Nosal, Ed; Waller, Christopher; Wright, Randall

Working Paper
Introduction to the macroeconomic dynamics: Special issues on money, credit, and liquidity

Working Paper, No. 2010-14

Provided in Cooperation with:
Federal Reserve Bank of Chicago

Suggested Citation: Nosal, Ed; Waller, Christopher; Wright, Randall (2010) : Introduction to the macroeconomic dynamics: Special issues on money, credit, and liquidity, Working Paper, No. 2010-14, Federal Reserve Bank of Chicago, Chicago, IL

This Version is available at:
http://hdl.handle.net/10419/70602

Terms of use:
Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.
Introduction to the *Macroeconomic Dynamics*: Special issues on money, credit, and liquidity

*Ed Nosal, Christopher Waller, and Randall Wright*

November 24, 2010

WP 2010-14
Introduction to the *Macroeconomic Dynamics* special issues on money, credit, and liquidity

Ed Nosal  
Federal Reserve Bank of Chicago  
Christopher Waller  
Federal Reserve Bank of St. Louis  
Randall Wright  
University of Wisconsin and Federal Reserve Bank of Minneapolis  
November 4, 2010

**Abstract**

We motivate and provide an overview to New Monetarist Economics. We then briefly describe the individual contributions to the Macroeconomics Dynamics special issues on money, credit and liquidity.

1 Introduction

This two-volume special issue of Macroeconomic Dynamics contains a collection of papers on money, credit, liquidity, banking, payments, asset pricing, and related topics. The contributions not only share general substantive interests, but also utilize a common method that we obviously endorse. This method involves an effort to take seriously the microeconomic foundations of models used to study the topics under consideration. It is clear to us that not all practitioners adopt this approach and that much work in macroeconomics is not sufficiently concerned with the microeconomic details behind institutions such as money, credit, or intermediation.\(^1\) In many popular models, money is introduced by using some ad hoc short cut, say by putting...
real balances into utility or production functions, or by imposing a cash-in-advance
constraint. Indeed, sometimes other assets, including government bonds or commer-
cial bank reserves, are also inserted into utility or production functions. Moreover,
in many of the models that dominate contemporary discussions of monetary policy
at central banks, there is no money at all, and nothing that resembles intermediation
in any interesting way.2

The reason many economists either ignore institutions like money, or slip them
in with short cuts, is this: they do not take seriously the nature of the process of
exchange. Following classical general equilibrium theory, agents do not trade with
each other, but trade only against their budget constraints. Any bundle that is
worth no more than the value of one’s endowment is available, with no discussion of
how it is to be acquired. Everyone worth his salt understands that there is no role
in Debreu’s frictionless paradigm for money, intermediation, or anything else that
facilitates the process of exchange since this process is not part of model.3 Unless
one introduces explicit frictions, therefore, short cuts are needed to get money and
related institutions into the discussion. These short cuts are meant to stand in for
a more detailed description of the role of institutions in facilitating exchange. Two
possible explanations for such implicit theorizing are: 1) the modelers do not care
about making their assumptions explicit; and 2) they cannot figure out how to do it.

We understand that the problem may seem hard, and if one cannot figure out
how to model things explicitly, one is reduced to reduced-form reasoning. It is harder
to understand the position that we do not (or should not) care about modeling the
process of exchange explicitly. How could one say it does not matter until one does
it? Some have argued that modeling the details of exchange and intermediation is
nothing more than studying the “plumbing” of the economy – it all works well behind
the scenes and so we do not need to pay attention to it. This seems wrong. How do
we know it is working well if we do not pay attention to it? What happens if the
“plumbing” goes bad? We know what this entails, and it is not pretty. We believe

2The authoritative reference for the popular New Keynesian approach where money plays no
role – the model by design is cashless – is of course Woodford (2003). An earlier survey of New
Keynesian models is contained in Clarida, Gali and Gertler (1999). Williamson and Wright (2010,in
press) provide more references, including examples models that put money, bonds, or bank reserves
in utility or production functions. Among those we think more of as microeconomists, including for
instance Kiyotaki and Moore (2008), Gertler and Kiyotaki (2010), or Holmstrom and Triole (2010),
we respect the spirit of these recent efforts to discuss liquidity and related issues, but at the end of
the day their theories look a bit too much like cash-in-advance models for our taste. We would like
to be able to elaborate on this, but do not have space to do justice to the issues here. Instead of
critiquing alternatives, we prefer in this special issue to suggest the approach we advocate is useful
and prove the point by providing examples of interesting papers.

