

NBER Reporter

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Program Report

State and Local Government Finance

Harvey S. Rosen

NBER's project on State and Local Government Finance is studying how state and local governments behave, how they relate to each other and to the federal government, and how they affect the national economy. In August, members of the project's research team met in Cambridge as part of the NBER's Summer Institute and reported on work in progress, receiving comments from other members of the group. Two conferences are also scheduled for the coming year.

The first, to be held in December in Cambridge, will deal with such issues as: state and local budgeting procedures; the provision of public education; and an evaluation of lotteries as a method of financing state expenditure. The second, in April 1987, will focus more narrowly on issues in fiscal federalism. Topics to be discussed include: the impact of the federal tax code on state and local public finance; the role of grants in a federal system; and the apportionment of responsibility for the maintenance of infrastructure among various levels of government.

The remainder of this report will summarize certain of the studies currently being undertaken by members of the project.

Lotteries

Charles T. Clotfelter, NBER and Duke University, is examining the incidence of lotteries as a source of revenue for state governments. The recent growth of lotteries as a revenue source, as well as the large number of states currently considering the adoption of a lottery, illustrate the importance of understanding the demand for the state-administered games. Building on theoretical models of the demand for gambling, Clotfelter will

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This issue of the *Reporter* highlights the Bureau's project on state and local government finance. Next, Ben S. Bernanke describes his work on financial factors and the real economy. Then, John Y. Campbell discusses the movement of long-term asset prices. After the quarterly Economic Outlook Survey are biographical sketches, news of NBER conferences, the Conference Calendar, and other NBER news and reports. The *Reporter* concludes with short summaries of recent NBER Working Papers.

analyze the effects on sales of such variables as income and its distribution, age distribution, prize structure, advertising, competition from other states' lotteries, and the existence of other gambling games. His study will also examine the impact of "price" on lottery demand, where price is the cost per dollar of expected return.

Income and Sales Taxes

Daniel R. Feenberg, NBER, and I are studying more traditional components of state revenue systems: their personal income and general sales taxes. In earlier work, we coded the major rules for income and general sales taxes for each state and combined them with

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NBER's federal tax simulation model (TAXSIM).¹ This enabled us to compare the tax systems of the various states consistently and coherently. We have already used the results to investigate the distributional impact of federal tax deductibility by state and by income class. Now we are analyzing the indexing provisions of state income tax codes, to see if they have been an effective way for insulating the systems from the effects of inflation.

Financing Expenditures

Robert P. Inman, NBER and University of Pennsylvania, is studying local officials' choices between the use of debt or taxes to finance current account expenditures. The recent fiscal crises in New York City, Cleveland, and Philadelphia were caused in no small measure by the failure to fully fund the costs of current services with current taxes and fees. Inman proposes to measure the degree of short-term debt expansion, the use of pension underfunding, and the decline of real public capital stocks in 41 major U.S. cities from 1960 to 1980. On the basis of these data, he will then analyze the political and economic determinants of the behavior of large-city taxes and short-term debt.

Capital and Investment

Michael J. Boskin, NBER and Stanford University, is producing new estimates of state and local government tangible capital and net investment. His paper will report estimates of state and local depreciation, in the aggregate and by components, at least for the post-war period and perhaps as far back as the late 1920s. It will also compare various state and local trends to those in the private sector and in the federal government. Thus, like Inman's work, it will help to improve our understanding of the true financial status of the state and local sectors.

Deductibility

Martin Feldstein, NBER and Harvard University, and Gilbert Metcalf, Harvard University, are analyzing the effect of federal tax deductibility on state and local taxes and spending.² Their preliminary results suggest that deductibility affects the way that state and local governments finance their spending as well as their overall level of spending. In states where federal deductibility implies a relatively low cost of using deductible personal taxes, there is greater reliance on those taxes and less reliance on business taxes and other revenue sources. Thus, if deductibility causes a large

¹D. R. Feenberg and H. S. Rosen, "State Personal Income and Sales Taxes, 1977-1983." In *Studies in State and Local Public Finance*, H. S. Rosen, ed. Chicago: University of Chicago Press, 1986, pp. 135-179.

²M. Feldstein and G. Metcalf, "The Effect of Federal Deductibility on State and Local Taxes and Spending," NBER Working Paper No. 1791, January 1986.

enough shift of financing from business taxes to personal taxes, it may actually raise federal tax receipts. Feldstein and Metcalf's calculations also imply that deductibility is likely to have a greater effect than direct grants in raising the general level of state and local government spending.

Education

Charles F. Manski, NBER and University of Wisconsin, is investigating the demand for teachers by local public school districts. In particular, he is looking at how teacher hiring and retention decisions are determined by: (1) local demographics, especially the expected time path of the population of children of school age; (2) local economic conditions; (3) the institutional structure of schooling finance, emphasizing the state/local sharing of schooling costs; and (4) the institutional structure of decision-making, possibly considering the length of terms and method of appointment of school boards and the distribution of decision-making power between school board and school administration.

Thomas Romer, Carnegie-Mellon University, is also studying educational finance, but his focus is the influence of political structures on economic allocations. Specifically, Romer will examine the referendum process in New York school districts to determine whether the process of "agenda control" has an important impact on educational spending.

Property Taxes

Katharine L. Bradbury, Federal Reserve Bank of Boston, and Helen Ladd, Duke University, are examining the viability of the property tax as a revenue source for U.S. cities. Two significant trends raise questions about the future of the property tax. First is the national shift away from manufacturing employment and toward service employment. Because manufacturing is thought to use more property than service activity, this shift could adversely affect the property tax base of central cities. Second, states and cities have been making both explicit and implicit decisions that affect the revenue potential of the local property tax. These include tax limitation measures that, if binding, directly affect local property tax revenues. Bradbury and Ladd will examine the implications of these trends.

