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Work Experience

2018 – present **Monetary and Capital Markets Department (MCM/GS), International Monetary Fund**
Financial Sector Expert

- Stress test and scenario design to assess fragility in nonbank financial institutions including mutual funds, insurance companies, and pension funds
- Monitor overvaluation in the real estate sector and spillover risk to the banking system
- Constructed the Financial Conditions Index to forecast tail risk in house prices and GDP
- Designed factor-models to assess overvaluation across major asset classes
- Coauthored "Asset Price Fragility in Times of Stress: The Role of Open-End Investment Funds" chapter in the Oct 2022 Global Financial Stability Review (GFSR)
- Led "Sovereign-Bank Nexus in Emerging Markets: A Risky Embrace" chapter in the April 2022 Global Financial Stability Review (GFSR)
- Led "Commercial Real Estate: Financial Stability Risks During the COVID-19 Crisis and Beyond" chapter in the April 2021 Global Financial Stability Review (GFSR)
- Coauthored "Liquidity Strains Cushioned by a Powerful Set of policies" chapter in the Oct 2020 Global Financial Stability Review (GFSR)
- Coauthored "Climate Change: Physical Risk and Equity Prices" chapter in the Apr 2020 Global Financial Stability Review (GFSR)
- Coauthored "Bank Dollar Funding and Financial Stability" chapter in the Oct 2019 Global Financial Stability Review (GFSR)
- Coauthored "Downside Risks to House Prices" chapter in the Apr 2019 Global Financial Stability Review (GFSR)
- Participated in IMF Financial Sector Assessment Programs (FSAP) to Hong Kong SAR and Japan

2016 – 2018 **Systemic Risk and Financial Institutions, European Central Bank**
Research Analyst/Expert

- Proposed and constructed a composite index of systemic risk to predict negative GDP shocks using time-varying factor models and quantile regressions
- Measured interbank contagion risk by applying agent-based network models to bilateral exposures between euro area banks
- Modeled the term structure implications of negative interest rate policy
- Quantified the effects of loan market concentration on firm loan rates

2016 -2017 **Research Department, Deutsche Bundesbank**
PhD Trainee

- Modeled and estimated the impact of interbank market frictions on firm loan supply
- Conducted policy analysis on banks' strategic choice of network position
- Designed machine learning algorithms for the harmonization of supervisory data

Education

- 2023 **Yale Program for Financial Studies Systemic Risk Institute**
IMF Representative
- 2013 – 2017 **University of Florence, University of Pisa and University of Siena (Joint Program)**
Ph.D., Department of Economics and Statistics
- 2007 – 2013 **University of Siena**
B.A. and M.S.c. in Economics, summa cum laude

Research Interests

Financial Intermediation, Monetary Policy, Systemic Risk, Interbank Networks

References

Mahvash Qureshi, Head of Division

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Published Papers

Portfolio Diversification and Systemic Risk in Interbank Networks

Journal of Economic Dynamics and Control, 82, 96-124, 2017

Joint with Stefano Battiston (University of Zurich) and Paolo Tasca (Deutsche Bundesbank)

This paper contributes to a growing literature on the ambiguous effects of risk diversification. In our model, banks hold claims on each other's liabilities that are marked-to-market on the individual financial leverage of the obligor. The probability of systemic default is determined using a passage-problem approach in a network context and banks are able to internalize the network externalities of contagion through their holdings. We study the optimal diversification strategy of banks in the face of opposite and persistent economic trends that are ex-ante unknown. We find that the optimal level of risk diversification may be interior or extremal depending on banks' exposure to external assets and that individual incentives may favor a banking system that is over-diversified with respect to the social optimum.

