economy. Nevertheless, re-running the code in Ramey & Zubairy (2018), the case where WWII is excluded exhibits multipliers above unity, in both military news and Blanchard-Perotti specification, contradicting their baseline findings and providing evidence for a more effective government spending in recessions.

## The Aggregate Consequences of Forbearance Lending: Evidence from Japan

Isabelle ROLAND, *University of Cambridge*

Yukiko SAITO, *Waseda University*

Philip SCHNATTINGER, *University of Oxford*

We study the impact of forbearance on aggregate economic performance in Japan over the period 2007-2015. Forbearance is a practice whereby banks accommodate bad borrowers instead of terminating their loans, with negative consequences for aggregate productivity. Forbearance was a widespread phenomenon during Japan's "Lost Decade" and the Japanese policy response to the global financial crisis of 2007-2008 has revived this practice (especially the "SME Financing Facilitation Act"). The extant literature has focused on firm-level, bank-level, and industry-level studies, showing e.g. that zombies depress the employment growth of healthy firms. However, it lacks an assessment of the aggregate impact of forbearance on economic performance. Our novel theory-driven empirical approach enables us to perform such a quantitative assessment. We develop a search-theoretic model of credit markets with severance costs that capture forbearance frictions, and estimate those frictions using the Tokyo Shoko Research (TSR) dataset. Our estimates indicate a marked increase in forbearance frictions from 2010 onwards, suggesting that the SME Financing Facilitation Act of 2009 has revived the practice of forbearance in Japan. We perform counterfactual exercises to estimate the aggregate impact of forbearance on economic performance. We find that up to 30% of firms would exit, leading to job up to 40 % fewer jobs and an increase in capital productivity of up to 40 %, with around 10% variation over the business cycle. Finally, we provide regression-based evidence in support of our channel. First, we relate our estimates of forbearance frictions to the zombieness measure of Caballero et al. (2008), and show that higher frictions are associated with a higher probability that a firm is classified as a zombie firm. Second, we exploit geographical variation in search frictions across Japanese prefectures to show that forbearance frictions are more significant when search frictions are more stringent. This shows that our model captures a unique margin in the data, which is not explained by models that are not based on search and matching.

**Monetary Policy and Portfolio Rebalancing: Evidence from Micro-Level Data on European Equity Mutual Funds**

Joey SOUDANT, *CeReFiM & naXys, Universite de Namur*  
Jean-Yves GNABO, *CeReFiM & naXys, Universite de Namur*

In this paper, we provide new empirical evidence on the portfolio rebalancing of European equity mutual funds following both conventional (CMP) and unconventional monetary policies (UMP). We use a micro-level database containing the portfolio holdings of 1772 equity mutual funds over the period 2002Q4-2016Q4. This micro-level information allows to characterize the funds asset allocation on different portfolio dimensions, namely the size, style, currency and domicile of the stocks. We use the Arellano and Bond (1991) difference generalized method of moments (DGMM) to estimate our dynamic panel with fixed effects. Overall, our results support the existence of portfolio rebalancing across equity categories following UMP. Assets of European equity mutual funds are on average reallocated towards large, mid cap., value stocks and transition economies and shifted away from developed countries. We further find evidence of increased cash positions.

## Political Monetary Cycles: An Empirical Study

Hugo ORIOLA, *Laboratoire d'Economie d'Orléans*

After decades of research on how political events may impact monetary policy the discussions are still ongoing. This paper aims to test whether electorally induced cycles exist in monetary policy using an extensive dataset to have clear answers to this debate. Data collection over election periods and political regimes for numerous countries enables the use of a panel composed of 103 countries over 32 periods (1985-2016). I find evidence that, the phenomenon of elections affecting monetary policy is observable in both developed and developing countries. The growth of the monetary mass (measured as the growth rate of M1) appears to be significantly higher in pre-electoral periods. Indeed, according to my estimations, the growth of the monetary mass is on average between 1.1% and 2.4% higher during the twelve months prior to a national election. Thereafter, I investigate if some type of institutional frameworks might smooth these political monetary cycles. I find that parliamentary regimes, free and fair elections, left-wing incumbents or the seniority of central banks help to reduce the amplitude of political monetary cycles.

## Re-assessing International Effects of U.S. Monetary Policy Shocks

Elizaveta LUKMANOVA, *Université Catholique de Louvain*  
Katrín RABITSCH, *Vienna University of Economics and Business*

We study international effects of persistent monetary policy shocks originated in the U.S. We document that such shocks have non-negligible international spillovers, leading not only to an expansion in the U.S. but also to an increase in foreign output, inflation, long-run inflation expectations, and dollar depreciation. Moreover, long-term rates, in the U.S. and abroad, increase and co-move positively. In contrast, in response to temporary nominal interest rate shocks, we find that international spillovers are smaller in magnitude and there is no significant reaction of long-term rates. This suggests that when it comes to understanding international spillover effects of U.S. monetary policy, persistent monetary policy shocks rather than temporary nominal interest rate shocks have the potential to explain long-run co-movements of macroeconomic variables across advanced countries.



## Capital Ratios and Banking Crisis in the European Union

Raphaël CARDOT-MARTIN, *CRESE*

Fabien LABONDANCE, *CRESE and OFCE-Sciences Po*

Catherine REFAIT-ALEXANDRE, *CRESE*

We assess if capital ratios reduced the occurrence of banking crisis in the European Union from 1998 to 2017. We use a Probit model and estimate the effect of two measures: the bank capital to total assets ratio and the bank regulatory capital to Risk Weighted Assets (RWA). We found that both measures affect negatively the probability of crisis. This result is robust to the exclusion of outliers, to the inclusion of various control variables for banking, financial and macroeconomic risks. Finally, we show that while the bank regulatory capital to RWA has always a negative effect on the probability of crisis, the bank capital to total assets ratio is only significant above a threshold, estimated between 10% and 12%.

## **Globalization and the Rise of Populist Radical Right in Europe**

Steven J. YAMARIK, *California State University*

This paper estimates the impact of globalization on the electoral outcomes of populist radical right parties in Europe. We use import penetration, outbound foreign direct investment, immigration, and asylum seekers as globalization threats seen by voters. To control for endogeneity, we use the predicted values of the bilateral determinants of each globalization measure. We then estimate the effects of each indicator of globalization on the election results of populist radical right parties in both National and European Parliamentary elections. Of all the globalization measures, we find that increases in immigration and asylum seekers, especially from Middle East and North Africa and sub-Saharan Africa, lead to the largest increases in radical right party vote percentages.