Research Summaries

Financial Factors and the Real Economy

Ben S. Bernanke

The role of the economy's financial sector in the initiation and propagation of macroeconomic fluctuations is a principal subject in my research. While this topic has engaged my interest for some time,¹ I first became seriously involved in the area after doing a study of the sources of the Great Depression of the 1930s.²

The nearly complete collapse of the U.S. financial system in 1929-33 was one of the most striking features of the Depression. This collapse had two major aspects. The better-known of these was the series of bank failures that reduced the number of operating banks in the United States by about half in less than four years.

In their classic monetary history,³ Milton Friedman and Anna J. Schwartz emphasized the contractionary effect of the banking crises on the money supply as a key element in the explanation of the Depression. Noting that banks play an important role in the intermediation of credit and in the provision of the means of payment, my own paper hypothesizes an additional effect of the bank crises: the disruption of the credit allocation process.

Banks specialize in evaluation, screening, and monitoring activities that make it possible for the large number of borrowers without access to corporate debt and equity markets to obtain funds. The banks' expertise, and their accumulated information and customer relationships, form a sort of (nontransferable) "intermediary capital." I argue that the financial distress of banks in the 1930s, which shut down many banks and forced the rest to hold safe, liquid securities instead of making loans, caused this "capital" to be seriously underutilized. The poor functioning of loan markets that resulted meant that many borrowers faced a very high cost of funds, or could not obtain loans at all. This in turn had a significant negative impact on aggregate demand and output.

¹B. S. Bernanke, "Bankruptcy, Liquidity, and Recession," *American Economic Review, Papers and Proceedings* 71, 2 (May 1981), pp. 155-159.

²B. S. Bernanke, "Non-Monetary Effects of the Financial Crisis in the Propagation of the Great Depression," *American Economic Review* 73, 3 (June 1983), pp. 257-276.

³M. Friedman and A. J. Schwartz, *A Monetary History of the United States, 1867-1960*, Princeton: Princeton University Press, 1963.

A further reason to believe that a breakdown of the process of borrowing and lending might have been important in the 1930s is the second, less well-known (but probably equally important) aspect of the financial collapse: the massive insolvency of borrowers that occurred as money incomes dropped sharply relative to debt burdens. The statistics here are quite remarkable: in some cities over 60 percent of mortgages were in default; about half of all farm debt became delinquent; three states and 37 major cities defaulted on obligations. The general insolvency of the borrower class greatly hampered the process of providing credit for worthwhile projects, since the majority of individuals with access to projects also had an overhang of unserviced obligations that made them poor risks. As I wrote in my 1983 article:

"A useful way to think of the 1930-33 debt crises is as the progressive erosion of borrowers' collateral relative to debt burdens. As the representative borrower became more and more insolvent, banks (and other lenders as well) faced a dilemma. Simple, noncontingent loans faced increasingly higher risks of default; yet a return to the more complex type of contract [with many explicit contingencies and extensive monitoring] involved many other costs. Either way, debtor insolvency necessarily raised the [cost of credit intermediation] for banks [thus contributing to the disruption of loan markets]."⁴

It is quite intuitive that a collapse of the financial system would seriously interfere with credit allocation, and that this in turn would have effects on the real economy. Indeed, the time-series evidence seems to indicate that such effects were important in the 1930s.⁵ Still, to get a clearer understanding of this channel and possibly to assess its relevance to the more placid macroeconomic conditions of the postwar period, a more formal theoretical analysis of these effects than was provided by my original study seems to be required. This has been the subject of much of my recent research, in collaboration with Mark Gertler.

We began by noting that in an economy with perfect information and complete markets, financial factors would be irrelevant to real outcomes; real allocations in such an economy would depend only on tastes, technology, and endowments, with no reference to how ownership claims are "packaged" into financial assets. By adding simple forms of asymmetric information to classical economies, though, Gertler and I investigate the implications for macroeconomic equilibrium. We hope thereby to provide a rigorous basis for the understanding of real-financial interactions.

To date, we have carried this approach furthest in a recent paper.⁶ It begins with a simple model of the pro-

cess of financing physical investment projects, building on the "costly state verification" approach of Robert Townsend.⁷ We use a two-good model, with a generalized output/consumption good and a capital good. We assume the existence of a pool of discrete "investment projects," defined as opportunities to transform a fixed amount of the output good into a random quantity of the capital good in the subsequent period. The returns to different projects are independent.

Like Townsend, we introduce a simple form of informational asymmetry: namely, that the ex post realized returns of the project are observable by the coalition of entrepreneurs who operate the project (the "insiders") but not by other people in the economy, including non-insiders who may have invested in the project (the "outsiders"). The realized returns of a given project can, however, be made public information at a fixed auditing cost. Unlike Townsend and others, who take the identity and number of insiders as fixed, we further assume that anyone can become an insider and that the number of insiders per project is freely variable. However, so that inside finance will not completely eliminate outside finance in equilibrium, we postulate an increasing marginal cost of adding inside investors to the coalition that undertakes a project.

The analysis reveals an important inverse relationship between the quantity of "borrower collateral" in the system (defined here as the amount of savings contributed to the project by insiders) and the deadweight "agency costs" inevitably created by the presence of asymmetric information. (The agency costs in this model are the real costs of the public auditing procedure, which must be incurred occasionally under the optimal contract.) The result, that higher quantities of collateral increase the efficiency of the financial intermediation (which follows also from alternative models), is a formal justification of the role attributed to collateral and the creditworthiness of borrowers in my paper on the Depression.