3Certainly Debreu (1959) understood this: “[An] important and difficult question ... not answered
by the approach taken here: the integration of money in the theory of value”
that it is dangerous to ignore the details of “plumbing” and that the recent financial crisis makes this obvious. We therefore think that it is important to study institutions that help to facilitate exchange, and the papers in this special issue do just that.

We have grouped the contributions together by the themes of money, credit and liquidity. Why? One of the simplest institutions is of course money, which is used as a medium of exchange to overcome the double-coincidence problem and situations where credit is difficult to use. But work in the area has gone well beyond studying how currency ameliorates frictions in trade. The study of credit and banking arrangements is another important area where there has been recent progress. In general, a characteristic of the methods we are advocating is a focus on liquidity. Liquidity is discussed in other branches of economics and finance, of course, but we think the approach adopted by the papers in this collection is especially fruitful. In particular, some of the most interesting work on financial markets and asset pricing is very much consistent with methods developed in the microfoundations of monetary economics literature.

All of this work is based on the fundamental principle that exchange needs to be modeled explicitly. This involves building models with detailed descriptions of the process of trade. More importantly, it means incorporating frictions that make exchange less than perfect, so that there is an essential role for institutions that help facilitate the process. Such frictions include limited commitment, imperfect information or record keeping, and so on. This is what the literature has been up to for the last two decades. The objective of the current special issue is to illustrate by way of example some of what people are doing in frontier research along these lines. The papers in this collection take various different, but definitely related, approaches.

---

4 Early examples of work in this literature studying the role of commodity or fiat money as a medium of exchange include Kiyotaki and Wright (1989,1991) and Ayigari and Wallace (1991). Much of the modern research in the area uses the more recent models in Shi (1997) or Lagos and Wright (2005). In between, there was much work extending the basic framework, including e.g. Shi (1995) and Trejos and Wright (1995), and clarifying exactly what frictions are required to make a medium of exchange essential, including e.g. Kocherlakota (1998a,b) and Wallace (2001). Again, see Nosal and Rocheteau (in press) for a summary. Much of this research is pure theory, but recently there has been much more quantitative work, including as recent examples Aruoba, Waller and Wright (2009) and Aruoba and Shorfheide (in press).

5 A position advocated in Williamson (1987) is that what makes financial intermediation potentially worth studying are its special functions, such as diversification, information processing, and asset transformation. We cannot expect to generate these special activities or derive many useful implications if our approach does not build on the economic features that cause financial intermediaries to arise in the first place. This is another call for making one’s assumptions explicit and generating market structure, including intermediation, endogenously. Berentsen, Camera and Waller (2007) and Williamson (2009) provide recent example that show how to put these ideas into practice in New Monetarist models. Sanches and Williamson (2010) is an example of more detailed analysis of credit and its interaction with monetary exchange. Nosal and Rocheteau (in press) provide many other applications in the study of credit and payments systems.

6 We have in mind e.g., papers by Duffie, Gârleanu and Pederson (2005,2008), Lagos (2008), Lagos and Rocheteau (2009), or Lagos, Rocheteau and Weill (2010).
to the substantive issues at hand. They all try to incorporate details of the exchange process in hope of enhancing our understanding of the way it works. By way of preview, we now summary the individual contributions.

2 The Papers

“Coin Sizes and Payments in Commodity Money Systems” by Angela Redish and Warren Weber is an example of applying the framework to issues in monetary history (they reference other such applications). They argue that several features of medieval and early modern European commodity monetary systems are hard to capture using models of centralized exchange. For example, physical characteristics of commodity money, such as coin size, created shortages of small change, which had real effects on trade. To confront these issues, they construct a random matching model with indivisible coins with different intrinsic values. The paper shows that small change shortages can exist in the sense that welfare increases when small coins are added to a large coin economy. Further, they study the real implications of changes in the denomination structure and in the quantity of metals in commodity money. They show that replacing full-bodied small coins with tokens may not improve welfare. It would be difficult to examine these sorts of issues and generate the interesting economic results that they obtain using reduced-form models with, say, cash-in-advance constraints.\footnote{There have been attempts, including the interesting work of Sargent and Velde (2002), but we think the cash-in-advance approach is simply not as natural or as rich. See Wallace (2003) for a more detailed critique of Sargent and Velde’s approach}

