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IMPLICATIONS OF MEANS-TESTING IN CHAPTER 7 BANKRUPTCY

The authors study, theoretically and quantitatively, the general equilibrium of an economy in which households smooth consumption by means of both a riskless asset and unsecured loans with the option to default. The default option resembles a bankruptcy filing under Chapter 7 of the U.S. Bankruptcy Code. Competitive financial intermediaries offer a menu of loan sizes and interest rates wherein each loan makes zero profits. The authors prove the existence of a steady-state equilibrium and characterize the circumstances under which a household defaults on its loans. They show that their model accounts for the main statistics regarding bankruptcy and unsecured credit while matching key macroeconomic aggregates and the earnings and wealth distributions. They use this model to address the implications of a recent policy change that introduces a form of "means-testing" for households contemplating a Chapter 7 bankruptcy filing. They find that this policy change yields large welfare gains.
(Revision forthcoming in *Econometrica*)

Working Paper 07-16, "A Quantitative Theory of Unsecured Consumer Credit with Risk of Default," Satyajit Chatterjee, Federal Reserve Bank of Philadelphia; Dean Corbae, University of Texas at Austin; Makoto Nakajima, University of Illinois; and Jose-Victor Rios-Rull, University of Pennsylvania

EFFECTS OF TRADE LIBERALIZATION ON WELFARE, TRADE, AND EXPORTS

The authors study a variation of the Melitz (2003) model, a monopolistically competitive model with heterogeneity in productivity across establishments and fixed costs of exporting. They calibrate the model to match the employment size distribution of U.S. manufacturing establishments. Export participation in the calibrated model is then compared to the data on U.S. manufacturing exporters. With fixed costs of starting to export about 3.9 times as large as the costs of continuing as an exporter, the model can match both the size distribution of exporters and transition into and out of exporting. The calibrated model is then used to estimate the effect of reducing tariffs on welfare, trade, and export participation. The authors find sizable gains to moving to free trade. Contrary to the view that the gains to lowering tariffs are larger in models with export decisions, they find that steady state consumption increases by less in their benchmark model of exporting than in a similar model without fixed costs. However, they also find that comparisons of steady state consumption understate the welfare gains to trade reform in models with fixed costs and overstate the welfare gains in models without fixed costs. With fixed costs, tariffs lead to an over-accumulation of product varieties that can be used more effectively along the transition to the

new steady state. Thus, following trade liberalizations, economic activity overshoots its steady state, with the peak in output coming 10 years after the trade reform. Finally, the authors explore the impact of the key modeling assumptions in the theoretical literature for quantitative results.

Working Paper 07-17, "Establishment Heterogeneity, Exporter Dynamics, and the Effects of Trade Liberalization," George Alessandria, Federal Reserve Bank of Philadelphia, and Horag Choi, University of Auckland

THE RELATIONSHIP BETWEEN ESTABLISHMENT AGE AND EMPLOYMENT GROWTH

This paper presents new evidence on the relationship between a metropolitan area's employment growth and its establishment age distribution. The author finds that cities with a relatively younger distribution of establishments tend to have higher growth, as well as higher job and establishment turnover. Geographic variations in the age distribution account for 38 percent of the geographic differences in growth, compared to the 32 percent accounted for by variations in industry composition. Differences are disproportionately accounted for by entrants and young (five years or younger) establishments. Furthermore, the relationship between age and growth is robust to controls for urban diversity and education. Overall, the results support a micro-foundations view of urban growth, where the benefits of agglomeration affect firms not through some production externality but through a process that determines which firms enter, exit, and thrive at a given location.

Working Paper 07-18, "The Relationship Between the Establishment Age Distribution and Urban Growth," R. Jason Faberman, Federal Reserve Bank of Philadelphia

FLUCTUATIONS IN SEPARATION RATES AND UNEMPLOYMENT

This paper uses CPS gross flow data, adjusted for margin error and time aggregation error, to analyze the business cycle dynamics of separation and job finding rates and to quantify their contributions to overall unemployment variability. Cyclical changes in the separation rate lead those of unemployment, while the job finding rate and unemployment move contemporaneously. Fluctuations in the separation rate explain between 40 and 50 percent of fluctuations in unemployment, depending on how the data are detrended. The authors' results suggest an important role for the separation rate in explaining the cyclical behavior of unemployment.