In the second part of our paper, the model of investment finance just described is embedded in a dynamic macro model—specifically, a stochastic version of Peter Diamond's 1965 overlapping-generations model of government debt.⁸ We obtain two major results. First we show that, since collateral is procyclical (income, savings, and profits vary positively with the cycle), the deadweight agency costs of investment finance will rise in recessions and fall in booms. The resulting enhanced procyclicality of investment demand increases the volatility of the cycle, relative to the full-information economy. Thus, financial factors enter into the cyclical propagation mechanism.

⁴B. S. Bernanke, "Non-Monetary Effects, . . ." pp. 265-266.

⁵J. Hamilton, "Monetary Factors in the Great Depression," *University of Virginia working paper*, June 1986.

⁶B. S. Bernanke and M. Gertler, "Agency Costs, Collateral, and Business Fluctuations," *NBER Working Paper No. 2015*, September 1986.

⁷R. Townsend, "Optional Contracts and Competitive Markets with Costly State Verification," *Journal of Economic Theory* (October 1979), pp. 265-293.

⁸P. Diamond, "Government Debt in a Neoclassical Growth Model," *American Economic Review* (December 1965), pp. 1126-1151.

Second, we show how shocks to the financial sector actually can initiate cycles in output. The example that we develop in detail is that of a "debt deflation" (first discussed by Irving Fisher). In a debt deflation, an unanticipated fall in the price level redistributes wealth away from the borrowing class, reducing their collateral. The fall in collateral increases agency costs, depressing capital formation and output. This sort of effect was probably quite important in the Depression.

Although explanation of the Great Depression is an important goal for macroeconomic analysis, I am equally interested in the interaction of financial and real factors in the modern economy. In recent research,⁹ I have tried to ascertain the relative importance of shocks to credit markets in postwar business cycles. Preliminary results suggest that nonmonetary shocks to financial markets were nearly as important as monetary shocks in the initiation of postwar cycles. This is encouraging for the view that financial-real interactions, although not as dramatic in the postwar period as in the turbulent 1930s, are relevant to understanding more recent output fluctuations.

There are many directions in the subject of real-financial interactions to pursue further. I would like to extend my work with Gertler to include an analysis of firms in which there is a separation of ownership and control, and to look more deeply into how considerations of liquidity and solvency affect firms' spending plans over the business cycle. (Ideally, further development of the theory at the level of the firm would eventually permit the development of cross-sectional empirical tests.) There are some interesting postwar examples of debt deflation (for example, U.S. farmers) and banking crises (for example, the Southern Cone experience) to be investigated further. Finally, it would be worthwhile to develop in more detail the implications of this work for the conduct of policy, notably monetary policy and banking regulation.

⁹B. S. Bernanke, "Alternative Explanations of the Money-Income Correlation," NBER Working Paper No. 1842, February 1986.

the related request to *predict* stock price changes, by explaining the theory of efficient markets. Yet the stock market often moves without a clear external stimulus, so it is difficult to account for its ups and downs.

Stock prices share some important characteristics with other macroeconomic variables, such as the long-term bond yield, the exchange rate, and the level of private consumption expenditure. These variables all display movements that are not obviously driven by events elsewhere in the economy; they all play a key role in macroeconomic theory and policy, so that it is important to explain their behavior; and they are all affected by market participants' expectations of the distant future.

In this paper, I summarize research designed to improve our understanding of these variables. For convenience I will refer to them collectively as long-term asset prices. All of this research maintains the hypothesis of rational expectations.

Alternative Models

A simple model of a long-term asset price expresses the price as the rational expectation of the present value (discounted at a constant rate to an infinite horizon) of future income from the asset. The price of stock can be written in this way, as the expected present value of future dividends, if discount rates are constant. The long-term bond yield is approximately an expected present value of future short-term interest rates if risk premiums in the term structure are constant.¹ Consumption is related to the expected present value of future labor income, according to the permanent income hypothesis.

These present-value models attribute all variation in asset prices to a single cause: changing rational expectations of future income. They are probably too simple to account for all movements in long-term asset prices, but they are the starting point for the research summarized here.

An alternate view is that asset prices move because discount rates vary through time.² If discount rates are observable—perhaps in another asset market—then this view can be tested, and some of my research tries to do this.

Of course, it might be that different discount rate movements cannot be observed. In such a case, an explanation of asset price behavior based on discount

What Moves Long-Term Asset Prices?

John Y. Campbell

Many economists have been asked at one time or another to explain the recent rise (or fall) in the stock market. They cannot rule out the question, as they can

¹J. Y. Campbell and R. J. Shiller, "A Simple Account of the Behavior of Long-Term Interest Rates," NBER Working Paper No. 1203, September 1983, and *American Economic Review Papers and Proceedings* 74 (May 1984), pp. 44-48; and J. Y. Campbell, "A Defense of Traditional Hypotheses about the Term Structure of Interest Rates," NBER Reprint No. 695, April 1986, and *Journal of Finance* 41 (March 1986), pp. 183-193.

²A number of theoretical models are available in which this occurs. One example is J. Y. Campbell, "Bond and Stock Returns in a Simple Exchange Model," NBER Working Paper No. 1509, November 1984, and *Quarterly Journal of Economics*, forthcoming November 1986.

rate changes can never be tested. The same is true if expectations are irrational, or if market participants are subject to "fads." Unless one can observe expectations or market psychology in some way, one does not have a testable model of asset prices. I examine more restrictive models that ignore such phenomena. To the extent that these models fail to explain asset prices, one has indirect evidence of the importance of unobservable changes in discount rates, rational expectations, or psychological factors.

