

# On the Causes of Ineffectiveness of Monetary Policy: Inability to Refinance vs. Voluntary Deleveraging

Marco Di Maggio (Columbia Business School) and Amir Kermani (UC Berkeley)

---

Despite the unconventional monetary policy measures adopted by the Federal Reserve and five years after the financial crisis, we still observe many households being underwater, high unemployment rate and low growth. In this paper, we plan to investigate the inability of underwater households to benefit from low interest rates and how their precautionary saving motive made monetary policy less effective.

The conventional wisdom argues that monetary policy can affect firms' investment and households' consumption by reducing the cost of external finance. However, a number of contractual frictions might determine the extent to which changes in monetary policy actually affect debt service and the cost of finance for households and firms. When debt contracts are rigid, such as the case with most fixed-rate mortgage financing, changes in the interest rates have little direct effect on consumption and investment decisions at the intensive margin, because only new potential borrowers are going to be affected by these policy changes. In fact during the recent years, banks remained unwilling to refinance mortgages on homes that are worth less than the amount owed on them. This resulted in a very limited pass-through of lower interest rates to households. The ineffectiveness of lowering interest rates suggests that the recession and the weak recovery that followed are as much about the large debts carried by homeowners as they are about a decline in housing wealth.

In order to investigate the role played by financial contracts rigidities in the ineffectiveness of monetary policy, we rely on an important change in the Home Affordable Refinance Program (HARP) that removed loan-to-value requirements for the refinancing of loans insured by GSEs. Since different regions in the US had different fraction of underwater loans that were insured by GSEs, we can investigate the impact of inability to refinance on local consumption and employment as well as house prices and delinquency rates.

The second channel through which monetary policy can become less effective is an increase in the households' precautionary saving motive or what we call *voluntary deleveraging*. In general, we would expect that if households are liquidity constrained, then a decrease in debt service payments is likely to be associated with an increase in consumption. However, the extent to which households' consumption respond to lower debt service payments can be a function of their precautionary saving incentives.

In order to explore this channel, we gathered information on mortgage payments as well as liabilities of more than 10 million households and rely on expected changes in monthly payments of borrowers with certain type

of adjustable rate mortgages and ask the question of how much of the decline in mortgage payments results in an increase in consumption and to what extent this resulted in faster deleveraging. Our preliminary results show that households use the additional resources from lower monthly payments to decrease their debt holdings as opposed to increasing their consumption.

Finally, we plan to investigate the implications of our findings for the aggregate economy. For this purpose, we plan to complement our data sources with the data from the Panel Study of Income Dynamics (PSID) and the Survey of Consumer Finance (SCF). PSID includes panel data on employment, income, wealth and expenditures of a nationally representative sample of over 18,000 individuals and SCF includes very detailed information about the households' balance-sheet.

**Data:** Our study requires the use of multiple datasets. For the loan-level data and information on liabilities of households we rely on BlackBox database, which includes more than 90 percent of all loans securitized in the US, merged the Equifax data. For the data on local consumption, we use data on car sales from Polk as well as data on non-durable sales from Nielsen. Data from RateWatch is used for information on pricing of loans with different characteristics. For unemployment data we use data from County Business Pattern. Finally, we complement our data by The Panel Study of Income Dynamics (PSID) and the Survey of Consumer Finance (SCF). A cleaned version of this data, with an emphasis on the information about households' mortgage liabilities will be made available on the authors' websites.

**Budget:** We are applying for a grant of \$14000.

At least \$10,000 will be devoted to hiring a third-year PhD student, with the potential to become our coauthor, to help us cleaning the data, merging the different sources and performing some preliminary analysis.

The remaining part of the grant will be used towards the purchase of two datasets that would be extremely useful for our analysis. The first is the Loan Report by RateWatch, which provides detailed information about fees and rates for a vast array of loans. The second is a dataset on new car sales by Polk which provides a reliable measure of consumption.