## **The Impact of the Asset Purchase Programme on Systemic Risk in the Euro Area: Is There a Threat?**

Leidy CHAVARRO SANCHEZ, *University of Luxembourg*

Francisco Nadal De SIMONE, *University of Luxembourg and Sacred Heart University*

Thorsten LEHNERT, *University of Luxembourg*

In the aftermath of the global financial crisis, the role of monetary policy on financial stability has received a lot of attention in the literature. In this paper, we study the impact of the Asset Purchase Programme (APP) on systemic risk in the euro area banking sector. We estimate a Bayesian structural vector auto-regression model to assess whether the APP shock enhances risk-taking behaviour by major euro area banking groups with effects on systemic risk. Various measures that capture the different facets of systemic risk are employed. We find that the APP may have contributed to systemic risk via increased banks' interdependence and contagion. Moreover, it does seem that the APP has contributed to create market conditions that increase the euro area banking sector's vulnerability. This suggests that the APP may pose overall a threat to financial stability in the euro area banking sector. The situation requires constant monitoring.

## **Euro Area Banking and Monetary Policy Shocks in the QE Era: A Structural Credit Risk and Vector-autoregression Approach**

Alain KABUNDI, *World Bank*

Francisco Nadal De SIMONE, *University of Luxembourg and Sacred Heart University*

This paper assesses the effects of monetary policy shocks on the macroeconomy and the euro area banking sector after the global financial crisis. Financial risk-return indicators of the banking sector based on a compound option-based structural credit risk model are embedded in a large macro-financial quarterly database covering the period 2008Q4-2019Q4. A SFAVAR identifies and estimates the shocks' responses relating them to the endogenous build-up of banks' vulnerabilities. The study finds that unconventional monetary policy, in particular the Asset Purchase Program of the European Central Bank, seems to have been more successful than conventional monetary policy in raising output and inflation. The desired boost to bank lending has been muted and loan cyclicality has varied across countries and loan types. The performance of the banking sector following monetary policy shocks can be characterized by a drop in expected ROE and ROA, a relaxation of lending conditions and increased correlation between banks' assets return and the market return, a mechanism pointing to enhanced risk-taking. While banks' probabilities of default fall following monetary policy shocks, financial leverage and the price of risk increase. Banks' net worth rises via higher market capitalization and implied assets value together with lower volatility, albeit often incurring more debt. Risk-taking in the banking sector, such as the one observed in the run-up to the global financial crisis, may pose a risk to financial stability, especially if its effects on banks' vulnerability spread to systemic risk. The endogenous build-up of macro-financial vulnerabilities may need to become part of monetary policymaking.

## The Resilience of the Euro Area Banking System during the Pandemic

Maria-Eleni AGORAKI, *University of Peloponnese*

Georgios KOURETAS, *IPAG and Athens University of Economics and Business*

Francisco Nadal De SIMONE, *Sacred Heart University*

This research explores the performance of the 27 major euro area banking groups between 2002:Q4 and 2021:Q1 using their return on assets as a gauge. It finds that the combination of regulatory reforms introduced following the Global Financial Crisis (GFC) and bold and encompassing monetary, fiscal, and regulatory policies soon after the start of the Covid-19 pandemic have sheltered the euro banking sector's performance to a large extent. In addition, it shows that the GFC and the sovereign crisis both introduced significant uncertainty in the performance of the banking sector in the euro area. However, the performance uncertainty observed after the GFC has not been replicated during the worst part of the pandemic in the euro area vindicating the positive effects of the massive policy measures taken. From a purely technical viewpoint, uncertainty in banking performance in the euro area highlights the relevance of using methodological approaches that are robust to changes in unconditional variance due to regime changes, to future random shocks or both and that take care of the endogeneity of most bank-specific determinants of return on assets. A major implication of this research is that overall policy measures, while having allowed the euro area banking industry to buy time to adjust to the major shock represented by the Covid-19 pandemic, the phasing-out of these policies may result in risks stemming from the expected rise in non-performing loans and the underlying structural vulnerabilities of banks in the world of low interest rates and low assets return that has characterized the sector since the end of the sovereign crisis relative to the pre-GFC period.

### **Carbon Risk in European Stock Market**

Benchora INESSA, *LEO, University of Orleans*

Sebastien GALANTI, *LEO, University of Orleans*

We propose to build a carbon factor that measuring the exposure of firms' stock return to ecological transition risk. In contrast with the existing literature, which uses data-intensive factors, we propose a simple variable based on verified CO<sub>2</sub> emissions from the European Emissions Trading Schemes (EU ETS) of carbon quotas. First, using data from around 800 firms on the EU ETS, we find that low-CO<sub>2</sub> emitting firm stocks receive an excess return compared to high-emitting firms, hereby confirming that “green” firms are perceived as riskier by investors. Second, the carbon factor have an explanatory power in stock returns, besides the traditional risk factors. This means that the CO<sub>2</sub> emissions are properly taken into account by investors in their stock selection. Policy makers could thus encourage investing in low-emitting firms stocks by advertising on the excess returns it brings to the investors, or by cutting capital gains taxes on green investing.

## **Non-performing Loans and Inefficient Capital Reallocation**

Philip SCHNATTINGER, *University of Oxford*

Non-performing loans have been shown to negatively affect credit supply, investment, and growth. Countries that have struggled to recover from financial crisis typically have had higher and more persistent non-performing loan levels. While these empirical facts have been well established, neither the mechanisms causing the great cross-country heterogeneity in non-performing loan dynamics, nor the channels through which they affect the real economy are well understood. This paper suggests a structural model with search frictions in used capital markets that links slow capital re-allocation and non-performing loans. The structural model shows that the stock of non-performing loans is a symptom of a low option value of foreclosure due to malfunctioning used capital markets. This will lead in turn to more misallocated capital, reducing the marginal product of fresh capital and thereby impacting credit creation. This model can provide an explanation for the empirically observed correlations of non-performing loans levels and macroeconomic outcomes. It can also serve as a ready framework for analysing macroeconomic policies preventing the build-up, and working towards resolving non-performing loans.

## **Natural Disasters and Financial Stress: Can Prudential Regulation Tame Green Swans?**

Pauline AVRIL, *University of Orleans*

Grégory LEVIEUGE, *Banque de France and University of Orleans*

Camélia TURCU, *University of Orleans*

The objective of this paper is to empirically investigate whether storms and floods trigger financial stress, conditional on the degree of stringency of macroprudential frameworks. We first describe the transmission channels through which such climate events could impact the financial sector. Then, we construct an original and comprehensive dataset of storm and flood intensities, from different sources, and estimate the impact of these exogenous events on external financial premiums (EFP) in 88 countries, over 1996-2016, using local projection method. The results indicate that EFP increase in countries with lax prudential regulation in the wake of storms. On the contrary, countries with a stringent prudential framework can benefit from lower premiums, as a better lenders and borrowers' creditworthiness facilitate the funding for the replacement of the destroyed capital by more productive technologies. The mitigating effects of macroprudential policies are less obvious in the case of flooding. As more foreseeable events, floods might induce spontaneous discipline and greater insurance coverage, which could make macroprudential measures less crucial.