In “Banking, Liquidity and Inflation,” Jonathan Chiu and Cesaïre Meh develop a search-based model to study the interaction between banking and monetary policy, extending earlier work by Berentsen, Camera and Waller (2007). They argue that understanding the nature of intermediation is critical for assessing the cost of inflation. They find that, when banking is explicitly in the model, inflation generates smaller welfare costs, compared to a no-banking environment, due to avoiding costs associated with intermediation. In equilibrium, monetary policy affects the affects welfare in rather interesting ways. When inflation is low, banking is not active, and when it is high, banking is active and improves welfare by channeling liquidity to those who need it most. At moderate levels of inflation, welfare is actually reduced by banking activity. But, owing to general equilibrium feedback, banking can be active in equilibrium at moderate inflation levels, even though welfare is higher without it. This is a nice example of how being careful with the details of the exchange process makes a big difference for understanding intermediation.

In “On the Threat of Counterfeiting,” Yiting Li and Guillaume Rocheteau study counterfeiting issues. In contrast to earlier work by Nosai and Wallace (2007), Li and Rocheteau show that a monetary equilibrium always exists, irrespective of the
technology for producing and the technology for identifying counterfeits. Nevertheless, the possibility of counterfeiting fiat money affects its value, as well as velocity, output and welfare, even if no counterfeiting occurs in equilibrium in their benchmark model. Policies that make currency more costly to counterfeit, or easier to recognize, will raise the value of money and welfare, but may not always decrease counterfeiting. We think this is a nice contribution to recent research that studies the role of recognizability in determining which objects are used in payments and at what prices. Private information about asset quality is important and interesting in theory and in practice, and this kind of analysis helps us understand how to analyze models where this is made explicit.

In a related paper, “Money, Markets and Dynamic Credit,” Amy Sun provides a theory of money and credit. Financial intermediation is studied when both the intermediary and individuals have private information. Money is essential because it helps solve a dynamic two-sided incentive problem. Requiring settlement with fiat money induces market trades that generate information-revealing prices that better discipline the intermediary. If financial intermediaries can issue private money — money that records its own history of being used in settlements — then it is optimal to have only private money circulate in the economy. This kind of analysis greatly enhances our understanding of intermediation, payments and settlement.

“Liquidity Provision in Capacity Constrained Markets,” by Pierre-Oliver Weill, follows up on some of his previous work, Weill (2008). He analyzes a dynamic financial market, where market makers face a capacity constraint on trading with outside investors, and the financial market is subject to a transient selling pressure. Market makers manage their capacity constraint over time and, as a result, liquidity to the market. When selling pressure is strong, they use slack capacity early to accumulate assets, so as to relax their capacity constraint and sell to buyers more quickly when the selling pressure subsides. When the capacity constraint binds, the bid-ask spread is strictly positive and depends on the change in inventories. A key insight is that variations in bid-ask spread are not a symptom of inefficient liquidity provision, since the equilibrium asset allocation is constrained Pareto optimal. This is another interesting contribution to the study of finance that incorporates explicit frictions into the theory.

“Monetary Policy Implementation Frameworks: A Comparative Analysis” by Antoine Martin and Cyril Monnet presents two stylized frameworks for the implementation of monetary policy that resemble what we actually observe in practice. The first framework has only standing facilities, while the second implements monetary policy through open market operations. Although the Friedman rule cannot be implemented when the central bank uses standing facilities only, for a given rate of inflation that can be achieved by both frameworks, standing facilities unambiguously deliver higher welfare than open market operations. Their results suggest that any monetary policy implementation framework should remunerate both required and excess reserves. This is an example of recent work in this literature that tries to model the details of
policy implementation explicitly.\textsuperscript{8}