**Timeline:** We expect to be able to have a first draft of the paper by October.

**MARCO DI MAGGIO**  
**COLUMBIA BUSINESS SCHOOL**

Division of Economics and Finance  
Columbia Business School  
3022 Broadway, Uris 819  
New York, NY 10027

Phone: 212-851-0159  
Email: [mdimaggio@columbia.edu](mailto:mdimaggio@columbia.edu)

**ACADEMIC POSITIONS**      Assistant Professor, Columbia Business School      July 2013-present  
Division of Finance and Economics

**EDUCATION**      Massachusetts Institute of Technology (MIT), 2013  
PhD, Economics  
DISSERTATION: "Essays on Amplification Mechanisms in Financial Markets"  
Committee: Daron Acemoglu, Stephen Ross, Abhijit Banerjee and Andrey Malenko  
  
Northwestern University, Visiting Scholar, 2006-2007  
  
University of Naples Federico II, 2003-2008  
Laurea in Economics *summa cum laude* (110/110 *cum laude*)

**RESEARCH INTERESTS**      Corporate Finance, Market Microstructure, Asset Pricing with Frictions

**RELEVANT POSITIONS**      Research Associate, Credit Suisse, New York, NY

**FELLOWSHIPS, HONORS, AND AWARDS**      Inquire Europe Research Grant  
J. A. Chazen Institute of International Business Research Grant  
Dissertation Grant, Shultz Fund  
American Finance Association, PhD Travel Grant  
European Economic Association, Travel Grant  
George and Obie Shultz Fund Grants  
"F. Adipietro" Prize for an outstanding research thesis  
MIT Department of Economics, Supplemental Fellowship  
"Giovanna Crivelli" Fellowship, Unicredit Group  
"Ando-Modigliani" Fellowship, Bank of Italy (declined)

**PROFESSIONAL ACTIVITIES**      *Invited Seminars:*  
Stanford GSB, Chicago Booth, Boston College Carroll, Duke Fuqua, Northwestern Kellogg, Harvard Business School, Columbia Business School, UNC Kenan-Flagler, New York University (Stern), Berkeley Haas, Federal Reserve Boards of Governors, Federal Reserve of New York, Federal Reserve Bank of Philadelphia, EIEF, Collegio Carlo Alberto.

*Other Presentations (\* scheduled):*

NBER Summer Institute Real Estate*	2014
NBER Summer Institute Monetary Economics*	
European Summer Symposium in Economic Theory; Gerzensee*	
International finance and Macro finance Workshop, Sciences Po Paris*	
Barcelona GSE Summer Forum*	
3rd ITAM Finance Conference 2014*	
The Financial Intermediation Research Society Meeting Quebec City*	
Csef-IGIER Conference - June 2014*	
2014 SFS Finance Cavalcade	
Texas Finance Festival   McCombs Business School	
Adam Smith Conference Asset Pricing	
American Finance Association (Asset Pricing Theory)	
Econometric Society (Financial Regulation and Information)	
Sixth Erasmus Liquidity Conference, Rotterdam, The Netherlands	2013
European Finance Association, Cambridge, UK	
Ninth CSEF-IGIER Symposium on Economics and Institutions, Capri, Italy	
SFS Finance Cavalcade, Miami, FL	
Financial Intermediation Research Society, Dubrovnik, Croatia	
North American Summer Meeting of the Econometric Society, Evanston, IL	2012
MOOD 12th Workshop in Economic Theory and Econometrics, Rome, Italy	
CREI-CEPR conference on "Decision Theory and its Applications to Economics and Finance", Barcelona, Spain	
Workshop on Information in Networks, NYU Stern School of Business	2011
NBER Summer Institute 2011, Cambridge, MA	
European Finance Association. Stockholm, Sweden	
European Economic Association, Oslo, Norway	
Conference on The Economics of Intellectual Property, Software and the Internet, Toulouse	
MIT Field Lunch Workshops (Finance, Macroeconomics, Theory, Org. Economics)	

*Referee:*

American Economic Review, Econometrica, Journal of Finance, Review of Economic Studies, Review of Financial Studies, Journal of Economic Theory.