**Financial Market Spillovers during the Euro-area Crisis: Intra-Country and Intra-Regional Estimates**

Heather GIBSON, *Bank of Greece*

Stephen HALL, *University of Leicester, Bank of Greece and University of Petroria*

Pavlos PETROULAS, *Bank of Greece*

George S. TAVLAS, *Bank of Greece and University of Leicester*

The euro-area sovereign debt crisis was characterized by feedback loops between (1) sovereign bond ratings and sovereign bond yields in single jurisdictions and (2) sovereign ratings and yields among jurisdictions. We provide a spatial framework that allows us to distinguish among European countries, both euro area and non-euro area. We find that, on balance, euro-area spillovers were smaller than spillovers among non-euro-area countries, implying that being part of a monetary union may reduce negative feedback loops. However, within the euro area, the lower feedback loop of a shock is mostly attributed to a group of non-crisis countries. For a group of euro-area countries hit hard by the crisis, results are more in line with the group of non-euro-area countries.

**Confidence as a Vector of Financial Contagion: How Does it Work, and How much Does it Matter?**

Louis RAFFESTIN, *University of Orleans*

This article analyzes the link between confidence and financial contagion. I provide a bank run-type model in which depositors are uncertain about their estimate of future bank portfolio returns, and banks are connected through balance sheet linkages. High parameter uncertainty (or low forecast confidence) leads to informational contagion by increasing the sensitivity of depositors of a given bank to negative information about other banks. Low confidence also indirectly enhances balance sheet contagion because the marginal impact of a drop in the value of assets on the probability of a run is higher when expected returns are low. I compare the relationships defined by the model to the capital requirements currently applied to i) systemic banks and ii) securitized assets in the repo market. Both regulations appear well suited to a financial system in which informational contagion and balance sheet contagion coexist and are fueled by low confidence.

**Are Commodity Markets Segmented? Understanding Cross-Asset Interdependencies Using Stochastic Spanning**

Evgenia PASSARI, *University Paris Dauphine*

Nikolas TOPALOGLOU, *IPAG Business School and Athens University of Economics and Business*

There is mixed evidence on the integration of commodity markets with equity and bond markets. On the one hand, a number of papers document that standard equity asset pricing factors cannot explain the cross-section of commodity futures returns implying market segmentation. On the other hand, there is some evidence that the recent financialization of commodities tends to integrate markets. We propose a unified approach for the study of commodity price behavior that builds on the theory of Greenwood et al. (2018). According the theory, large supply shocks exacerbate market segmentation by limiting the willingness of market specialists to trade across markets. At the same time, we explore whether demand shocks encourage market integration through increased investing across asset classes; also during periods of big financial distress as investors redirect portfolio flows out of risky portfolios and into safe assets. In particular, we formally test for the differential degree of market segmentation under narratively-identified supply and demand commodity developments by employing a non-parametric, distribution-free measure of stochastic dominance. Subsequently, we proceed to study the speed at which such information is reflected into different speculative assets conditioning on the identified shock type.

## **Impact of Uncertainty on Firm Investments and Options to Mitigate its Effects**

Klára BAKOVÁ, *Mendel University in Brno*

The paper investigates the effects of economic policy uncertainty on European firms' investment behavior with additional differentiation based on firm size. We also analyze monetary and fiscal policy's effect to eliminate the impact of uncertainty on investment behavior. In this paper, we provide three contributions. The first contribution is differentiating between the impact of uncertainty on firm investments based on firm size. The second contribution is recommended policy for reducing the impact of uncertainty on firm investments. Third, we use rich microeconomic data of European firms which includes large and medium-sized firms.

**The US Post-War Economic Dynamics and Intrinsic Inflation Persistence: A Regime-switching Perspective**

Elton BEQIRAJ, *Sapienza University of Rome*  
Giovanni di BARTOLOMEO, *Sapienza University of Rome*

This paper revisits the evolution of the US business cycle accounting for exogenous switches in the inflation intrinsic persistence, which is formalized as changes in the hazard functions. After controlling for Phillips curve shifts, in an estimated Markov-switching macro model, we identify two monetary regimes, which have a different interpretation from that generally proposed. The Fed operates according to the Brainard Principle, gradually reacting to observed shocks, but episodically it deviates from this regime being more active. Quantitatively, however, the main drivers of the business cycle are structural changes in price settings and stochastic volatilities. Structural changes in price and wage adjustments play different roles in the Great Inflation. The former fuels inflation, while the latter tends to moderate it. A low volatility regime occurs around 1985 and explains a large part of the remarkable fall in volatilities.

## Target Inflation and Forward Guidance

Michael DOBREW, *Deutsche Bundesbank*

This paper studies the impact of higher inflation targets on the effectiveness and credibility of forward guidance announcements. Higher inflation rates induce a more forward looking behavior of firms. This implies that agents "see through" announcements on future interest rates and the positive current period demand effects they generate reducing the overall effectiveness of forward guidance. This result is robust to expectations processes that are not subject to the forward guidance puzzle, e.g. inattention, imperfect credibility or learning. Optimal policy in an environment with positive target inflation holds interest rates lower for even longer but this becomes less credible the higher the target.

## A Structural Investigation of Quantitative Easing

Gregor BOEHL, *University of Bonn*

Gavin GOY, *De Nederlandsche Bank*

Felix STROBEL, *Deutsche Bundesbank*

Using nonlinear Bayesian methods that fully account for the binding zero lower bound (ZLB), we estimate several macro-financial DSGE models. Counterfactual analysis suggests that by easing financing conditions, quantitative easing facilitated an increase in aggregate investment. The resulting expansion of firms' production capacities lowered their marginal costs. These disinflationary supply side effects dominated over the inflationary effects induced by the stimulus to aggregate demand. At the ZLB, the concomitant rise in real interest rates in turn induced a net fall in aggregate consumption.

## **Asymmetry in Inflation Rates under Inflation Targeting**

Nektarios ASLANIDIS, *Universitat Rovira I Virgili*

Demetris KOURSAROS, *Cyprus University of Technology*

Glenn OTTO, *University of New South Wales*

This study empirically documents that inflation is significantly more persistent when it is below the Central Bank's target than otherwise, in five inflation targeting countries (Australia, New Zealand, Sweden, United States and the Euro-Area). We use a threshold autoregressive model to test for this asymmetry in inflation persistence; above and below some estimated threshold. We find that the threshold estimates are reasonable in light of a central bank's announced inflation target. Theoretically, we postulate that this phenomenon occurs because while forming their expectations, agents pay attention to recent observations asymmetrically along the business cycle. It is shown that a New Keynesian model with adaptive learning and an adaptive gain can explain the asymmetry in inflation persistence. Due to relatively larger forecasting errors, agents tend to put more weight on recent events in expansions, forcing inflation persistence to deteriorate. Our empirical evidence supports the theoretical findings that inflationary periods are associated with larger forecasting errors.