Working Paper 07-19, "The Cyclicality of Separation and Job Finding Rates," Shigeru Fujita, Federal Reserve Bank of Philadelphia, and Garey Ramey, University of California, San Diego

STANDARD SETTING, PATENTS, INTELLECTUAL PROPERTY, AND ELECTRONIC PAYMENT SYSTEMS

For many reasons, payment systems are subject to strong network effects; one of those is the necessity of interoperability among participants. This is often accomplished via standard-setting organizations. The goal of the Single European Payments Area (SEPA) is to establish modern cross-boarder consumer payment systems for Europe. This too will require a standard-setting arrangement. But patents are also becoming an important feature of electronic payment systems, and thus standard setting under SEPA should incorporate a policy to address the ownership and licensing of essential intellectual property. Using examples from the experience of European mobile telephony and financial patenting in the United States, the authors argue that the lack of a well-developed IP policy creates significant risks for participants in the new SEPA payment systems.

Working Paper 07-20, "Intellectual Property Rights and Standard Setting in Financial Services: The Case of the Single European Payments Area," Robert M. Hunt, Federal Reserve Bank of Philadelphia; Samuli Simojoki, Attorneys at Law Borenius and Kemppinen; and Tuomas Takalo, Bank of Finland

PATENTS ON BUSINESS METHODS

Nearly a decade after the federal circuit decision in *State Street*, patents on computer-implemented methods of doing business have become commonplace. To date, there is little evidence of any effect on the rate of innovation or R&D among firms in financial services. Indeed, measuring such effects presents difficult problems for researchers. We do know that some of these patents are successfully licensed and others are the subject of ongoing litigation. Looking ahead, a number of recent Supreme Court decisions are likely to have a significant effect on how business method patents are enforced. Congress is also considering significant reforms to U.S. patent law.

Working Paper 07-21, "Business Method Patents for U.S. Financial Services," Robert M. Hunt, Federal Reserve Bank of Philadelphia

DESIGNING AN EFFICIENT PAYMENT SYSTEM

The authors study the design of efficient intertemporal payment arrangements when the ability of agents to perform certain welfare-improving transactions is subject to random and unobservable shocks. Efficiency is achieved via a payment system that assigns balances to participants, adjusts them based on the histories of transactions, and periodically resets them through settlement. The authors' analysis addresses two key issues in the design of actual payment systems. First, efficient use of information requires that agents participating in transactions that do not involve monitoring frictions subsidize those that are subject to such frictions. Second, the payment system should explore the tradeoff between higher liquidity costs from settlement and the need to provide intertemporal incentives. In order to counter a higher exposure to default, an increase in settlement costs implies that the volume of transactions must decrease but also that the frequency of settlement must increase.

Working Paper 07-22, "A Dynamic Model of the Payment System," Thorsten Koeppl, Queen's University; Cyril Monnet, Federal Reserve Bank of Philadelphia; and Ted Temzelides, University of Pittsburgh

POPULATION DENSITY AND OCCUPATIONAL CHANGES

Using U.S. census micro-data, the authors show that, on average, workers change occupation and industry less in more densely populated areas. The result is robust to standard demographic controls, as well as to including aggregate measures of human capital and sectoral mix. Analysis of the displaced worker surveys shows that this effect is present in cases of involuntary separation as well. On the other hand, the authors actually find the opposite result (higher rates of occupational and industrial switching) for the sub-sample of younger workers. These results provide evidence in favor of increasing-returns-to-scale matching in labor markets. Results from a back-of-the-envelope calibration suggest that this mechanism has an important role in raising both wages and returns to experience in denser areas.

Working Paper 07-23, "Thick-Market Effects and Churning in the Labor Market: Evidence from U.S. Cities," Hoyt Bleakley, University of Chicago, and Jeffrey Lin, Federal Reserve Bank of Philadelphia

PLANT AND AGGREGATE INVESTMENT DYNAMICS

The authors study a model of lumpy investment wherein establishments face persistent shocks to common and plant-specific productivity and nonconvex adjustment costs lead them to pursue generalized (S,s) investment rules. They allow persistent heterogeneity in both capital and total factor productivity alongside low-level investments exempt from adjustment costs to develop the first model consistent with the cross-sectional distribution of establishment investment rates. Examining the implications of lumpy investment for aggregate dynamics in this setting, the authors find that they remain substantial when factor supply considerations are ignored but are quantitatively irrelevant in general equilibrium.