Working Papers

Predicting Downside Risks to House Prices and Macro-Financial Stability

Joint with Tobias Adrian (IMF), Mitsuru Katagiri (BoJ), Sohaib Shahid (IMF), and Nico Valckx (IMF)

This paper predicts downside risks to future real house price growth (house-prices-at-risk) in 32 advanced and emerging market economies. Through a macro-model and predictive quantile regressions, we show that current house price overvaluations, excessive credit growth, and tighter financial conditions jointly forecast higher house-prices-at-risk up to three years ahead. House-prices-at-risk (HaR) can in turn predict future growth at risk and financial crises. We also investigate and propose policy solutions for preventing the identified risks. We find that overall, a tightening of macroprudential policy is the most effective at curbing downside risks to house prices, whereas a loosening of conventional monetary policy reduces short term downside risks only in advanced economies.

The Sovereign-Bank Nexus in Emerging Markets in the Wake of the COVID-19 Pandemic

Joint with Salih Fendoglu (IMF), Tara Iyer (IMF), Hamid R. Tabarrei (IMF), Yizhi Xu (IMF), and Mustafa Yenice (IMF)

The COVID-19 pandemic has brought the relationship between sovereigns and banks (i.e. the sovereign-bank nexus) in emerging market economies to the fore as bank holdings of domestic sovereign debt have surged. This paper examines the empirical relevance of this nexus to assess how it could amplify macro-financial stability risks. The findings show that an increase in sovereign credit risk can adversely affect banks' balance sheets and credit supply, especially in countries with less-well-capitalized banking systems. Sovereign distress can also impact banks indirectly through the nonfinancial corporate sector by constraining their funding and reducing their capital expenditure. Notably, the effects on banks and corporates are strongly nonlinear in the size of the sovereign distress.

Is Dollar Funding a Source of Global Financial Vulnerability

Joint with Adolfo Barajas (IMF), Claudio Raddatz (IMF), Dulani Seneviratne (IMF), Peichu Xie (IMF), and Yizhi Xu (IMF)

Leading up to the global financial crisis of a decade ago, US dollar activity by global banks headquartered outside the United States played a crucial role in transmitting shocks originating in funding markets. We construct novel measures of US dollar funding structure for the banking systems of 13 economies that are home to global non-US banks at a quarterly frequency between 2000 and 2018 and show that vulnerabilities in US dollar balance sheets can be a source of financial instability. We find that a higher reliance on synthetic US dollar funding amplifies the relationship between a country's cost of synthetic US dollar funding (measured by the cross currency basis) and its main drivers. Crucially, our results show that a higher US dollar liquidity or maturity mismatch amplifies the adverse impact that shocks to US dollar funding costs have on financial stress in the home economies of global non-US banks. Furthermore, we provide evidence of spillovers to third-party borrowers, especially those located in emerging economies, which experience a contraction in cross-border USD financing and additional financial stress.

Corporate Funding and the COVID-19 Crisis

Joint with Dulani Seneviratne (IMF), Tomohiro Tsuruga (IMF), and Jerome Vandenbussche (IMF)

This paper assesses whether corporate liquidity needs in the G7 economies were met during the containment phase of the COVID-19 pandemic (February-June 2020) using various approaches to identify credit supply shocks. The pandemic crisis adversely affected nonfinancial corporate sector cash flows, generating liquidity and solvency pressures. However, corporate borrowing surged in March and into the second quarter, thanks to credit line drawdowns and unprecedented policy support. In the United States, the bond market was buoyant from the end of March onward, but credit supply conditions for bank loans and the syndicated loan market tightened. In other G7 economies, credit supply conditions generally eased somewhat across markets during the second quarter. Among listed firms, entities with weaker liquidity or

solvency positions before the onset of COVID-19, as well as smaller firms, suffered relatively more financial stress in some economies in the early stages of the crisis. Residual signs of strain remained as of the end of June. Policy interventions, especially those directly targeting the corporate sector, had a beneficial effect on credit supply overall.

A Model of Network Formation for the Overnight Interbank Market

Joint with Mikhail Anufriev (University of Technology Sydney), Valentyn Panchenko (University of New South Wales) and Paolo Pin (Bocconi University)

We introduce an endogenous network formation model of the interbank overnight lending market. Banks are motivated to meet the minimum reserve requirements set by the Central Bank but their reserves are subject to random shocks. To adjust their expected end-of-the-day reserves, banks enter the interbank market, where borrowers decrease their expected cost of borrowing with the Central Bank, and lenders decrease their deposits with the Central Bank in an attempt to obtain a higher interest rate from the interbank market while facing counter-party default risk. In this setting, we show that a financial network arises endogenously, exhibiting a unique giant component which is connected but bipartite in lenders and borrowers. The model reproduces features of trading decisions observed empirically in the Italian e-MID market for overnight interbank deposits.