**RESEARCH  
PAPERS**

**“Credit-Induced Boom and Bust” (with Amir Kermani)**

Can a credit expansion induce a boom and bust in house prices and real economic activity? This paper exploits the federal preemption of national banks from local laws against predatory lending to gauge the effect of the supply of credit on the real economy. Specifically, we exploit the heterogeneity in the market share of national banks across counties in 2003 and that in state anti-predatory laws to instrument for an outward shift in the supply of credit. First, a comparison between counties in the top and bottom deciles of presence of national banks in

states with anti-predatory laws suggests that the preemption regulation produced an 11% increase in annual lending. Our estimates show that to this lending increase is associated with a 12% rise in house prices and a 2% expansion of employment in the non-tradable sectors, followed by drops of similar magnitude in subsequent years. Finally, we show that the increase in the supply of credit reduced mortgage delinquency rates during the boom years but increased them in bust years. These effects are even stronger for subprime and inelastic regions.

**“Market Turmoil and Destabilizing Speculation”** *submitted*

This paper explores how speculators can destabilize financial markets by amplifying negative shocks in periods of market turmoil, and confirms the main predictions of the theoretical analysis using data on money market funds (MMFs). I propose a dynamic trading model with two types of investors - long-term and speculative - who interact in a market with search frictions. During periods of turmoil created by an *uncertainty shock*, speculators react to declining asset prices by liquidating their holdings in hopes of buying them back later at a gain, despite the asset's cash flows remaining the same throughout. Moreover, I show that a reduction in trading frictions leads to more severe fluctuations in asset prices. At the root of this result are the strategic complementarities between speculators expected to follow similar strategies in the future. Using a novel dataset on MMFs' portfolio holdings during the European debt crisis, I gauge the strength of funds' strategic interactions as the number of funding relationships each issuer has with MMFs. I show that funds are more likely to liquidate the securities of issuers that have fewer funding relationships with other funds, obliging them to borrow at shorter maturity and higher interest rates.

**“Financial Disclosure and Market Transparency with Costly Information Processing”**  
(with Marco Pagano) *submitted*

We study a model where some investors ("hedgers") are bad at information processing, while others ("speculators") have superior information-processing ability and trade purely to exploit it. The disclosure of financial information induces a trade externality: if speculators refrain from trading, hedgers do the same, depressing the asset price. Market transparency reinforces this mechanism, by making speculators' trades more visible to hedgers. As a consequence, asset sellers will oppose both the disclosure of fundamentals and trading transparency. This policy is socially inefficient if a large fraction of market participants are speculators and hedgers have low processing costs. But in these circumstances, forbidding hedgers' access to the market may dominate mandatory disclosure.

**“Fake Alphas, Tail Risk and Reputation Traps”**

This paper presents a model in which the investment funds' desire to enhance their reputation is decisive in determining the severity of aggregate shocks. Fund managers can generate active returns at a disutility or try to time the market, while investors learn about the manager's skill by observing past returns. During booms, star funds exploit their status by extracting higher rents from investors, while poor performers may end up in a reputation trap, limiting their ability to attract investment. In a crisis, the funds exploit their reputation more frequently and tend to exacerbate fluctuations insofar as in the search for higher short-term returns they expose investors' capital to tail risk. The model's predictions on the effect of volatility, skewness of returns and inflows of funds, are all supported by recent empirical evidence on fund managers' behavior.

**“Information Sharing, Social Norms and Performance”** (with Marshall Van Alstyne) *submitted*

What drives workers to seek information from their peers? And how does communication affect employee performance? We address these questions using an original panel data set that includes all accesses to an information-sharing platform, together with performance measures of all loan officers at a major commercial bank. We show that low skill agents benefit the most from consuming others' information. Moreover, we provide evidence that job rotation destroys specialized human capital, such as soft information about local borrowers. Finally, by instrumenting the demand for information with the exogenous variation arising from differences in social norms among branches, we are able to assess the causal effect of information sharing on performance.

