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## Editorial

Daron Acemoglu, Kenneth Rogoff, and Michael Woodford

The twenty-third edition of the *NBER Macroeconomics Annual* continues with its tradition of featuring theoretical and empirical contributions that are central to current-day macroeconomic issues. As in previous years, the contributions raise important policy-relevant questions and highlight new developments in macroeconomics. The contributions discuss important topics such as the character and nature of labor market expansions, the relationship between health and growth, the impact of technological changes on marriage and divorce, and the relationship between currency crises and carry trades. They also revisit policy-relevant questions in macroeconomics such as the influence of the European Monetary Union on macroeconomic comovement and the role of monetary policy. As has been the tradition in the *NBER Macroeconomics Annual*, each paper is discussed by two experts, who provide contrasting views and elaborations of the themes raised in the papers.

The first paper in this year's *NBER Macroeconomics Annual* is by Giuseppe Moscarini and Fabien Postel-Vinay, "The Timing of Labor Market Expansions: New Facts and a New Hypothesis." Moscarini and Postel-Vinay revisit the dynamics of labor markets during expansions and use newly available data on labor market flows to motivate a novel model and hypothesis. They document that over the past 15 years, there appears to be a strong comovement between the employer-to-employer worker transitions, wages, and the share of employment in large firms. Most interestingly, all three of these quantities remain below trend in the first few years of an aggregate expansion but then increase above trend. Notably, large firms expand more than small firms at the second stage of a business cycle upswing, and simultaneously there is an increase in job-to-job transitions and wage increases accelerate. This change in the composition of employment across firm sizes is a newly documented fact and calls for a potentially different approach to labor market flows at the cyclical frequencies.

Moscarini and Postel-Vinay propose such a new approach. They build on the seminal work by Burdett and Mortensen, which introduced job-to-job transitions in a simple equilibrium search model. In the Burdett and Mortensen framework, some firms offer higher wages and attract the employees of other firms, and thus both are endogenously larger and pay higher wages. In Moscarini and Postel-Vinay's model, which is an extension of Burdett and Mortensen's framework to business cycles, positive shocks increase labor demand, but this is first met by firms hiring out of the unemployment pool. It is only once this cheap labor becomes limited that firms start competing more fiercely. Then, large firms expand more than small firms because of their ability to poach workers from lower-wage employers. The authors show how such a model can be consistent with the qualitative features of the expansionary phase of the labor market. They also provide a calibrated version of their model to show that the quantitative predictions are also broadly consistent with the data.

Key questions that are raised by discussion concern whether the patterns observed in the labor market expansions over the past 15 years are a general feature or reflect idiosyncratic aspects of the recent business cycles. The theoretical model by Moscarini and Postel-Vinay also raises interesting questions. A central one concerns how firms respond to business cycle shocks when they have made commitments to their existing employees. Depending on how much wage flexibility there is in response to such shocks, the implications for wages can be different.

The second paper in this volume is by Jean Boivin, Marc Giannoni, and Benoît Mojon, "How Has the Euro Changed the Monetary Transmission Mechanism?" This paper empirically documents the transmission of monetary and oil price shocks across countries in the European Monetary Union. At the center of the paper are the changes in the transmission of various shocks after the introduction of the euro. The authors use factor vector autoregressions in order to capture the relationship between a large number of country-specific variables and their interactions. This is a rich empirical framework, and it allows for a parsimonious modeling of differential transmission of shocks across countries. The paper shows considerable heterogeneity in the transmission of shocks across countries, especially before the euro. For example, major monetary policy shocks, driven by German interest rate changes, appear to lead to considerably larger effects on interest rates and consumption in some countries such as Italy and Spain than in others. However, the introduction of the euro creates greater homogeneity in the transmission

of such macroeconomic shocks and may have also reduced the overall impact of these shocks.

Boivin, Giannoni, and Mojon then construct a simple open-economy new-Keynesian model that can account for the comovement and changes in the transmission as a result of the introduction of the euro. Using this model, they provide an interpretation of the patterns documented by their factor vector autoregressions analysis. This paper raises new methodological and empirical issues. Much of the discussion at the macro annual conference focused on how informative the factor vector autoregression framework is in uncovering comovements and the impact of shocks, and what types of theoretical models can shed light on these patterns.

The third paper is by Quamrul Ashraf, Ashley Lester, and David Weil, "When Does Improving Health Raise GDP?" This paper constructs a simple neoclassical growth model, with realistic demographic structure, in order to investigate the implications of general and specific health improvements on GDP. Contrary to some claims in the literature and in policy circles, recent evidence shows limited positive effects of large, exogenous health improvement on growth. Some evidence even suggests negative effects because of potential changes in factor proportions. Ashraf, Lester, and Weil show that such patterns can arise and persist for very long periods of time, even when health improvements increase productivity. This occurs not only because of changes in capital-labor ratios but also because fertility adjustments tend to be gradual. Their analysis cautions against optimistic assessments of how health improvements can lead to immediate economic dividends. The discussion focused on how quickly fertility can adjust in response to different types of shocks and how the long-run effects should be measured and compared to short-run effects.