Testing Present-Value Models

Present-value models imply that excess returns (roughly, asset price changes, corrected for dividends) are unpredictable based on the information that is available in advance. It is common practice to try to reject a present-value model by showing that excess returns indeed can be forecast. A disadvantage of this approach is that it yields no natural measure of how badly the model does as a description of the long-term asset price. It is possible that the model is rejected statistically but that it can account for most of the variation in the price, leaving only a small role for the other factors discussed above.³

In recent work, including two papers written with Robert J. Shiller, I have developed an alternative strategy for judging the merits of present-value models.⁴ I start with the observation that if the model is true, no econometric forecast of the present value that uses publicly available information can be superior to the forecast contained in the long-term asset price. In fact, according to the model, since the asset price itself is publicly available information, the best econometric forecast is *equal* to the asset price. If the model is false, the best econometric forecast will deviate from the asset price, and one can learn something from the way in which it deviates. For example, one can identify puzzling historical episodes, or one may discover that the asset price "moves too much"; that is, more than the best econometric forecast. Although the econometric forecast cannot be estimated by a simple regression (since the present value is infinite, and hence never directly observed), it can be constructed from a vector autoregression that includes at least the asset price and the income from the asset.

³Strictly speaking, it is also possible for excess returns to be unforecastable even if long-term asset prices are not determined only by the expected present value of future income. This can occur if there are "rational bubbles." There is considerable debate about the theoretical possibility of such bubbles, and about how they can be detected. The research described here is not designed to detect rational bubbles, since the tests will reject the present-value model only if excess returns are predictable.

⁴See J. Y. Campbell, "Does Saving Anticipate Declining Labor Income? An Alternative Test of the Permanent Income Hypothesis," NBER Working Paper No. 1805, January 1986, for an application to consumption, and J. Y. Campbell and R. J. Shiller, "Cointegration and Tests of Present-Value Models," NBER Working Paper No. 1885, April 1986, for applications to bonds and stocks. J. Y. Campbell and R. J. Shiller, "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors," paper for presentation at NBER Economic Fluctuations meeting, Cambridge, MA, October 10, 1986, is a further study of the stock market.

Unit Roots and Cointegration

Historically, macroeconomists have tended to think of economic variables as fluctuating around a fixed long-run growth path, or in some cases a fixed mean. This implies that random shocks have only a transitory effect; eventually, variables return to trend. However, an alternative view, that economic variables have trend growth rates but not trend growth paths, has recently gained ground. If this "unit root" view is correct, some fraction of any shock is permanent.

The latter view has to be taken seriously in testing present-value models. Variables such as short-term interest rates and labor income have no clear tendency to return to a trend or mean level.⁵ More generally, postwar U.S. business cycles are highly persistent.⁶ Also, long-term asset prices are often surprisingly volatile, and this is easier to reconcile with the present-value relationship if shocks have permanent effects on the income generated by an asset.⁷

Even if asset prices and dividends have no trend path, the present-value relationship implies that they cannot drift too far apart. (Technically, they are "cointegrated" variables.) In the stock market, for example, the dividend-price ratio will tend to return to a fixed mean because it is determined by expectations of future dividend growth rates, which have a fixed mean. Similarly, the spread between long- and short-term interest rates has a fixed mean because it reflects a constant risk premium and expected future short rate changes. According to the permanent income hypothesis, saving is an expected present value of future declines in labor income, so if these fluctuate around a fixed mean, saving will do so too.

Some Results on Present-Value Models

Applying these ideas to the term structure of nominal interest rates, Shiller and I find that in postwar monthly U.S. data there is a high correlation between the actual long-short spread and the optimal forecast of future short rate changes from a vector autoregression. This is true even though, as we showed in earlier research, the spread predicts excess returns on long bonds.⁸ We conclude that time-varying risk premiums

⁵The evidence is mixed for real dividends on stocks, which behave more as if they have a trend growth path. See J. Y. Campbell and R. J. Shiller, "The Dividend-Price Ratio. . . ."

⁶J. Y. Campbell and N. G. Mankiw, "Are Output Fluctuations Transitory?" NBER Working Paper No. 1916, May 1986.

⁷Some of these issues are discussed at a more general level by L. P. Hansen and T. J. Sargent, "Exact Linear Rational Expectations Models: Specification and Estimation," Staff Report No. 71, Federal Reserve Bank of Minneapolis, 1981. See also K. D. West, "Dividend Innovations and Stock Price Volatility," NBER Working Paper No. 1833, February 1986.

⁸R. J. Shiller, J. Y. Campbell, and K. L. Schoenholtz, "Forward Rates and Future Policy: Interpreting the Term Structure of Interest Rates," Brookings Papers on Economic Activity 1 (1983), pp. 173-217, and J. Y. Campbell and R. J. Shiller, "A Simple Account. . . ."

in the term structure are not highly persistent, so that major movements in the long-short spread are primarily caused by expectations of future changes in short rates.

Shiller and I also study real stock price movements from 1871 to 1986. Here the evidence is more mixed. Stock prices have considerable forecasting power for dividends, even when the history of dividends is taken into account. This is a minimal implication of the present-value model. But, for constant real discount rates close to the sample average return on stocks, the dividend-price ratio seems to be more variable than the model allows.

Results for the permanent income theory of consumption are also mixed. According to the theory, real saving should be the optimal forecast of future declines in real labor income. In postwar quarterly U.S. data, saving does help to forecast labor income changes, and the sign is right: if saving is unusually high in one quarter, income tends to decline in the next quarter. The standard deviation of saving is very close to that of the optimal forecast of income declines, which contradicts the view that consumption is "excessively sensitive" to income. However, using vector autoregressions with more than a single lag, I forecast declines in the present value of income that diverge substantially from saving.