**RESEARCH IN  
PROGRESS**

**“The Unintended Consequences of the Zero-Lower Bound”** (with Marcin Kacperczyk)  
**COMING SOON**

We investigate the effect of the zero-lower bound interest rate policy on money market funds industry. We find that, as the Fed funds rate approaches zero bound, money funds display reaching for yield incentives in that they invest in riskier asset classes and hold less diversified portfolios. The reduction in interest rates also increases the likelihood of funds exiting the market and lowers expenses funds charge to investors. Consistent with the reputation concerns at stake, we find that funds affiliated with large financial institutions are more likely to exit the market while funds managed by independent asset management companies take on relatively more risk. Additional evidence from the Fed's forward guidance policy corroborates the findings.

**AMIR KERMANI**  
[amir@haas.berkeley.edu](mailto:amir@haas.berkeley.edu)

**OFFICE CONTACT INFORMATION**

Haas School of Business  
University of California, Berkeley  
545 Student Services Building #1900  
Berkeley, CA 94720-1900

Phone: 510-664-4139  
[amir@haas.berkeley.edu](mailto:amir@haas.berkeley.edu)  
<http://faculty.haas.berkeley.edu/amir/>

**ACADEMIC POSITION**

Assistant Professor  
Haas School of Business and Department of Economics,  
University of California - Berkeley.

July 2013-present

**EDUCATION**

Ph.D in Economics, Massachusetts Institute of Technology, June 2013.  
M.S. in Economics, London School of Economics and Political Science, June 2008.  
M.S. in Managerial Economics, Sharif University of Technology, June 2007.  
B.S. in Electrical Engineering, University of Tehran, June 2006.

**FIELDS**                      Primary Field: Macroeconomics, Monetary Policy, Real Estate Finance  
Secondary Field: Finance, Political Economy

**RELEVANT POSITIONS**              Graduate Analyst at Federal Reserve Bank of New York,                      2011-2012  
Structured Products Group

**FELLOWSHIPS, HONORS, AND AWARDS**              MIT Department of Economics Fellowship                      2008-2009  
HAND Foundation Scholarship    2008  
Ithmaar Bank Scholarship    2007  
Gold Medal of 33<sup>rd</sup> International Physics Olympiad (IPhO 2002)                      2002

**TEACHING EXPERIENCE**                      ECON 236 B: Aggregate Economics, PhD  
UGBA 183: Real Estate Finance and Securitization, Undergraduate

**RESEARCH PAPERS**                      **“Credit Induced Boom and Bust”** joint with Marco Di Maggio  
Can a credit expansion induce a boom and bust in house prices and real economic activity? This paper exploits the federal preemption of national banks from local laws against predatory lending to gauge the effect of the supply of credit on the real economy. Specifically, we exploit the heterogeneity in the market share of national banks across counties in 2003 and that in state anti-predatory laws to instrument for an outward shift in the supply of credit. First, a comparison between counties in the top and bottom deciles of presence of national banks in states with anti-predatory laws suggests that the preemption regulation produced an 11% increase in annual lending. Our estimates show that to this lending increase is associated with a 12% rise in house prices and a 2% expansion of employment in the non-tradable sectors, followed by drops of similar magnitude in subsequent years. Finally, we show that the increase in the supply of credit reduced mortgage

delinquency rates during the boom years but increased them in bust years. These effects are even stronger for subprime and inelastic regions.