The fourth paper in the conference volume is by Jeremy Greenwood and Nezih Guner, "Marriage and Divorce since World War II: Analyzing the Role of Technological Progress on the Formation of Households." Greenwood and Guner provide an ambitious theory of the effect of technological progress (in particular, the introduction of labor-saving technologies) on the formation and dissolution of households. They construct a simple search model in which individuals form matches that can lead to marriage and then, depending on the realization of ex post uncertainty, may decide to dissolve such marriages, leading to divorce. A key question concerns the cost of single individuals to perform household tasks. Greenwood and Guner argue that labor-saving technological change has made it much easier for singles to perform such tasks,

increasing the potential value of being single relative to being married. The consequence of this is a decline in marriage rates and also an increase in the likelihood of divorce when couples receive negative shocks to their marriage. Greenwood and Guner show that the qualitative features of this model are consistent with recent developments in marriage and divorce rates, and they perform a quantitative evaluation, showing that the quantitative implications of the model are also consistent with the broad patterns. They also consider an extension of the model that can be applied to the prewar era. Part of the discussion concerns how the hypothesis proposed by Greenwood and Guner can be tested more systematically and what types of technologies would affect household formation.

The fifth paper is by Markus Brunnermeier, Stefan Nagel, and Lasse Pederson, "Carry Trades and Currency Crashes." Carry trades and currency markets have become more important in recent years and provide potentially profitable trades to arbitrage differences between high-interest rate and low-interest rate currencies. However, such trades are also subject to highly skewed risk in response to exchange rate movements, particularly when high-interest rate currencies suffer devaluation. This type of shock and the associated unwinding of carry trades have been important in a variety of recent currency crises. Their paper carefully documents the relationship between carry trades and the comovement among currencies with similar interest rates and the differences between currencies with significantly different interest rates. Brunnermeier, Nagel, and Pederson show how the salient correlations in the data could be driven by liquidity problems and their contribution to current currency crises. Their analysis raises a range of interesting questions, some of them concerning the measurement of potential returns from carry trades and quantification of risks of such transactions. Other questions are related to the appropriate theoretical framework for understanding exchange rate movements and the risks that they create.

The final paper in the conference is by Andrew Atkeson and Patrick Kehoe, "On the Need for a New Approach to Analyzing Monetary Policy." Atkeson and Kehoe argue that the most popular models of the effect of monetary policy, building on the new-Keynesian framework, do not explain the existence of risk premia of the kind indicated by movements in the term structure of interest rates. They suggest that this reflects an inadequacy of the general framework used in the literature and argue that a different approach is necessary. The alternative proposed is a framework in which there are changes in the volatility of shocks that households face and monetary policy is correlated with this volatility, either

because it responds to underlying shocks or conceivably because it is one of the causes of variations in risk. This paper revisits a central question in macroeconomics, and the authors' interpretation raises important challenges and leads to a heated debate. A large part of the debate concerns whether the problems identified by Atkeson and Kehoe reflect only the failure of certain simple Euler equations and whether more complex new-Keynesian models avoid these problems. As with the other papers in this volume, the debate generated by Atkeson and Kehoe's paper will likely continue.

Finally, the authors and the editors would like to take this opportunity to thank Martin Feldstein and the National Bureau of Economic Research for their continued support for the *NBER Macroeconomics Annual* and the associated conference. We would also like to thank the NBER conference staff, particularly Rob Shannon for his usual excellent organization and support. Financial assistance from the National Science Foundation is gratefully acknowledged. Laura Feiveson and Luminita Stevens provided invaluable help in preparing the discussions. We are also grateful to Lauren Fahey and Helena Fitz-Patrick for assistance in editing and producing the manuscript.



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# Abstracts

## 1 The Timing of Labor Market Expansions: New Facts and a New Hypothesis

*Giuseppe Moscarini and Fabien Postel-Vinay*

We document three new facts about aggregate dynamics in U.S. labor markets over the last two decades, drawing in part from newly available data sets. We find a strong comovement between the employer-to-employer worker transition rate, various measures of wages, and the share of employment at large firms. All three remain below trend several years into the expansion. Then, simultaneously, large firms take over employment, workers start quitting more from job to job, and wages accelerate. Somewhat surprisingly, employment growth of larger firms is more cyclically sensitive. Building on these facts, we formulate a new hypothesis of how business cycles evolve and mature. Following a positive aggregate shock to labor demand, wages respond little on impact and start rising only when firms run out of cheap unemployed hires and start competing to poach and to retain employed workers. Workers quit mostly from small, low-paying, less productive firms to large, high-paying, productive firms. Wages rise both within firms and as workers upgrade by quitting to higher-paying employers. The growth in the employment of large firms is fueled by the stock of employment at small firms, which takes some time to replenish after a recession. We investigate whether this view is consistent with the transitional dynamics of the Burdett and Mortensen (1998) equilibrium search model, which we analyze in detail in a companion paper. A calibrated example shows that the model qualitatively captures the essence of the three facts.