Time-Varying Discount Rates

Shiller and I have examined three models of time-varying discount rates in the stock market. Stock returns are assumed to vary with expected real returns on short debt, expected real consumption growth, or the expected volatility of the stock returns themselves. But none of these variables helps to explain movements in the dividend-price ratio in our data.⁹ I have also studied the relationship between expected stock returns and volatility in postwar monthly data, finding that the relationship is negative because high short-term interest rates, which forecast low stock returns, also forecast high volatility.¹⁰

Stock prices could also be driven by discount rate changes that are not directly observable, but that affect other asset returns. I have examined a model in which a single unobserved variable is responsible for predictable excess returns in the stock market and the term structure.¹¹ There is quite strong evidence against this model in postwar monthly data.

⁹J. Y. Campbell and R. J. Shiller, "The Dividend-Price Ratio. . . ."

¹⁰J. Y. Campbell, "Stock Returns and the Term Structure," NBER Working Paper No. 1626, June 1985, and *Journal of Financial Economics*, forthcoming 1987.

¹¹J. Y. Campbell, "Stock Returns and the Term Structure." See also J. Y. Campbell and R. H. Clarida, "The Term Structure of Euromarket Interest Rates: An Empirical Investigation," NBER Working Paper No. 1946, June 1986, and *Journal of Monetary Economics*, forthcoming 1987, for an examination of a similar hypothesis in Euro-market term structures.

Conclusion

Particular episodes in which long-term asset prices move dramatically are hard to interpret without perspective on the forces that have influenced these prices historically. The research summarized here aims to provide some perspective. For example, it appears that changes in rationally expected future real dividends can account for much, but not all, of the variation in real stock prices over the last century. There are theoretically appealing models in which stock prices also react to changes in discount rates, caused by changes in rationally expected future short-term real interest rates, consumption growth, or stock market volatility. But I have found little evidence for these effects.

Economic Outlook Survey

Errata

The tabulations of the mean probability distributions for real GNP and IPD forecasts in the "Economic Outlook Survey" reports in the Spring 1986 and Summer 1986 issues of the *NBER Reporter* contained several technical errors in the headings and intervals. (See the report that follows for an explanation of the measures concerned.)

The correct tables are as follows:

First Quarter 1986

Percentage Change in Real GNP, 1985-6	Mean Response (Percent)	
	March 1986 Survey	December 1985 Survey
6.0 percent or more	2	2
4.0 to 5.9 percent	19	14
2.0 to 3.9 percent	55	57
0 to 1.9 percent	17	22
Negative	7	5

Percentage Change in IPD, 1985-6	Mean Response (Percent)	
	March 1986 Survey	December 1985 Survey
6.0 percent or more	9	10
4.0 to 5.9 percent	24	34
2.0 to 3.9 percent	53	52
Less than 2.0 percent	14	4

Errata—continued

Second Quarter 1986

Percentage Change in	Mean Response (Percent)	
	1985-6	1986-7
Real GNP		
4.0 percent or more	8	21
2.0 to 3.9 percent	69	49
0 to 1.9 percent	22	21
Negative	1	9

Percentage Change in	Mean Response (Percent)	
	1985-6	1986-7
IPD		
6.0 percent or more	3	9
4.0 to 5.9 percent	13	34
2.0 to 3.9 percent	72	51
Less than 2.0 percent	12	6

Third Quarter 1986

Victor Zarnowitz

According to the August survey of 24 professional forecasters taken by NBER and the American Statistical Association, real GNP will rise 2.7 percent in 1986-7 and 2.9 percent in 1986:3-1987:3. In the previous (June) survey, forecasters anticipated growth of 3.4-3.7 percent. The downward revisions reflect the adverse news of the economy's performance in the spring and summer. Nonetheless, the outlook is for slow but steady growth, and the probabilities of a recession next year are relatively low, around 20 percent. The unemployment rate is not expected to change much, but more forecasters see it as drifting gradually downward than upward. They see an end to declines in consumer and producer prices, but they envisage only moderate inflation in the near future.

Despite Dissent, Forecasts of Slow Improvement Prevail

According to the latest estimates, real GNP rose at annual rates of 3.8 percent in 1986:1 and 0.6 percent in 1986:2. The prior corresponding "consensus" (group mean) forecasts from the NBER-ASA surveys were 2.8 percent and 2.6 percent. For the first half of the year, therefore, the actual and predicted figures are 2.2 percent and 2.7 percent, respectively. Although the second quarter result was certainly a major disappointment, many forecasters see the economy as gradually improving in the year ahead. The average predictions are 2.3 percent for 1986:3 and 2.6-3.1 percent for the following four quarters.

There is a great deal of uncertainty about whether the expansion will gather strength. The forecasters are about equally divided between optimists who anticipate growth to equal or exceed the long-term average of 3 percent, and pessimists who see more sluggishness. The average for the year ahead is close to 3 percent, the standard deviation is about 1 percent; three out of four forecasters fall between 2 and 4 percent. The total range, including the remaining outliers, is 1-5 percent.

Chances of a Recession Up but Not High

The forecasters were asked to assess the probabilities that real GNP will decline in any of the periods covered. The means of the resulting distributions for the five successive quarters 1986:3-1987:3 are 18, 18, 22, 22, and 23 chances in 100, respectively; the overall average is 21. In the June survey, the corresponding figures varied from 9 to 23 and averaged 15. Thus the threat of a recession is seen as increasing but not imminent. The historical record shows that these probabilities tend to approach 40 percent or more before the advent of an actual downturn in aggregate economic activity.