The next two papers revisit an old idea in monetary economics, the ‘Hot Potato’ effect of inflation (people spend their money faster when inflation goes up). While this intuition has been around for a long time, formally modeling it is more challenging than one thinks. In the paper by Lucy Liu, Liang Wang and Randall Wright, it is argued that monetary theory with endogenous search intensity seems ideal for studying this issue, but in standard models, since inflation is a tax that lowers the surplus from monetary exchange, it actually reduces search effort and therefore the speed at which people spend their money. The authors therefore replace search intensity with a free entry (participation) decision for buyers, and focus on the extensive rather than intensive margin. They show that in this model buyers always spend their money faster when inflation increases. In his related paper, Ed Nosal focuses on intensive margin effects to show that an increase in inflation causes people to speed up their spending. In the model, buyers must exit the market after making a trade and have to wait in a queue to re-enter the market. When waiting is costly, buyers are very choosy in terms of their purchases – even though a match can generate surplus, a buyer may forego the trade if the surplus is small. An increase in inflation makes buyers less choosy.

These two papers are interesting from the point of view of this collection for the following reason. Many times those of us who work on microfoundations hear the following question: What can one do with a search model that one could not do with a reduced-form model that assumes money enters the utility function or imposes cash in advance constraints? This is a subtle issue. We have learned over the years that the key frictions making a medium of exchange essential are more about limited commitment and information than about spatial or temporal separation per se, even though search theory provides us with natural environments within which we can easily incorporate the relevant commitment and information frictions. For many questions, search may be useful but it is not strictly necessary. For the questions in these papers – does inflation make people spend their money faster, and what are the implications for the effects of monetary policy on velocity, output and welfare? – search is of the essence. By definition, search theory is the way to endogenize the time it takes to trade.\textsuperscript{9}

The papers on the ‘Hot Potato’ effect show that how one models the search process can make a big difference for the predictions of theory. It is also known that it matters how one models the determination of the terms of trade in both theoretical and quantitative applications. In “Inflation and Unemployment in Competitive Search Equilibrium,” Mei Dong provides another illustration of this important message. In earlier work, Rocheteau, Rupert, and Wright (2007) show that the relationship between inflation and unemployment (i.e. the long run Phillips curve) can be positive or

\textsuperscript{8}See also Berentsen and Monnet (2008) and Berentsen and Waller (in press).

\textsuperscript{9}Earlier work using search theory to study the impact of inflation on the time it takes to spend ones money, velocity, and welfare includes Li (1995), Lagos and Rocheteau (2005), and Ennis (2008).
negative, depending on preferences, in models where both unemployment and monetary exchange are modeled with explicit microfoundations. However, they assumed random search and used bargaining for price determination, and were only able to prove their results under the extreme assumption of buyers making take-it-or-leave-it offers. Dong instead uses directed search and price posting, and is able to prove the same results, plus interesting extensions, more generally. Again, it is clear from all of this work how details of the process by which agents meet and the mechanism by which they choose the terms of trade make a big difference for monetary theory and policy. We see nothing like this message having emerged from the cash-in-advance or money-in-utility-function literature. We see less in the New Keynesian literature.

Moving right along, a paper that emphasizes both the process by which agents meet and the nature of private information is “Adverse Selection, Segmented Markets and the Role of Monetary Policy” by Steve Williamson and Daniel Sanchez. In their model, trading partners are asymmetrically informed about future trading opportunities, and spatial and informational frictions limit arbitrage between markets. These frictions create inefficiencies, the extent of which is affected by monetary policy. A Friedman rule is optimal under a wide range of circumstances, including ones where segmented markets limit the extent of monetary policy intervention. These kinds of models teach us much about the way exchange works in decentralized environments and this can have important policy implications.

In “Random Matching and Money in the Neoclassical Growth Model: Some Analytical Results,” Christopher Waller adds long-run technical change to the monetary version of the neoclassical growth model used by Aruoba, Waller and Wright (2009) to study the impact of inflation on capital accumulation. In the prevailing literature, using a reduced-form approach, the exchange process is not modeled and so we cannot be sure the effects of inflation on anything, including growth, are being captured appropriately. Waller tries to shed light on this issue by incorporating matching frictions and bargaining into neoclassical growth theory. A key result is that inflation lowers per capita income in steady state, as well as the growth rate of the economy along the transition path. Although the Friedman rule is optimal, it does not give the first best outcome under bargaining due to a holdup problem. This paper is another step in the research program trying to reduce the gap between mainstream macro and models that take seriously the microfoundations of exchange.