Commercial Real Estate and Macrofinancial Stability During COVID-19

Joint with Junghwan Mok (IMF) and Tomohiro Tsuruga (IMF)

The COVID-19 pandemic crisis has severely shocked the commercial real estate (CRE) sector, which could have important implications for macro-financial stability going forward because of the large size of the sector and its strong interconnectedness with the real economy. Using a novel methodology, this paper quantifies vulnerabilities in the CRE sector and analyzes policy tools available to mitigate related risks. The analysis shows that CRE prices were overvalued in several major advanced economies in 2020:Q1. It also shows that such price misalignments increase the likelihood of future price corrections and exacerbate downside risks to future GDP growth. While the path of recovery in the sector will depend inherently on the pace of overall economic recovery and the structural shifts induced by the pandemic, easy financial conditions may contribute to an increase in financial vulnerabilities and persistent price misalignment. Macroprudential policy can, however, be effective in curbing the financial stability risks posed by the CRE sector.

Liquidity in Times of Distress: The Effect of Interbank Network Structure

This paper identifies the importance of market power in the interbank market during times of distress. We show that in the aftermath of the 2008 financial crisis, lending and borrowing in the Italian overnight unsecured interbank market became more sensitive to banks' network position. We fit the observed network to a core-periphery structure and find that highly connected core banks were able to selectively charge higher interest rates on loans to and pay lower interest rates on loans from sparsely connected periphery banks over the course of the crisis. We use link level variation to verify that the differences stem from banks' network contingent market power. This demonstrates banking sector interconnectedness as a source of market illiquidity and sheds light on the effective design of central bank liquidity policy.

Policy Work

US Dollar Funding and Emerging Market Economy Vulnerabilities

Joint FSB-IMF publication, 2022

This report presents the findings of the FSB-IMF work on the interaction between US dollar (USD) funding and external vulnerabilities in emerging market economies (EMEs). The report, which forms part of the FSB's work programme on non-bank financial intermediation, takes stock of recent trends in the structure of EMEs' external borrowing, focusing on the shift towards nonbank financing; examines how

these developments contributed to the build-up of vulnerabilities in EMEs and to the USD funding stress during the March 2020 turmoil; and draws policy implications about measures to enhance EME resilience in order to lessen the impact of future episodes of stress

Commercial Real Estate Prices During COVID-19: What is Driving the Divergence?

Joint with Fabio Natalucci (IMF) and Mahvash Qureshi (IMF). Published as Global Financial Stability Note, 2022/002.

After dropping sharply in the early phases of the COVID-19 pandemic, commercial real estate prices are on the mend. However, the initial price decline, as well as the pace of recovery, vary widely across regions and different segments of the commercial real estate market. This note analyzes the factors that explain this divergence using city-level data from major advanced and emerging market economies. The findings show that pandemic-specific factors such as the stringency of containment measures and the spread of the virus are strongly associated with a decline in prices, while fiscal support and easy financial conditions maintained by central banks have helped to cushion the shock. A higher vaccination rate has aided the recovery of the sector, especially in the retail segment. Structural changes in private behavior such as the trend toward teleworking and e-commerce have also had an impact on commercial property prices in some segments. The outlook of the sector across regions thus remains closely tied to the trajectory of the pandemic and broader macroeconomic recovery, financial market conditions, and the pace of structural shifts in the demand for specific property types. In an environment of tightening financial conditions and a slowdown in economic activity, continued vigilance is warranted on the part of financial supervisors to minimize financial stability risks stemming from potential adverse shocks to the sector.