The substantial implications of general equilibrium extend beyond the dynamics of aggregate series. While the presence of idiosyncratic shocks makes the time-averaged distribution of plant-level investment rates largely invariant to market-clearing movements in real wages and interest rates, the authors show that the dynamics of plants' investments differ sharply in their presence. Thus, model-based estimations of capital adjustment costs involving panel data may be quite sensitive to the assumption about equilibrium. The authors' analysis also offers new insights about how nonconvex adjustment costs influence investment at the plant. When establishments face idiosyncratic productivity shocks consistent with existing estimates, the authors find that nonconvex costs do not cause lumpy investments but act to eliminate them.

Working Paper 07-24, "Idiosyncratic Shocks and the Role of Nonconvexities in Plant and Aggregate Investment Dynamics," Aubhik Khan, Federal Reserve Bank of Philadelphia, and Julia K. Thomas, Federal Reserve Bank of Philadelphia and NBER

ADAPTING TO INNOVATION: WHERE DOES NEW WORK GO?

Where does adaptation to innovation take place? The supply of educated workers and local industry structure matter for the subsequent location of new work – that is, new types of labor-market activities that closely follow innovation. Using census 2000 micro-data, the author shows that regions with more college graduates and a more diverse industrial base in 1990 are more likely to attract these new activities. Across

metropolitan areas, initial college share and industrial diversity account for 50 percent and 20 percent, respectively, of the variation in selection into new work unexplained by worker characteristics. He uses a novel measure of innovation output based on new activities identified in decennial revisions to the U.S. occupation classification system. New work follows innovation, but unlike patents, it also represents subsequent adaptations by production and labor to new technologies. Further, workers in new activities are more skilled, consistent with skill-biased technical change.

Working Paper 07-25, "Innovation, Cities, and New Work," Jeffrey Lin, Federal Reserve Bank of Philadelphia

DESIGNING AN OPTIMAL CARD-BASED PAYMENT SYSTEM WHEN CASH IS AN ALTERNATIVE

Payments are increasingly being made with payment cards rather than currency — this despite the fact that the operational cost of clearing a card payment usually exceeds the cost of transferring cash. In this paper, the authors examine this puzzle through the lens of monetary theory. They consider the design of an optimal card-based payment system when cash is available as an alternative means of payment and derive conditions under which cards will be preferred to cash. The authors find that a feature akin to the controversial "no-surcharge rule" may be necessary to ensure the viability of the card payment system. This rule, which is part of the contract between a card provider and a merchant, states that the merchant cannot charge a customer who pays by card more than a customer who pays by cash.

Working Paper 07-26, "Optimal Pricing of Payment Services When Cash Is an Alternative," Cyril Monnet, Federal Reserve Bank of Philadelphia, and William Roberds, Federal Reserve Bank of Atlanta

IMPLEMENTATION ISSUES AND OPTIMAL MONETARY POLICY

Currently there is a growing literature exploring the features of optimal monetary policy in New Keynesian models under both commitment and discretion. With respect to time-consistent policy, the literature focuses on solving for allocations. Recently, however, King and Wolman (2004) have examined implementation issues involved under time-consistent policy when the monetary authority chooses nominal money balances. Surprisingly, they find that equilibria are no longer unique under a money stock regime. Indeed, there exist multiple steady states. Dotsey and Hornstein find that King and Wolman's conclusion of nonuniqueness of Markov-perfect equilibria is sensitive to the instrument of choice. If, instead, the monetary authority chooses the nominal interest rate rather than nominal money balances, there exists a unique Markov-perfect steady state and point-in-time equilibria are unique as well. Thus, in King and Wolman's language, monetary policy is implementable using an interest rate instrument, while it is not implementable using a money stock instrument.

Working Paper 07-27, "Interest Rate Versus Money Supply Instruments: On the Implementation of Markov-Perfect Optimal Monetary Policy, "Michael Dotsey, Federal Reserve Bank of Philadelphia, and Andreas Hornstein, Federal Reserve Bank of Richmond

INNOVATION AND LOCAL ECONOMIC CHARACTERISTICS

This paper extends the research in Carlino, Chatterjee, and Hunt (2007) to examine the effects of local economic characteristics on the rate of innovation (as measured by patents) in more than a dozen industries. The availability of human capital is perhaps the most important factor explaining the invention rate for most industries. The authors find some evidence that higher job market density is associated with more patenting in industries such as pharmaceuticals and computers. They find evidence of increasing returns with respect to city size (total jobs) for many industries and more modest effects for increases in the size of an industry in a city. This suggests that inter-industry spillovers are often at least as important as intra-industry spillovers in explaining local rates of innovation. A more competitive local market structure, characterized by smaller establishments, contributes significantly to patenting in nearly all industries. More often than not, specialization among manufacturing industries is not particularly helpful, but the authors find the opposite for specialization among service industries. Industries benefit from different local sources of R&D (academia, government labs, and private labs) and to varying degrees.