## **2 How Has the Euro Changed the Monetary Transmission Mechanism?**

*Jean Boivin, Marc P. Giannoni, and Benoît Mojon*

This paper characterizes the transmission mechanism of monetary shocks across countries of the euro area, documents how this mechanism has changed with the introduction of the euro, and explores some potential explanations. The factor-augmented VAR (FAVAR) framework used is sufficiently rich to jointly model the euro area dynamics while permitting the transmission of shocks to be different across countries. We find important heterogeneity across countries in the effect of monetary shocks before the launch of the euro. In particular, we find that German interest rate shocks triggered stronger responses of interest rates and consumption in some countries such as Italy and Spain than in Germany itself. According to our estimates, the creation of the euro has contributed to (1) a greater homogeneity of the transmission mechanism across countries and (2) an overall reduction in the effects of monetary shocks. Using a structural open-economy model, we argue that the combination of a change in the policy reaction function—mainly toward a more aggressive response to inflation and output—and the elimination of an exchange rate risk can explain the evolution of the monetary transmission mechanism observed empirically.

## **3 When Does Improving Health Raise GDP?**

*Quamrul H. Ashraf, Ashley Lester, and David N. Weil*

We assess quantitatively the effect of exogenous health improvements on output per capita. Our simulation model allows for a direct effect of health on worker productivity, as well as indirect effects that run through schooling, the size and age structure of the population, capital accumulation, and crowding of fixed natural resources. The model is parameterized using a combination of microeconomic estimates, data on demographics, disease burdens, and natural resource income in developing countries and standard components of quantitative macroeconomic theory. We consider both changes in general health, proxied by improvements in life expectancy, and changes in the prevalence of two particular diseases: malaria and tuberculosis. We find that the effects of health improvements on income per capita are substantially lower than those that are often quoted by policy makers and may not emerge at all for three decades or more after the initial improvement in health. The

results suggest that proponents of efforts to improve health in developing countries should rely on humanitarian rather than economic arguments.

#### **4 Marriage and Divorce since World War II: Analyzing the Role of Technological Progress on the Formation of Households**

*Jeremy Greenwood and Nezih Guner*

Since World War II there has been (i) a rise in the fraction of time that married households allocate to market work, (ii) an increase in the rate of divorce, and (iii) a decline in the rate of marriage. It is argued here that labor-saving technological progress in the household sector can explain these facts. This makes it more feasible for singles to maintain their own home and for married women to work. To address this question, a search model of marriage and divorce, which incorporates household production, is developed. An extension looks back at the prewar era.

#### **5 Carry Trades and Currency Crashes**

*Markus K. Brunnermeier, Stefan Nagel, and Lasse H. Pedersen*

This paper documents that carry traders are subject to crash risk; that is, exchange rate movements between high-interest rate and low-interest rate currencies are negatively skewed. We argue that this negative skewness is due to sudden unwinding of carry trades, which tend to occur in periods in which risk appetite and funding liquidity decrease. Funding liquidity measures predict exchange rate movements, and controlling for liquidity helps explain the uncovered interest rate puzzle. Carry trade losses reduce future crash risk but increase the price of crash risk. We also document excess comovement among currencies with similar interest rates. Our findings are consistent with a model in which carry traders are subject to funding liquidity constraints.

#### **6 On the Need for a New Approach to Analyzing Monetary Policy**

*Andrew Atkeson and Patrick J. Kehoe*

We present a pricing kernel that summarizes well the main features of the dynamics of interest rates and risk in postwar U.S. data and use it to uncover how the pricing kernel has moved with the short rate in this data. Our findings imply that standard monetary models miss an essential link between the central bank instrument and the economic activity that monetary policy is intended to affect, and thus we call for a new approach to monetary policy analysis. We sketch a new approach using

an economic model based on our pricing kernel. The model incorporates the key relationships between policy and risk movements in an unconventional way: the central bank's policy changes are viewed as primarily intended to compensate for exogenous business cycle fluctuations in risk that threaten to push inflation off target. This model, while an improvement on standard models, is considered just a starting point for their revision. It leads to critical questions that researchers need to answer as they continue to revise their approach to monetary policy analysis.