The final paper, “The Welfare Cost of Inflation in OECD Countries” by Paola Boel and Gabriele Camera, is more quantitative in nature. It is known that the cost of anticipated inflation in search-and-bargaining models when calibrated to the US economy can be an order of magnitude higher than in traditional reduced-form models.\(^{10}\) Boel and Camera measure the cost of inflation in a microfounded model of money calibrated to each of twenty-three OECD countries for several sample periods.

\(^{10}\) Thus, in Lucas (2000) or Cooley and Hansen (1989) one finds that eliminating a 10% inflation is worth roughly 1/2 of 1% of consumption, while in Lagos and Wright (2005) the same policy can be worth 10 times as much.
With pricing taking, they predict that agents in most of the countries would give up less than 1% of consumption to eliminate 10% inflation. When one assumes bargaining, however, agents are willing to give up as much as 6% to eliminate 10% inflation in some countries. The results presented here further our knowledge of the quantitative properties of the models in monetary theory. This, of course, an important ongoing part of the ongoing research agenda.

In summary, first, we think that tremendous progress has been made over the last two decades on New Monetarist models. Also, we believe that the papers in this special issue, individually and collectively, advance our understanding of how money, credit and liquidity affect the exchange process and this is relevant both in terms of theory and policy analysis. But while our understanding of the roles of money, credit, intermediation and related institutions has improved greatly, there is much more to be done. The recent financial crisis makes this apparent. We believe the papers in this volume constitute another step in building the foundations for future research.
References


Working Paper Series

A series of research studies on regional economic issues relating to the Seventh Federal Reserve District, and on financial and economic topics.

Risk Taking and the Quality of Informal Insurance: Gambling and Remittances in Thailand

*Douglas L. Miller and Anna L. Paulson*

Fast Micro and Slow Macro: Can Aggregation Explain the Persistence of Inflation?

*Filippo Altissimo, Benoît Mojon, and Paolo Zaffaroni*

Assessing a Decade of Interstate Bank Branching

*Christian Johnson and Tara Rice*

Debit Card and Cash Usage: A Cross-Country Analysis

*Gene Amromin and Sujit Chakravorti*

The Age of Reason: Financial Decisions Over the Lifecycle

*Sumit Agarwal, John C. Driscoll, Xavier Gabaix, and David Laibson*

Information Acquisition in Financial Markets: a Correction

*Gadi Barlevy and Pietro Veronesi*

Monetary Policy, Output Composition and the Great Moderation

*Benoît Mojon*

Estate Taxation, Entrepreneurship, and Wealth

*Marco Cagetti and Mariacristina De Nardi*

Conflict of Interest and Certification in the U.S. IPO Market

*Luca Benzoni and Carola Schenone*

The Reaction of Consumer Spending and Debt to Tax Rebates – Evidence from Consumer Credit Data

*Sumit Agarwal, Chunlin Liu, and Nicholas S. Souleles*

Portfolio Choice over the Life-Cycle when the Stock and Labor Markets are Cointegrated

*Luca Benzoni, Pierre Collin-Dufresne, and Robert S. Goldstein*

Nonparametric Analysis of Intergenerational Income Mobility with Application to the United States

*Debopam Bhattacharya and Bhashkar Mazumder*

How the Credit Channel Works: Differentiating the Bank Lending Channel and the Balance Sheet Channel

*Lamont K. Black and Richard J. Rosen*

Labor Market Transitions and Self-Employment

*Ellen R. Rissman*

First-Time Home Buyers and Residential Investment Volatility

*Jonas D.M. Fisher and Martin Gervais*
Establishments Dynamics and Matching Frictions in Classical Competitive Equilibrium
Marcelo Veracierto

Technology’s Edge: The Educational Benefits of Computer-Aided Instruction
Lisa Barrow, Lisa Markman, and Cecilia Elena Rouse

The Widow’s Offering: Inheritance, Family Structure, and the Charitable Gifts of Women
Leslie McGranahan

Incomplete Information and the Timing to Adjust Labor: Evidence from the Lead-Lag Relationship between Temporary Help Employment and Permanent Employment
Sainan Jin, Yukako Ono, and Qinghua Zhang