Probabilistic Forecasts of Growth

When asked about the probabilities they attach to several prespecified intervals of percentage change in real GNP, the forecasters produced assessments that disclose more uncertainty and doubts about the near future than could be inferred from their point forecasts. When the responses within each interval are averaged, the following summary results:

Percentage Change in	Mean Response (Percent)	
	1985-6	1986-7
Real GNP		
4.0 percent or more	5	15
2.0 to 3.9 percent	70	45
0 to 1.9 percent	23	28
Negative	2	12

Of course, the distribution for 1987 is much more dispersed than that for 1986 (the more distant the future, the greater the uncertainty). The relatively high chances of low or negative growth in 1986-7 should be noted.

Inflation Moderate but Likely to Increase

In recent months, declines in prices of industrial commodities and materials, especially including oil and many imports, offset or outweighed the rises in prices of other items, notably services. Most forecasters now expect that the deflationary forces will ebb as the collapse in oil prices is halted and monetary expansion and gradual depreciation of the dollar continue. The GNP implicit price deflator (IPD) is expected to increase 2.1 percent and 1.8 percent in the last two quarters of 1986; 2.8-3.2 percent in the first three quarters of 1987; and by about 2.5 percent in 1986 and 1987. The consumer price index (CPI), which unlike IPD includes

Projections of GNP and Other Economic Indicators, 1986-7

	Annual				
				Percent Change	
	1985 Actual	1986 Forecast	1987 Forecast	1985 to 1986	1986 to 1987
1. Gross National Product (\$ billions)	3988.1	4213.0	4447.5	5.6	5.6
2. GNP Implicit Price Deflator (1982 = 100)	111.5	114.4	117.3	2.6	2.5
3. GNP in Constant Dollars (billions of 1982 dollars)	3585.2	3680.5	3780.0	2.7	2.7
4. Unemployment Rate (percent)	7.2	7.1	6.9	-0.1 ¹	-0.2 ¹
5. Corporate Profits After Taxes (\$ billions)	131.4	140.5	148.0	6.9	5.3
6. Nonresidential Fixed Investment (billions of 1982 dollars)	458.2	454.8	457.1	-0.7	0.5
7. New Private Housing Units Started (annual rate, millions)	1.7	1.9	1.8	9.9 ²	-6.5 ²
8. Change in Business Inventories (billions of 1982 dollars)	9.0	21.6	23.0	12.6 ³	1.4 ³
9. Treasury Bill Rate (3-month, percent)	7.5	6.0	5.7	-1.5 ¹	-0.3 ¹
10. Consumer Price Index (annual rate)	3.3	2.0	3.3	-1.3 ¹	1.3 ¹

	Quarterly						Percent Change	
	1986 Q2 Actual	1986 Q3 Q4		1987 Q1 Q2		Q3	Q2 86 to Q2 87	Q3 86 to Q3 87
		Forecast						
1. Gross National Product (\$ billions)	4182.3	4230.0	4288.0	4348.5	4408.7	4475.0	5.4	5.8
2. GNP Implicit Price Deflator (1982 = 100)	114.1	114.7	115.2	116.1	116.9	117.7	2.5	2.6
3. GNP in Constant Dollars (billions of 1982 dollars)	3665.7	3686.9	3714.9	3739.0	3767.0	3794.9	2.8	2.9
4. Unemployment Rate (percent)	7.2	7.0	7.0	6.9	6.9	6.8	-0.3 ¹	-0.2 ¹
5. Corporate Profits After Taxes (\$ billions)	137.5	140.2	145.0	143.4	146.2	147.0	6.4	4.8
6. Nonresidential Fixed Investment (billions of 1982 dollars)	454.8	452.0	453.6	453.9	453.6	458.6	-0.3	1.5
7. New Private Housing Units Started (annual rate, millions)	1.9	1.9	1.9	1.8	1.8	1.8	-5.7 ²	-4.6 ²
8. Change in Business Inventories (billions of 1982 dollars)	19.6	16.0	18.0	20.0	22.0	23.0	2.4 ³	7.0 ³
9. Treasury Bill Rate (3-month, percent)	6.1	5.7	5.4	5.5	5.6	5.8	-0.5 ¹	0.1 ¹
10. Consumer Price Index (annual rate)	2.1	2.9	3.3	3.5	3.5	3.7	1.4 ¹	0.8 ¹

SOURCE: National Bureau of Economic Research and American Statistical Association, Business Outlook Survey, September 1986. The figures on each line are medians of twenty-four individual forecasts.

¹Change in rate, in percentage points.

²Possible discrepancies in percentage changes are caused by rounding.

³Change in billions of dollars.

import prices, shows a larger and more consistent increase in inflation, from 2.9 percent and 3.3 percent in 1986:3 and 1986:4 to 3.5 percent in the first half of next year and 3.7 percent in 1987:3. The annual median rates of increase in the CPI for 1986 and 1987 are 2.0 percent and 3.3 percent, respectively.

The mean percentage distribution based on the individual probabilistic forecasts for IPD is as follows:

Percentage Change in IPD	Mean Response (Percent)	
	1985-6	1986-7
6.0 percent or more	2	5
4.0 to 5.9 percent	7	19
2.0 to 3.9 percent	76	62
Less than 2.0 percent	15	14

Predictions for both periods are concentrated between 2-4 percent, but the expected increase in dispersion between the 1985-6 and the 1986-7 distributions takes the form of a shift toward the upper end of the probable range.

Views on Interest Rates Divided; Most See Slow Rises Ahead

The 3-month Treasury bill rate is expected to reach a low of 5.4 percent in 1986:4, then rise to 5.8 percent in 1987:3. Similarly, the yield on new high-grade corporate bonds is expected to decline to 8.4 percent in 1986:4, then increase to 8.8 percent in 1987:3. The annual averages, however, are somewhat lower for 1987 than for 1986.