## **Identification of Non-Rational Risk Shocks**

Maximilian BÖCK, *Vienna University of Economics and Business*

This paper studies how non-rational risk shocks affect the macroeconomy. Using a novel identification design, exploiting survey expectations data of financial executives in the US, I identify non-rational risk shocks via distortions in beliefs. Belief distortions are defined as differences between subjective and objective forecasts on risk spreads. Surprises in beliefs are used as an exogenous proxy for over- and undervaluation of risk. Results indicate that the constructed shocks have statistically and economically meaningful effects. Positive belief distortions lead to exaggerated overoptimism on financial markets. This has sizeable consequences for the U.S. economy: risk spreads overshoot and real activity abates, leading to a recession. Depending on the risk spread under scrutiny, nominal adjustments are present.

**The Financial Resource Curse Revisited: The Supply-Side Effect of Low Interest Rates**

Simon HILDEBRANDT, *University of Kassel*

Jochen MICHAELIS, *University of Kassel*

The established theory explains that a reduction of interest rates affected the peripheral eurozone in the 1990s by inducing a consumption boom, ending in a crowding out of tradable goods production by non-tradable goods production. The movement of resources out of tradable goods production into non-tradable goods production is supposed to adversely result in a slowdown of productivity growth and a reduction of output and welfare, referred to as Financial Resource Curse. A shortfall this theory suffers from is the negligence of the beneficial supply-side effect lower interest rates have by pushing output and welfare via accelerating capital accumulation. Closing this theoretical shortfall, we find that the supply-side effect potentially overcompensates the Financial Resource Curse, modelling a three-sector, two-factor small open economy.

**Measuring Capital-Labor Substitution: The Importance of Method Choices  
and Publication Bias**

Sebastian GECHERT, *Macroeconomic Policy Institute*

Tomas HAVRANEK, *Charles University*

Zuzana IRSOVA, *Charles University*

Dominika KOLCUNOVA, *Charles University*

We show that the large elasticity of substitution between capital and labor estimated in the literature on average, 0.9, can be explained by three issues: publication bias, use of cross-country variation, and omission of the first-order condition for capital. The mean elasticity conditional on the absence of these issues is 0.3. To obtain this result, we collect 3,186 estimates of the elasticity reported in 121 studies, codify 71 variables that reflect the context in which researchers produce their estimates, and address model uncertainty by Bayesian and frequentist model averaging. We employ nonlinear techniques to correct for publication bias, which is responsible for at least half of the overall reduction in the mean elasticity from 0.9 to 0.3. Our findings also suggest that a failure to normalize the production function leads to a substantial upward bias in the estimated elasticity. The weight of evidence accumulated in the empirical literature emphatically rejects the Cobb-Douglas specification.

### Secured and Unsecured Credit Cycles

Massimiliano TANCIONI, *Sapienza University of Rome*

Costanza GIANNANTONI, *Sapienza University of Rome*

Valeria PATELLA, *Sapienza University of Rome*

The cyclical properties of private credit depend on the secured/unsecured type of debt contract. We decompose US credit accounts (1975-2019) in secured and unsecured contracts to compare sample correlations to the results of a structural vector auto-regression where leverage and unsecured credit shocks are separately identified employing a mixed point/set identification strategy. Contrary to unconditional patterns, leverage shocks contribute to output variability by far more than unsecured credit shocks, highlighting the role of the collateral channel in the transmission of credit shocks into the real economy. This holds for both businesses and households and whether we account for demand or supply credit shocks.

## Global Uncertainty and the Dollar

Georgios GEORGIADIS, *European Central Bank*  
Gernot J. MÜLLER, *University of Tübingen and CEPR*  
Ben SCHUMANN, *Free University of Berlin*

A distinct feature characterising international financial markets is that the US dollar appreciates in times of heightened global uncertainty. In this paper, we establish a “dollar channel” for the transmission of global uncertainty shocks. First, we identify these shocks in a Bayesian proxy VAR model and show that they appreciate the dollar. Second, we construct a minimum-relative-entropy counterfactual for which we reweigh the posterior distribution of impulse response functions such that the dollar does not respond to the global uncertainty shock while minimising the distance from the baseline posterior distribution. Absent the dollar appreciation, we find the adverse impact of the global uncertainty shock is considerably reduced--both in the US and the rest of the world. Third, we zoom in on the role of US monetary policy and find that, while it tends to accommodate global uncertainty shocks, a stronger response would prevent the appreciation of the US dollar, thereby containing the adverse effects on the global economy.

## **Investment Funds, Monetary Policy, and the Global Financial Cycle**

Christoph KAUFMANN, *European Central Bank*

This paper studies the role of international investment funds in the transmission of global financial conditions to the euro area using structural Bayesian vector auto regressions. While cross-border banking sector capital flows receded significantly in the aftermath of the global financial crisis, portfolio flows of investors actively searching for yield on financial markets world-wide gained importance during the post-crisis “second phase of global liquidity” (Shin, 2013). The analysis presented in this paper shows that a loosening of US monetary policy leads to higher investment fund inflows to equities and debt globally. Focussing on the euro area, these inflows do not only imply elevated asset prices, but also coincide with increased debt and equity issuance. The findings demonstrate the growing importance of non-bank financial intermediation over the last decade and have important policy implications for monetary and financial stability.

## The Hidden Dragon: China's Contribution to the Global Cycle

William L. BARCELONA, *Federal Reserve Board*

Danilo CASCALDI-GARCIA, *Federal Reserve Board*

Jasper J. HOEK, *Federal Reserve Board*

Eva Van LEEMPUT, *Federal Reserve Board*

China's economy accounts for 16% of world GDP and has contributed on average more than 30% to global growth in recent years. Yet, China's role as a driver of the fluctuations in the global economy has been largely unexplored, possibly because its official GDP is seemingly uncorrelated with the global cycle. In this paper, we quantify the role of China's economy in driving the global cycle. Specifically, we estimate the impact of China's credit policies on global economic activity and commodity prices. To do so, we first construct measures of China's credit impulse and GDP growth that better capture the volatility of underlying Chinese economic activity. We then estimate a Structural Vector Autoregressive Model (SVAR) to estimate the impact of movements in Chinese economic activity induced by China's domestic credit stimulus on economic activity in the rest of the world. Our results show that China's credit policies since the Great Financial Crisis have played an important role in supporting economic growth, not only in China but also globally. We find that shocks to China's credit policies explain 15% of the movement in world industrial production and 21% of global commodity price movements over two years, which highlights China's importance in contributing to the global cycle.