A Conversation with 590 Nascent Entrepreneurs
Jeffrey R. Campbell and Mariacristina De Nardi

Meredith A. Crowley

Health Capital and the Prenatal Environment: The Effect of Maternal Fasting During Pregnancy
Douglas Almond and Bhashkar Mazumder

The Spending and Debt Response to Minimum Wage Hikes
Daniel Aaronson, Sumit Agarwal, and Eric French

The Impact of Mexican Immigrants on U.S. Wage Structure
Maude Toussaint-Comeau

A Leverage-based Model of Speculative Bubbles
Gadi Barlevy

Displacement, Asymmetric Information and Heterogeneous Human Capital
Luojia Hu and Christopher Taber

BankCaR (Bank Capital-at-Risk): A credit risk model for US commercial bank charge-offs
Jon Frye and Eduard Pelz

Bank Lending, Financing Constraints and SME Investment
Santiago Carbó-Valverde, Francisco Rodríguez-Fernández, and Gregory F. Udell

Global Inflation
Matteo Ciccarelli and Benoît Mojon

Scale and the Origins of Structural Change
Francisco J. Buera and Joseph P. Kaboski

Inventories, Lumpy Trade, and Large Devaluations
George Alessandria, Joseph P. Kaboski, and Virgiliu Midrigan
Working Paper Series (continued)

School Vouchers and Student Achievement: Recent Evidence, Remaining Questions
Cecilia Elena Rouse and Lisa Barrow

Does It Pay to Read Your Junk Mail? Evidence of the Effect of Advertising on Home Equity Credit Choices
Sumit Agarwal and Brent W. Ambrose

The Choice between Arm’s-Length and Relationship Debt: Evidence from eLoans
Sumit Agarwal and Robert Hauswald

Consumer Choice and Merchant Acceptance of Payment Media
Wilko Bolt and Sujit Chakravorti

Investment Shocks and Business Cycles
Alejandro Justiniano, Giorgio E. Primiceri, and Andrea Tambalotti

New Vehicle Characteristics and the Cost of the Corporate Average Fuel Economy Standard
Thomas Klier and Joshua Linn

Realized Volatility
Torben G. Andersen and Luca Benzoni

Revenue Bubbles and Structural Deficits: What’s a state to do?
Richard Mattoon and Leslie McGranahan

The role of lenders in the home price boom
Richard J. Rosen

Bank Crises and Investor Confidence
Una Okonkwo Osili and Anna Paulson

Life Expectancy and Old Age Savings
Mariacristina De Nardi, Eric French, and John Bailey Jones

Remittance Behavior among New U.S. Immigrants
Katherine Meckel

Birth Cohort and the Black-White Achievement Gap: The Roles of Access and Health Soon After Birth
Kenneth Y. Chay, Jonathan Guryan, and Bhashkar Mazumder

Public Investment and Budget Rules for State vs. Local Governments
Marco Bassetto

Why Has Home Ownership Fallen Among the Young?
Jonas D.M. Fisher and Martin Gervais

Why do the Elderly Save? The Role of Medical Expenses
Mariacristina De Nardi, Eric French, and John Bailey Jones
Using Stock Returns to Identify Government Spending Shocks  
*Jonas D.M. Fisher and Ryan Peters*  

Stochastic Volatility  
*Torben G. Andersen and Luca Benzoni*  

The Effect of Disability Insurance Receipt on Labor Supply  
*Eric French and Jae Song*  

CEO Overconfidence and Dividend Policy  
*Sanjay Deshmukh, Anand M. Goel, and Keith M. Howe*  

Do Financial Counseling Mandates Improve Mortgage Choice and Performance? Evidence from a Legislative Experiment  
*Sumit Agarwal, Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet, and Douglas D. Evanoff*  

Perverse Incentives at the Banks? Evidence from a Natural Experiment  
*Sumit Agarwal and Faye H. Wang*  

Pay for Percentile  
*Gadi Barlevy and Derek Neal*  

The Life and Times of Nicolas Dutot  
*François R. Velde*  

Regulating Two-Sided Markets: An Empirical Investigation  
*Santiago Carbó Valverde, Sujit Chakravorti, and Francisco Rodriguez Fernandez*  