Financial System Stability Assessment Program (FSAP): People's Republic of China—Hong Kong Special Administrative Region

Country Report No. 2021/102

The Hong Kong SAR FSAP identified the extensive linkages to Mainland China, stretched real estate valuations, and exposure to shifts in global market and domestic risk sentiment, compounded by escalating U.S.-China tensions, as the main macro-financial risks. Stress tests conducted by the FSAP show that the financial system is resilient to severe macro-financial shocks and the banking system is also resilient to liquidity stress, but there are pockets of vulnerabilities in foreign bank branches, investment funds, households, and nonfinancial corporates. Accordingly, the FSAP made recommendations for enhancing oversight over banking groups with both foreign branches and local subsidiaries in Hong Kong SAR, heightening monitoring of liquidity risk for banks operating with multiple group entities, and ensuring that internal risk models to monitor lending to Mainland China are sufficiently forward looking.

Strains in Offshore US Dollar Funding during the COVID-19 Crisis

Joint with Adolfo Barajas (IMF), Salih Fendoglu (IMF) and Yizhi Xu (IMF). Published as Global Financial Stability Note, 2020/001

This note analyzes recent trends in offshore US dollar funding markets and explores the drivers of dollar funding costs during the COVID-19 pandemic crisis. Preliminary evidence suggests that only part of the sharp increase in observed dollar funding costs can be attributed to the standard supply- and demand-side factors analyzed in the October 2019 Global Financial Stability Report (GFSR), including the dollar funding fragility of non-US global banks. Changes in market structure since the global financial crisis, as well as heightened uncertainty and tensions in the commercial paper market, may provide further explanations for the movements in dollar funding costs in late March 2020. The US Federal Reserve's swap line arrangements have helped lessen strains in dollar funding markets, but funding pressure remains significant for some emerging market economies, notably those without access to the swap lines. Furthermore, tighter dollar funding conditions appear to have accompanied increases in financial stress in the home economies of affected non-US global banks and to have generated adverse spill-over effects in the form of cutbacks in cross-border lending.

A new financial stability risk index to predict the near-term risk of recession

Joint with Peter Welz (ECB), Dawid Zochowsky (ECB). Published as part of the Financial Stability Review May 2018.

This paper estimates the predictive power of systemic risk buildup on the probability of future macroeconomic downturns. We first put forward a broad range of individual indicators to capture fluctuations in non-financial imbalances, financial vulnerability, risk appetite and systemic risk. To efficiently aggregate information across indicators, we then construct a composite index of systemic risk through semiparametric dimension reduction. Increases in the composite index robustly forecast future drops in the distribution of economic activity. A one standard deviation increase in the index predicts that the 20th percentile of the GDP growth shock distribution shifts downwards by 71

The Effects of Negative Interest Rates on Interbank Markets

Joint with Yiming Ma (Stanford GSB) and Livia Polo Friz (ECB)

We show that the effects of negative interest rates are amplified through the unsecured interbank market. As retail deposit rates are floored at zero while asset returns track policy rates, reliance on retail deposits shrinks net returns, lowers bank capital and raises the cost of external financing. Banks relying more heavily on retail deposits face stronger downward pressure on net interest margins and reduce lending to other banks in the unsecured money market by more. However, deposit reliant banks also tend to be more profitable and better capitalised to begin with, alleviating the net adverse impact of negative rates.

Awards

- Research Grant, FET Project Financial Systems Simulation and Policy Modelling (SIMPOL) (2015)
- Pegaso PhD Scholarship (Top 5 PhD Candidates) (2013-2016)
- Italian Ministry of Foreign Affairs Scholarship (2012)
- DSU scholarship (2007-2010)

Visiting Positions

- Stanford GSB (Spring 2017)
- University of Zurich (Spring 2015)
- University of New South Wales Business School (Fall 2014)
- Isaac Newton Institute for Mathematical Sciences Cambridge University (Winter 2014)

Programming

Matlab, Python, Stata, Mathematica, R, Bloomberg

Personal Information

D.O.B. Oct 3, 1988
Citizenship Italian
Languages Italian (Native), English (Fluent), German (Intermediate), French (Elementary)

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