## **Currency Depreciations in Emerging Economies: A Blessing or a Curse for External Debt Management?**

Boris FISERA, *Charles University*

Menbere Workie TIRUNEH, *Webster Vienna Private University*

David HOJDAN, *Slovak Academy of Sciences*

We investigate the long-term effect of domestic currency depreciation on external debt for a panel of 41 emerging economies over the years 1999-2019 based on quarterly data. Using heterogeneous panel cointegration methods, we find that domestic currency depreciation leads to an increase in the external debt to GDP ratio over the long-term and it reduces the sustainability of external debt. This is particularly the case for larger depreciations, while smaller depreciations might reduce the external debt burden over the long-term for more developed emerging economies. Poorer emerging economies face a greater increase in external debt burden following domestic currency depreciation. We also find that higher exchange rate volatility and the use of floating exchange rates contribute to an increase in external debt burden over the long-term. Consequently, our results suggest that for emerging economies, having more volatile and floating exchange rates reduces the sustainability of external debt. We find asymmetric effects of exchange rate depreciation on external debt: greater central bank independence limits the effect of currency depreciation on external debt, while higher financial development and illicit financial flows augment the effect of depreciation on external debt.



**Assessing the Sources of Heterogeneity in Eurozone Response to  
Unconventional Monetary Policy**

Komlan Eli AGBA, *CeReFiM-University of Namur*

Jean-Yves GNABO, *CeReFiM-University of Namur*

Hamza BENNANI, *EconomiX-University Paris Nanterre*

Following the Global Financial Crisis and the euro area Sovereign Debt Crisis, several papers study the impact and effectiveness of the European Central Bank's Unconventional Monetary Policy. However, in most cases their attention was devoted to the reaction in the countries or sectors at the aggregate level. We assess the reaction at a more disaggregated level by looking at the impact on 17 sectors inside each country of the euro area. Adopting an event-study methodology coupled with an ordered probit regression, we explain the reaction of each sector with some bank-level and country-level variables. Our main findings show that variables related to the nature of banking industry (e.g. cost-to-income, return on assets, and credit risk), macroeconomic environment (e.g. gross debt) and macroprudential policy all contribute to observe diverging responses to ECB's monetary policies. While some sectors and countries responded more negatively than positively to the policies, the Unconventional Monetary Policy impacts the markets positively overall.

**The Effects of Euro Area Labour Market Reforms: Evidence from a  
Narrative Panel VAR**

Gerhard RÜNSTLER, *CeReFiM-University of Namur*

Using new quarterly narrative evidence, this study examines the macroeconomic impact of reforms of unemployment benefits schemes and employment protection legislation (EPL) in the euro area from a Bayesian narrative panel VAR. Liberalising reforms result in a decline in wages and a gradual increase in economic activity and employment. For EPL reforms the full impact materialises only after 6 years. EPL reforms related to regular employment in countries heavily affected by the 2009 financial crisis raised employment by close to 1%, while the impact of reforms to temporary employment contracts is small and depends on the state of the business cycle.

## Structural Changes in the Job Ladder and the Flattening of the Phillips Curve

Riccardo ZAGO, *Banque de France*

Daniele SIENA, *Banque de France*

Routine jobs are destroyed every time an economy enters in a recession (Jaimovich and Siu (2020)). This paper shows that such a structural change in the composition of the job ladder –triggered and matured during a crisis– has important implications for inflation dynamics and the Phillips Curve (PC). Using data from the European Monetary Union, we show that countries experiencing a bigger shift in the occupational structure during a downturn exhibit slow inflation recovery and a flatter PC afterward. In particular, we estimate that the shift in the composition of the job ladder during the Great Recession and the following Sovereign Debt Crisis jointly explain 34% of the flattening of the PC between 2002 and 2018. We reconcile this evidence with a New Keynesian DSGE Model accounting for heterogeneity in the labor market. Different wage flexibility is underneath the flattening of the PC generated by both an endogenous and exogenous shift towards non-routine employment during recessions.

**Labour Shares in the EU: Cross-Country Heterogeneity and Cross-Sectional Dependence**

Ilias KOSTARAKOS, *Economic and Social Research Institute*

The stability of the labour share of income, which has been a key component of modern macroeconomic analysis, has recently been challenged. This paper, contrary to common wisdom, shows that the labour share in the EU followed an upward, rather than a declining, trend over the last 25 years. Moreover, using recently developed panel time series estimators that account for heterogeneity and the impact of global common shocks, it empirically assesses the validity of alternative theories in an attempt to identify the determinants of the labour share. The empirical results indicate that capital deepening does not have a statistically significant impact on the labour share. Moreover, they lend support to theories based on the impact of government activity and market concentration.

## **Drivers of Portfolio Capital Flows before and after the Global Financial Crisis: Have They Changed?**

Tjeerd BOONMAN, *Monmouth University*

There has been a long-running debate on whether capital inflows are influenced by global indicators (push factors) or domestic factors (pull factors). The choice of the individual indicators within these two categories themselves can disclose more information on the mechanisms that drive capital flows. These determinants of capital flows are likely to change over time, particularly after a high impact event such as the 2008–2009 Global Financial Crisis (GFC). Have the drivers of capital flows changed since the GFC, and if affirmative, how? Have international investors switched attention to more risk-oriented indicators in the aftermath of the GFC? This paper identifies and compares the determinants of portfolio capital inflows in the pre-GFC period (1996-2007) and in the post-GFC period (2011-2019) for 77 countries. I use the Bayesian Model Averaging (BMA) method, a data-driven process, to identify robust determinants of portfolio capital inflows, separately for advanced economies and for emerging market economies. I find that the determinants are indeed different in the two periods, with the exception of global risk aversion for EMEs that is robust in both periods. I also find that for both AEs and EMEs, there is a shift towards more risk-related indicators in the post-GFC period.

### **Capital Flows-at-risk: Push, Pull and the Role of Policy**

Fernando EGUREN-MARTIN, *Bank of England and University of Oxford*

Cian O'NEILL, *Bank of England*

Andrej SOKOL, *European Central Bank, Bank of England and CfM*

Lukas von dem BERGE, *Bank of England*

We characterise the probability distribution of capital flows for a panel of emerging market economies conditional on information contained in financial asset prices, with a focus on 'tail' events. Our framework, based on quantile regression methodology, allows for a separate role of push and pull-type factors, and offers insights into the term-structure of these effects. We find that both push and pull factors have heterogeneous effects across the distribution of capital flows, with the strongest reactions in the left tail. Also, the effect of changes in pull factors is more persistent than that of push factors. Finally, we explore the role of policy, and find that macroprudential and capital flow management measures are associated with changes in the distribution of capital flows.