The Case of the Undying Debt  
*François R. Velde*  

Paying for Performance: The Education Impacts of a Community College Scholarship Program for Low-income Adults  
*Lisa Barrow, Lashawn Richburg-Hayes, Cecilia Elena Rouse, and Thomas Brock*  

Establishments Dynamics, Vacancies and Unemployment: A Neoclassical Synthesis  
*Marcelo Veracierto*  

The Price of Gasoline and the Demand for Fuel Economy: Evidence from Monthly New Vehicles Sales Data  
*Thomas Klier and Joshua Linn*  

Estimation of a Transformation Model with Truncation, Interval Observation and Time-Varying Covariates  
*Bo E. Honoré and Luojia Hu*  

Self-Enforcing Trade Agreements: Evidence from Antidumping Policy  
*Chad P. Bown and Meredith A. Crowley*  

Too much right can make a wrong: Setting the stage for the financial crisis  
*Richard J. Rosen*
Working Paper Series (continued)

Can Structural Small Open Economy Models Account for the Influence of Foreign Disturbances?  
Alejandro Justiniano and Bruce Preston  
WP-09-19

Liquidity Constraints of the Middle Class  
Jeffrey R. Campbell and Zvi Hercowitz  
WP-09-20

Monetary Policy and Uncertainty in an Empirical Small Open Economy Model  
Alejandro Justiniano and Bruce Preston  
WP-09-21

Firm boundaries and buyer-supplier match in market transaction: IT system procurement of U.S. credit unions  
Yukako Ono and Junichi Suzuki  
WP-09-22

Health and the Savings of Insured Versus Uninsured, Working-Age Households in the U.S.  
Maude Toussaint-Comeau and Jonathan Hartley  
WP-09-23

The Economics of “Radiator Springs:” Industry Dynamics, Sunk Costs, and Spatial Demand Shifts  
Jeffrey R. Campbell and Thomas N. Hubbard  
WP-09-24

On the Relationship between Mobility, Population Growth, and Capital Spending in the United States  
Marco Bassetto and Leslie McGranahan  
WP-09-25

The Impact of Rosenwald Schools on Black Achievement  
Daniel Aaronson and Bhashkar Mazumder  
WP-09-26

Comment on “Letting Different Views about Business Cycles Compete”  
Jonas D.M. Fisher  
WP-10-01

Macroeconomic Implications of Agglomeration  
Morris A. Davis, Jonas D.M. Fisher and Toni M. Whited  
WP-10-02

Accounting for non-annuitization  
Svetlana Pashchenko  
WP-10-03

Robustness and Macroeconomic Policy  
Gadi Barlevy  
WP-10-04

Benefits of Relationship Banking: Evidence from Consumer Credit Markets  
Sumit Agarwal, Souphala Chomsisengphet, Chunlin Liu, and Nicholas S. Souleles  
WP-10-05

The Effect of Sales Tax Holidays on Household Consumption Patterns  
Nathan Marwell and Leslie McGranahan  
WP-10-06

Gathering Insights on the Forest from the Trees: A New Metric for Financial Conditions  
Scott Brave and R. Andrew Butters  
WP-10-07

Identification of Models of the Labor Market  
Eric French and Christopher Taber  
WP-10-08
**Working Paper Series (continued)**

Public Pensions and Labor Supply Over the Life Cycle  
*Eric French and John Jones*  
WP-10-09

Explaining Asset Pricing Puzzles Associated with the 1987 Market Crash  
*Luca Benzoni, Pierre Collin-Dufresne, and Robert S. Goldstein*  
WP-10-10

Does Prenatal Sex Selection Improve Girls’ Well-Being? Evidence from India  
*Luojia Hu and Analía Schlosser*  
WP-10-11

Mortgage Choices and Housing Speculation  
*Gadi Barlevy and Jonas D.M. Fisher*  
WP-10-12

Did Adhering to the Gold Standard Reduce the Cost of Capital?  
*Ron Alquist and Benjamin Chabot*  
WP-10-13

Introduction to the *Macroeconomic Dynamics*:  
Special issues on money, credit, and liquidity  
*Ed Nosal, Christopher Waller, and Randall Wright*  
WP-10-14