These medians conceal much dispersion among the individual forecasts. About 60 percent of the sample sees the rates higher in 1987:3 than in 1986:3, the rest lower or, in a couple of cases, the same. The 1987:3 forecasts range from 4.6-7.0 percent for the bill rate, 7.8-9.9 percent for the bond yield, and have standard deviations of about 0.6 percent for both.

Consumption Fairly Steady, Investment Weak

Real consumption is forecast to rise 3.8 percent in 1985-6 but only 2.9 percent in 1986-7 and slightly less than that in 1986:3-1987:3. Individual forecasts for this variable tend to agree with these averages. Thus consumption is perceived as rising about as much as expected real GNP. In contrast, nonresidential fixed investment in 1982 dollars is predicted to decline 0.7 percent in 1985-6 and rise only 0.5 percent in 1986-7. However, a modest improvement in real outlays on business plant and equipment is expected in the year ahead. (The forecast for 1986:3-1987:3 is a rise of 1.5 percent.)

Residential construction will probably not be a source of much strength either. Most forecasters see housing starts as drifting downward in the year ahead, although gently. Expenditures in constant dollars hold up better, drawing on higher prior levels of the starts.

Trade Deficits Lower, Industrial Production Stronger

Net exports of goods and services in billions of 1982 dollars are forecast to be -103 in 1987:3, down about 30 percent from their estimated mid-1986 level. Almost all respondents expect the trade deficit to fall, although they vary widely in their predictions, from 6 to 41 percent.

Output of manufacturing, mining, and public utilities is expected to rise only 0.4 percent in 1985-6, 3 percent in 1986-7, and 3.7 percent in 1986:3-1987:3. This is a substantial turnaround and reflects the persistent belief that eventually the economy will benefit from the falling dollar and the improved competitive stance of U.S. industry.

Policy and Other Assumptions

Some forecasters assume that the passage of the tax reform law will be associated with tax increases, which vary in the individual responses from "slight" to "10 percent in 1987-8." Real government purchases of goods and services are expected to rise modestly in the year ahead (on the average, 1.8 percent and 1.4 percent for the federal and state-local governments, respectively). The individual assumptions about the growth in defense outlays vary greatly, but on the whole reflect the expectation that Congress will keep it low.

Those respondents who stated their monetary policy assumptions in numerical terms put the growth rates of M1 at 8-13 percent in 1986, 7-8 percent in 1987. For M2 the estimates are slightly lower.

Oil prices are generally assumed to vary around \$15

but below \$20 per barrel in 1986, and to be somewhat higher in 1987.

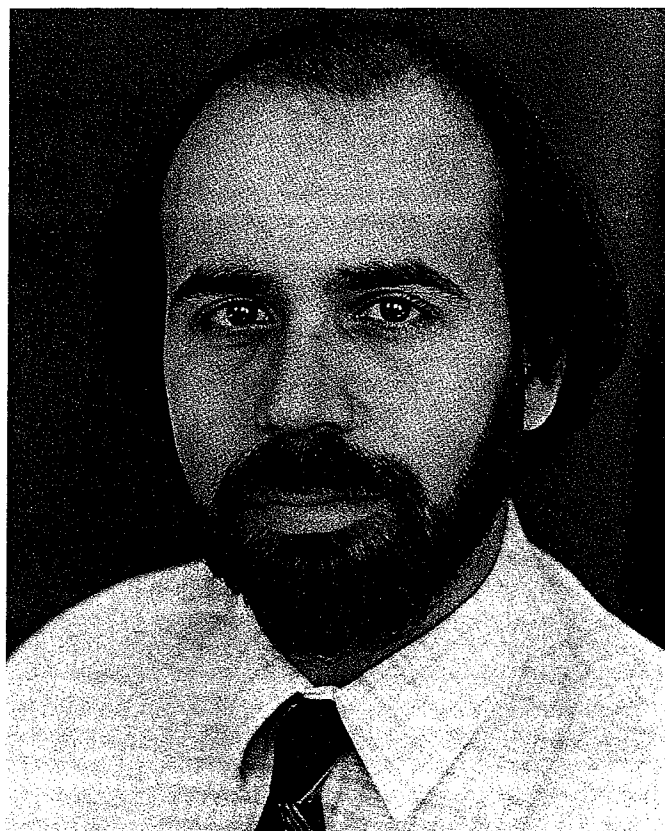
Most respondents see the dollar as continuing to drift down in 1987 and exports as strengthening.

This report summarizes a quarterly survey of predictions by 24 business, academic, and government economists who are professionally engaged in forecasting and are members of the Business and Economics Statistics Section of the American Statistical Association. Victor Zarnowitz of the Graduate School of Business of the University of Chicago and NBER, assisted by Robert E. Allison of NBER, was responsible for tabulating and evaluating this survey.

NBER Profiles

Ben S. Bernanke

Ben Bernanke, a research associate in NBER's Program in Economic Fluctuations since 1983, was born in Augusta, Georgia. He received his B.A. from Harvard University in 1975 and his Ph.D. in economics from MIT in 1979.