## **Feeling the Heat: Climate Risks and the Cost of Sovereign Borrowing**

John BEIRNE, *Asian Development Bank Institute*

Nuobu RENZHI, *Asian Development Bank Institute*

Ulrich VOLZ, *SOAS University of London and German Development Institute*

This paper empirically examines the link between the cost of sovereign borrowing and climate risk for 40 advanced and emerging economies. Controlling for a large set of domestic and global factors, the paper shows that both vulnerability and resilience to climate risk are important factors driving the cost of sovereign borrowing at the global level. Overall, we find that vulnerability to the direct effects of climate change matter substantially more than climate risk resilience in terms of the implications for sovereign borrowing costs. Moreover, the magnitude of the effect on bond yields is progressively higher for countries deemed highly vulnerable to climate change. Impulse response analysis from a set of panel structural VAR models indicates that the reaction of bond yields to shocks imposed on climate vulnerability and resilience become permanent after around 12 quarters, with high risk economies experiencing larger permanent effects on yields than other country groups.

**Within-firm wage disparity: The important role of director tenure**

Manthos D. DELIS, *Montpellier Business School*

Iftekhhar HASAN, *Fordham University*

Panagiotis N. POLITSIDIS, *Audencia Business School and European Banking  
Institute*

Anthony SAUNDERS, *Leonard N. Stern School of Business*

This paper highlights the important role of director tenure for shaping within-firm wage disparity. By examining more than 2,700 US firms during the 1996-2019 period, we document that greater time in the role for executive directors raises within-firm wage disparity through an increase in the average director compensation and a decrease in the average employee salary. We find that this effect is contingent on directors' social values, as we observe lower disparities in boards where directors have cultural backgrounds that promote altruism. Finally, we point to the moderating role of the compensation committee, the level of industry competition and the strength of corporate governance.



## **Bank Capital Requirements, Lending Supply and Economic Activity**

Antonio M. CONTI, *Bank of Italy*

Andrea NOBILI, *Bank of Italy*

Federico M. SIGNORETTI, *Bank of Italy*

We evaluate the relation between bank capital, lending supply and economic activity using Italian data over 1993-2015, a period which covers three key post-crisis regulatory and supervisory measures (the Basel III reform; the 2011 EBA Stress test; the ECB's Comprehensive Assessment and launch of the Single Supervisory Mechanism – SSM). We quantify the effects of increased bank capital requirements adopting a novel procedure which recovers the size of the policy actions relying on scenario analysis and Bayesian VARs with a rich characterization of the banking sector. We document that the EBA and SSM measures unpredictably raised Tier 1 ratio by about 2.5 percentage points, leading to an average reduction in credit to firms and households by 5 and 4%, respectively, and to a decline in real GDP by over 2 and 4%. The Basel III bank capital increase is instead correctly anticipated in out-of-sample forecasting. These findings are robust to time-varying model parameters and consistent with narrative sign restrictions techniques.

## On the Macroeconomic Effects of Shadow Banking Development

Georgios MAGKONIS, *University of Portsmouth*

Eun Young OH, *University of Portsmouth*

Shuonan ZHANG, *University of Portsmouth*

We build and estimate a dynamic stochastic general equilibrium model with risky innovation and shadow credits to study the macroeconomic implications of shadow banking (SB), particularly on productivity. Our analysis is motivated by negative relationships between SB development and innovation outcome or total factor productivity (TFP) growth. In our model, information asymmetry associated with technology utilization leads to an agency problem in which shadow intermediation reduces banks' incentives to screen project quality. An SB boom crowd-out traditional financial services, decreases innovation quality and technology efficiency, and thereby reduces TFP. In the light of model mechanisms, we analyse cross-country differences and deliver important implications of SB. SB development mainly driven by financial factors (e.g., the US case) leads to significant loss on TFP while that relatively prompted by real-sided factors (e.g., China and the EA cases), could be less harmful.

## **LSIs' Exposures to Climate Change Related Risks: An Approach to Assess Physical Risks**

Maria Sole PAGLIARI, *Banque de France*

This paper proposes an approach to estimate the impact of adverse climatic events on the profitability of small European banks (LSIs). By considering river flooding phenomena, we construct a unique database matching the information on location, frequency and severity of floods with the location and balance sheet data of institutions mainly operating in the areas where they are headquartered (territorial LSIs). We compare the performance of territorial LSIs across regions at low and high flooding risk and test for the "core lending channel" hypothesis, whereby lending to the real economy is a catalyst of physical risks. Results show that an adverse event dropping loans to households and non-financial corporations by one percentage point (pp) of total assets entails a decrease in the Return on Assets (ROA) of territorial LSIs in riskier areas by 0.01pps (~3.1%). Moreover, if all territorial LSIs were located in riskier areas, one bank out of two would report an average ROA between 0.0001 and 0.52 pps lower than what observed.

## **Firm-Specific Shocks and Contagion: Are Global Banks Special?**

Hannah ENGLJÄHRINGER, *European Central Bank*

Livio STRACCA, *European Central Bank*

This paper builds a unique database of idiosyncratic shocks (events) affecting global banks and car manufacturers (as representative of non-financial firms), and tracks how these influence a number of macroeconomic and firm-specific variables in the short and medium-term. We find that these shocks have large effects on the firms' own equity market valuation, CDS spreads and expected default probabilities, and leave a very persistent trace on these firms' leverage, liquidity and price to book ratio. On the other hand, contagion across firms in both sectors is generally small, suggesting that the high degree of equity price comovement across firms is driven by common shocks. Surprisingly, we find that spill-overs of global bank-related events are not significantly different from the car sector, suggesting that, at least from this perspective, banks are not unusually interconnected. Finally, we also investigate whether our events are "granular", i.e. influencing aggregate variables such as the VIX, equity indexes and key exchange rates, and at least in some cases they are.

**Bank IPOs, Political Connections and De(Regulations)**

Maria-Eleni AGORAKI, *University of the Peloponnese*

Dimitrios GOUNOPOULOS, *University of Bath*

Georgios P. KOURETAS, *IPAG and Athens University of Economics and Business*

Using regulations as an exogenous shock we provide causal evidence on their impact on the risk-taking, soundness, value, and performance of banks. Our results suggest that banking regulations enhance market discipline and empower the supervisory power of the authorities. The integrity of the going public process improves and the offer price capture more accurate the actual value of the bank. IPOs listed under strict regulatory framework experience lower level of underpricing and secure survivability in the long term. We attribute our results to intense monitoring which states that regulations that promote market discipline will result in better outcomes for the banking sector.