Working Paper 07-28, "Innovation Across U.S. Industries: The Effects of Local Economic Characteristics," Gerald A. Carlino, Federal Reserve Bank of Philadelphia, and Robert M. Hunt, Federal Reserve Bank of Philadelphia

VIOLATING PPP ACROSS COUNTRIES

The authors show that deviations from the law of one price in tradable goods are an important source of violations of absolute PPP across countries. Using highly disaggregated export data, they document systematic international price discrimination: At the U.S. dock, U.S. exporters ship the same good to low-income countries at lower prices. This pricing-to-market is about twice as important as any local nontraded inputs, such as distribution costs, in explaining the differences in tradable prices across countries. The authors propose a model of consumer search that generates pricing-to-market. In this model, consumers in low-income countries have a comparative advantage in producing nontraded, nonmarket search activities and therefore are more price sensitive than consumers in high-income countries. The authors present cross-country time-use evidence and evidence from U.S. export prices that is consistent with the model.

Working Paper 07-29, "Pricing-to-Market and the Failure of Absolute PPP," George Alessandria, Federal Reserve Bank of Philadelphia, and Joseph Kaboski, Ohio State University

CYCLICAL PROPERTIES OF THE PRIVATE RISK PREMIUM

This paper studies cyclical properties of the private risk premium in a model where a continuum of heterogeneous entrepreneurs are subject to aggregate as well as idiosyncratic risks, both of which are assumed to be highly persistent. The calibrated model matches highly skewed wealth and income distributions of entrepreneurs found in the Survey of Consumer Finances. The authors provide an accurate numerical solution to the model, even though the model is shown to exhibit serious nonlinearities that are absent in incomplete market models with idiosyncratic labor income risk. The model is able to generate the aggregate private risk premium of 2 to 3 percent and the low risk-free rate. However, it generates very little variation in these variables over the business cycle, suggesting that the model lacks the ability to amplify aggregate shocks.

Working Paper 07-30, "Private Risk Premium and Aggregate Uncertainty in the Model of Uninsurable Investment Risk," Francisco Covas, Board of Governors of the Federal Reserve System, and Shigeru Fujita, Federal Reserve Bank of Philadelphia

PERSONAL BANKRUPTCY FILINGS UNDER CHAPTER 13

By compiling a novel data set from bankruptcy court dockets recorded in Delaware between 2001 and 2002, the authors build and estimate a structural model of Chapter 13 bankruptcy. This allows them to quantify how key debtor characteristics, including whether they are experiencing bankruptcy for the first time, their past-due secured debt at the time of filing, and income in excess of that required for basic maintenance, affect the distribution of creditor recovery rates. The analysis further reveals that changes in debtors' conditions during bankruptcy play a nontrivial role in governing Chapter 13 outcomes, including their ability to obtain a financial fresh start. The authors' model then predicts that the more stringent provisions of Chapter 13 recently adopted, in particular those that force subsets of debtors to file for long-term plans, do not materially raise creditor recovery rates but make discharge less likely for that subset of debtors. This finding also arises in the context of alternative policy experiments that require bankruptcy plans to meet stricter standards in order to be confirmed by the court.

Working Paper 07-31, "The Anatomy of U.S. Personal Bankruptcy Under Chapter 13, "Hülya Eraslan, University of Pennsylvania; Wenli Li, Federal Reserve Bank of Philadelphia; and Pierre-Daniel Sarte, Federal Reserve Bank of Richmond

ESTIMATING PAYMENT NETWORK SCALE ECONOMIES FOR EUROPE

The goal of SEPA (Single Euro Payments Area) is to facilitate the emergence of a competitive, intra-European market by making cross-border payments as easy as domestic transactions. With cross-border interoperability for electronic payments, card transactions will increasingly replace cash and checks for all types of payments. Using different methods, the authors estimate card and other payment network scale economies for Europe. These indicate substantial cost efficiency gains if processing is consolidated across borders rather than "piggybacked" onto existing national operations. Cost reductions likely to induce greater replacement of small value cash transactions are also illustrated.

Working Paper 07-32, "Payment Network Scale Economies, SEPA, and Cash Replacement," Wilko Bolt, De Nederlandsche Bank, and David Humphrey, Florida State University, and Visiting Scholar, Federal Reserve Bank of Philadelphia