### **“Cheap Credit, Collateral and the Boom-Bust Cycle”**

This paper proposes a model of booms and busts in house prices and consumption driven by the interplay between relatively low interest rates and an expansion of credit, triggered by further decline in interest rates or relaxing collateral requirements. When credit becomes available, households would like to borrow in order to frontload consumption, and this increases demand for housing and non-housing consumption. If the increase in the demand for housing translates into an increase in prices, then credit is fueled further, this time endogenously, both because of the valuation effect (the existing housing stock is now more valuable) and because housing can be used as collateral. Because a lifetime budget constraint still applies, *even in the absence of a financial crisis*, the initial increase in house prices and non-housing consumption will be followed by a period of contraction, with declining consumption and house prices. My mechanism clarifies that boom-bust dynamics will be accentuated in regions with inelastic supply of housing and muted in elastic regions. In line with qualitative predictions of my model, I provide evidence that differences in regions' elasticity of housing and initial relaxation of collateral constraints can explain most of the 2000-2006 boom and the subsequent bust in house prices and consumption across US counties. Quantitative evaluation of the model shows that reversal in the initial relaxation of collateral constraints is important in explaining the sharp decline of house prices and consumption. However, the model shows that most of the decline would have happened even without a reversal in the initial expansion of credit, albeit over a longer period of time.

**“The Value of Political Connections in the United States”**, joint with Daron Acemoglu, Simon Johnson, James Kwak and Todd Mitton.

The announcement of Tim Geithner as President-elect Obama's nominee for Treasury Secretary in November 2008 produced a cumulative abnormal return for financial firms with which he had a personal connection. This return was around 15 percent from day 0 through day 10, relative to other comparable financial firms. This result holds across a range of robustness checks and regardless of whether we measure connections in terms of firms with headquarters in New York City, meetings he had in 2007-08, or non-profit board memberships he shared with financial services executives. There were subsequently abnormal negative returns for connected firms when news broke that Geithner's confirmation might be derailed by tax issues. Roughly in line with market expectations, the Obama administration hired people from Geithner-connected firms into top level financial policy positions. Geithner's policies proved supportive of large financial firms' executives, shareholders, and creditors including for Citigroup, with which he had the strongest prior connections. But the market-perceived quantitative value of connections is broader than just for the too big to fail category. We argue that this value of connections reflects the perceived impact of relying on the advice of a small



network of financial sector executives during a time of acute crisis and heightened policy discretion.

**“Does Skin-in-the-Game Affect Security Performance?**

**Evidence from the Conduit CMBS Market”** joint with Adam Ashcraft and Kunal Gooriah

Does reducing the skin-in-the-game of informed agents matter for the performance of securitized assets? In the conduit commercial mortgage backed securities (CMBS) market, an informed investor purchases the bottom 5 percent of the capital structure, known as the B-piece, conducting independent screening of loans from which all other investors benefit. However, during the recent credit boom, a secondary market for B-pieces developed, permitting these investors to significantly reduce their skin in the game. In this paper, we document, that after controlling for all information available at issue, the percentage of the B-piece that is sold by these investors has a significant adverse impact on the probability that more senior tranches ultimately default. The result is robust to the use of an instrumental variables strategy which relies on the greater ability of larger B-piece buyers to sell these positions given the need for large pools of collateral. Moreover we show the risk associated with this agency problem was not priced.

**RESEARCH IN  
PROGRESS**

**“Securitization Chain: Moral Hazard Exacerbation or Gains from Specialization?”**

A central question related to the recent financial crisis is whether the originate-to-distribute model of financial intermediation exacerbated moral hazard among financial intermediaries and resulted to origination of loans with low quality. In this paper we develop a model of a competitive economy in which financial intermediation requires a combination of screening and monitoring activities. We consider two types of intermediation: when the loan’s originator remains responsible for servicing the loan as well (Affiliated loans) and when the originator outsources the servicing to a specialized servicer (Unaffiliated loans). In the competitive equilibrium, the gains from specialization exceed the cost of separating the originator from the servicer only for loans with lower probability of repayment. The inferior performance of unaffiliated loans results from the optimal market structure rather than providing evidence of lax screening by originators. Evidence from loan-level data supports the model’s predictions. Moreover structural estimation of the model shows specialized servicers were on average 40-70% more efficient in servicing the loans and this, on average, lowered by 20-40 bps the interest rate paid by borrowers with lower credit quality. Regulations banning the separation of servicer from originator would only exclude 1.5-2.5% of borrowers with the lowest quality -- but would result in higher interest rates for more than half of all subprime and Alt-A borrowers.