## **Uncertainty Shocks and Business Cycles in the US: New Insights from the Last Three Decades**

Oussama HOUARI, *University of Poitiers and University of Tours*

By distinguishing between financial, macroeconomic and policy uncertainty, the paper investigates the impact of uncertainty on macroeconomic dynamics in the US during 1990- 2018. Using a structural model, our findings suggest that uncertainty generates a deep and persistent contraction of output and investment. The financial uncertainty seems to be the only uncertainty measure having important effects on both real economy and the financial system. These effects are transmitted through various mechanisms, i.e. real-options, precautionary savings and financial frictions. Our results suggest also that political uncertainty is the least significant compared to VIX and macroeconomic uncertainty. Finally, we show that high financial uncertainty is consistently translated into high economic-policy uncertainty, whereas the opposite causality direction is not confirmed. In terms of policy implications, our results advocate the importance of an active policy-mix, supposing that monetary and fiscal policies have to fight specifically against a rise in financial uncertainty in order to preserve the stability of macroeconomic and financial system.

## **Financial System Heterogeneity and FDI Flows: Evidence from OECD Economies**

Konstantinos DELLIS, *University of Piraeus*

Foreign direct investment (FDI) has grown dramatically as a major form of international capital transfer over the past decades. The unprecedented growth of cross-country FDI flows has been attributed to a rich set of economic, geographical and institutional factors. In this paper we examine the role of financial system heterogeneity as a potential detrimental factor to FDI flows across OECD economies. To do so, we use a panel dataset of the most recently updated bilateral FDI data at the country level according to OECD BMD4 definition and construct measures of financial distance using a broad set of financial indicators. The econometric approach consists of a gravity-style model, estimated according to the latest advancements in econometric techniques in order to avoid omitted variable bias. The results indicate that financial system similarity is associated with increased bilateral FDI flows, a conclusion that is robust across different estimation strategies and financial distance measures. This insightful policy implication for advanced economies is that the restructuring of the financial system and harmonization to best practices can contribute to economic recovery through the FDI channel as well. Finally, the results highlight the importance for the full implementation of the Banking Union and the Capital Markets Union in the EU.

### **Microfinance, Competition and Growth**

Asma BOUSSETTA, *University of Orleans*

El Moctar LAGHLAL, *University of Orleans*

Réda MARAKBI, *University of Artois*

This paper analyzes the relationship between microfinance, competition and growth in a sample of 119 countries over the period 1999-2018. Our results are fourfold. First, we show that microfinance increases economic growth. Second, we identify investment as the main channel explaining the positive effect of microfinance on growth. Third, our study highlights that the conventional financial sector and microfinance are substitutes and not complements in emerging and developing countries. Finally, we show that competitive microfinance markets allow increasing the positive effect of microfinance on growth.



## **Bubbles, Endogenous Growth and Financial Stability**

Arthur GALICHÈRE, *University of Glasgow*

This paper studies the dynamic ownership of risky asset price bubbles and its implications for financial stability and real activity in a heterogeneous agent model with occasionally binding borrowing constraints. It shows that the intensity of the banking crisis and the quantitative effects on real activity are mostly determined by both the overall contamination of the heterogeneous banking sector and the individual exposure of banks to the risky bubble. The more banks fail following the burst of the bubble, the deeper is the recession and the slower is the recovery. Importantly, the dynamics of bubble growth matters for financial stability: banks prefer to invest in the bubble at the beginning of its development, which makes this period extremely vulnerable to financial shocks. Although a banking supervision rule that dampens the impact of the bursting bubble should be very strict at the beginning of the bubble's growth, such rule weakens the financial health of the banks and makes them more vulnerable to economic shocks.

## The Optimal Level of Government Debt and Wealth Inequality

Daria MATVIIENKO, *Higher School of Economics, International Laboratory for Macroeconomic Analysis*

Rapidly growing public debt to GDP in the U.S. makes the question of the optimal level of public debt extremely relevant. The answer to this question will help to explore whether the U.S. government should conduct a contractionary fiscal policy in order to reduce the debt burden and increase social welfare or there should be no concerns about the level of the government debt to GDP. To address this issue correctly it is important to consider heterogeneous agents model instead of the model with a representative agent to account for more realistic wealth and income distributions. The model in this paper is mainly based on the works of Aiyagari, McGrattan (1998) and Achdou et al. (2017, 2020). It is conducted in continuous time, using such tools as the Hamilton-Jacobi-Bellman equation, Kolmogorov forward equation with finite differences approach. To calibrate the income distribution in the model, I used the NMAR process for Markov transition matrix discretization, which differs from the standard lognormal income process widely used in the literature. This paper also augments the literature by introducing a portfolio choice in heterogeneous agents model with government debt, as well by accounting for the rare jump shock hitting the whole economy. This makes the work extremely relevant for the analysis of the current worldwide crisis. Optimality of the government debt here is considered in the context of social welfare maximization, taking into account the wealth and income distributions, as well as incompleteness of markets because of the borrowing constraints. In the result of the analysis, I have obtained that the optimal level of government debt to GDP in the U.S. ranges from 120% to 140%, which is in line with the related literature.

## Macroprudential Policies and Brexit: A Welfare Analysis

Margarita RUBIO, *University of Nottingham*

Brexit will bring many economic and institutional consequences. Among other, Brexit will have implications on financial stability and the implementation of macroprudential policies. One immediate effect of Brexit is the fact that the United Kingdom (UK) will no longer be subject to the jurisdiction of the European Supervisory Authorities (ESAs) nor the European Systemic Risk Board (ESRB). This paper studies the welfare implications of this change of regime, both for the UK and the European Union (EU). By means of a Dynamic Stochastic General Equilibrium model (DSGE), I compare the pre-Brexit scenario with the new one, in which the UK sets macroprudential policy independently. I find that, after Brexit, the UK is better off by setting its own macroprudential policy without taking into account Europe's welfare as a whole. Given the small relative size of the UK, this implies just slight welfare loss in the EU.

## **When could Macroprudential and Monetary Policies be in Conflict?**

Gregory LEVIEUGE, *Banque de France and University of Orleans*

Jose David Garcia REVELO, *University of Orleans*

This paper aims to provide a comprehensive analysis of the potential conflicts between macroprudential and monetary policies within a DGSE model with financial frictions. The identification of conflicts is conditional on different types of shocks, different policy instruments, and different policy objectives (variance of key variables, probability of a crisis, growth-at-risk). We first find that conflicts are not systematic but are fairly frequent, especially in the case of supply-side and widespread shocks such as technology and bank capital shocks. Second, monetary policy and countercyclical capital requirements generate conflicts in many circumstances. By affecting interest rates, they both “get in all the cracks”, albeit with their respective targets generally moving in opposite directions. Nonetheless, monetary policy could reduce its adverse financial side effects by responding strongly to the output gap. Third, loan-to-value caps, as sector-specific instruments, cause few conflicts. Thus, they can be easily implemented without concerns about generating potential spillovers, whereas smooth coordination is required between the implementation of capital requirements and of monetary policy.

## Public Pension System and Fiscal Devaluation

Matthias SCHÖN, *Deutsche Bundesbank*

Kilian RUPPERT, *Deutsche Bundesbank*

Nikolai STÄHLER, *Deutsche Bundesbank*

This paper studies optimal fiscal policy in a New Keynesian two-region general equilibrium framework, that is augmented with overlapping generations. The framework is used to assess a change in the financing structure of public pay-as-you-go pension systems, i.e. a shift from direct (labour income) taxation to indirect (consumption) taxation. This change, known as fiscal devaluation, shifts partially the tax burden from domestic to foreign producer and lowers marginal costs of domestic production. Additionally, the partial postponement of a household's tax burden to retirement leads to higher savings and increases the domestic assets. Calibrated to Germany and the Euro area, the model shows that the change in taxation increases domestic output and consumption by 4% and by 3%, respectively. The overlapping generation household structure also allows analysing the distributional effects of the fiscal devaluation. The quantitative model shows that households already retired suffer welfare losses due to tax restructuring.

**Monetary Policy Announcements, Information Shocks, and Exchange Rate Dynamics**

Daniel GRÜNDLER, *University of Innsbruck*

Eric MAYER, *University of Würzburg*

Johann SCHARLER, *University of Innsbruck*

We study nominal exchange rate dynamics in the aftermath of U.S. monetary policy announcements. Using high-frequency interest rate and stock price movements around FOMC announcements, we distinguish between pure monetary policy shocks and information shocks, which are associated with new information contained in the announcements. Contractionary pure policy shocks give rise to a strong, but transitory, appreciation on impact. Information shocks also depreciate the exchange rate, but the effect builds up only slowly over time and is highly persistent. Thus, we conclude that although the short-run effects on the exchange rate are due to pure policy shocks, most of the medium-run response is driven by information effects.

**Trilemma under the Yoke of Dominant Currency Paradigm?**

Vanessa Olakemi DOVONOU, *University of Orleans*

Economies are exposed to the macroeconomic fluctuations of the countries they have exposure to. Many international transactions in terms of trade and debt denomination are performed in selected currencies (US dollar, Euro). We analyze how these exposures and the use of these key currencies affect countries' monetary autonomy and hence the traditional Trilemma.

## **Firm Turnover in the Export Market and the Case for Fixed Exchange Rate Regime**

Masashige HAMANO, *Waseda University*

Francesco PAPPADA, *Bank of France*

This paper revisits the case for flexible vs. fixed exchange rate regime in a two-country model with firm heterogeneity and nominal wage rigidity under incomplete financial markets. Dampening nominal exchange rate fluctuations simultaneously stabilizes the firm turnover in the export market. When firms are homogeneous and low productive, the fixed exchange rate regime dominates the flexible one because it reduces the fluctuations in labor demand arising from entry and exit of exporters following a demand shock. We also show that an alternative regulation policy in the export market does not rule out the possible adoption of a managed floating regime.



## Foreign Exchange Market Effects of Monetary Policy Announcements

Joscha BECKMANN, *University of Greifswald*

Thomas NITSCHKA, *Swiss Central Bank*

This paper provides a novel and comprehensive perspective on the effects of monetary policy announcements and meetings on the foreign exchange market. We are the first to assess the effects on order flows, trading volumes and spot rates based on a novel dataset from CLS Bank. Our sample covers the period from 2011 until 2018, including several important events in the context of unconventional monetary policy. We identify several transmission channels and find that the response of trading volume for spot, forward and swaps differs significantly. Monetary policy announcements also affect the net buying pressure (order flow) on the foreign exchange market and influence the link between both trading volumes and order flow to movements of spot exchange rates.

## **Bank IPOs and Regulations: Cross-Country Evidence**

Maria-Eleni AGORAKI, *University of Peloponnese*

Dimitris GOUNOPOULOS, *University of Bath*

Georgios KOURETAS, *IPAG and Athens University of Economics and Business*

Using regulations as an exogenous shock we provide causal evidence on their impact on the risk-taking, soundness, value, and performance of banks. Our results suggest that banking regulations enhance market discipline and empower the supervisory power of the authorities. The integrity of the going public process improves and the offer price capture more accurate the actual value of the bank. IPOs listed under strict regulatory framework experience lower level of underpricing and secure survivability in the long term. We attribute our results to intense monitoring which states that regulations that promote market discipline will result in better outcomes for the banking sector.

**Verbal Interventions by Various Officials of the Bank of Russia and Interest Rate Dynamics**

Oleg TELEGIN, *National Research University Higher School of Economics*

This paper aims to study the impact of the communication policy of the Bank of Russia on the Russian interest rates structure from 2014 to 2017 under transition to inflation targeting. All statements by various Central Bank officials, press service releases as well as published results of studies made by the Bank of Russia departments were taken as an object of study. To explore the structure of interest rates in the economy of the Russian Federation, the values of the zero-coupon yield curve of the Moscow Exchange were investigated. The results of the evaluation of various models of ARIMA, ARCH and GARCH, including asymmetric components, showed that the market reaction may depend on the personalities who made the statement. Market participants also perceive differences in the topic and the tone of statements. As well as market participants have at their disposal information on the areas of responsibility of certain officials of the Board of Directors of the Bank of Russia. In addition, the paper considers proposals to improve the effectiveness of communication policy taking into account the identified imperfections in the current policy.

## The Diplomacy Discount in Global Syndicated Loans

Gene AMBROCIO, *Bank of Finland*

Xian GU, *Durham University Business School*

Iftekhhar HASAN, *Fordham University*

Panagiotis Nikolaos POLITSIDIS, *Audencia Business School*

We investigate whether state-to-state political ties with a global superpower affects the pricing of international syndicated bank loans. We find statistically and economically significant effects of stronger state political ties with the United States, arguably the most dominant global superpower of our times, on the pricing of global syndicated loans. A one standard deviation improvement in state political ties between the U.S. and the government of a borrower's home country is associated with 13.5 basis points lower loan spread. This is equivalent to a cumulative savings in loan interest payments of about 10 million USD for the average loan in our sample. The effect of political ties on loan pricing is also stronger when lead arrangers are U.S. banks, during periods in which the U.S. is engaged in armed conflicts such as in the Afghan, Iraq and Syrian wars, when the U.S. president belongs to the Republican Party, and for borrowers with better balance sheets and prior lending relationships. Notably, we find that not all firms equally benefit, as cross-listed firms and firms in countries with strong institutional quality and ability to attract institutional investors are much less affected by political ties in lowering their borrowing costs.