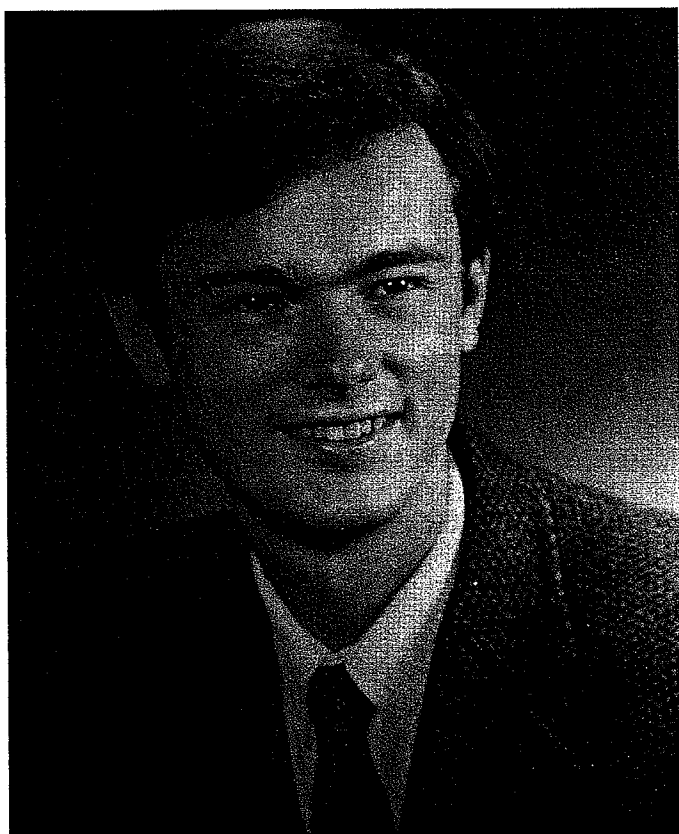
Bernanke was an assistant professor of economics at Stanford Business School from 1979-83, and an associate professor there from 1983-5. He was named professor of economics and public affairs at the Woodrow Wilson School, Princeton University, in 1985.

Bernanke is also associate editor of the *Quarterly Journal of Economics*. In addition, his work on banking, business cycles, and financial crises has appeared in a number of economic journals.

Bernanke and his wife, Anna, live in Rocky Hill, New Jersey. They have two children: Joel, who is nearly four, and Alyssa, who was born in June. In his free time, Bernanke plays squash and roots for the Red Sox.

John Y. Campbell

John Campbell has been a faculty research fellow in NBER's Program in Financial Markets and Monetary Economics since 1984. This year, he is also a John M. Olin Fellow, doing research in the Bureau's Cambridge office.

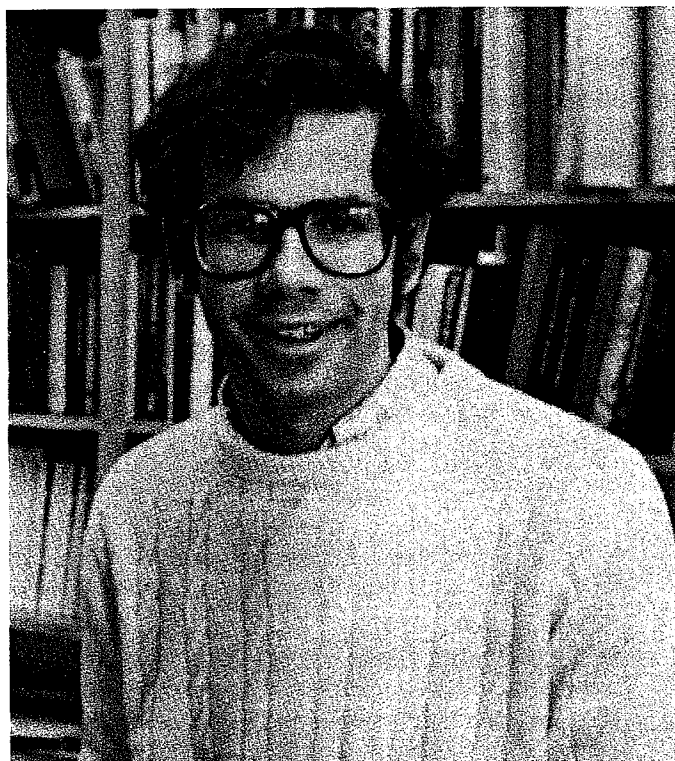


Campbell, who holds a B.A. from Oxford University, received his Ph.D. from Yale University in 1984. He has been an assistant professor of economics at Princeton University since 1984 and has taught courses in both monetary and macroeconomic theory. Campbell's work has been published in several journals and in NBER's Working Paper Series.

Campbell was born in England and is a dual citizen of the United States and the United Kingdom. He and his wife, Susanna Peyton, are expecting their first child in December. Campbell's main extracurricular interest is choral singing; he sang tenor with the Princeton Singers, a 25-member a cappella group.

Harvey S. Rosen

Harvey Rosen, director of NBER's Project on State and Local Government Finance, has been an NBER research associate since 1978. Rosen received his A.B. from the University of Michigan in 1970 and his Ph.D. in economics from Harvard University in 1974. He has served on the economics faculty at Princeton University since 1974 and was promoted to professor of economics there in 1984.



Rosen was also a fellow at Hebrew University's Institute for Advanced Studies (Jerusalem) in 1978, and a visiting scholar at the Hoover Institution (Stanford University) in 1981. In addition, he served as a consultant to the U.S. Treasury's Office of Tax Analysis, in 1975-6 and 1983, and to the Joint Economic Committee of the U.S. Congress in 1979.

Rosen's work on taxation, housing, and labor markets has appeared in a number of academic journals. He is also editor of the 1986 volume, *Studies in State and Local Public Finance*.

He and his wife, Marsha Novick, live in Princeton. They have two children, Lynne, aged 5, and Jonathan, aged 3. Rosen's hobbies are jogging and cooking.

Correction

The Summer 1986 issue of the *NBER Reporter* incorrectly stated that James Tobin will retire from Yale University this year. He will actually retire from that institution on June 30, 1988.

International Seminar on Macroeconomics

The ninth International Seminar on Macroeconomics (ISOM) was held at the Facultés des Universitaires Notre Dame de la Paix in Namur, Belgium, on June 22–24. ISOM is cosponsored by the National Bureau of Economic Research and La Maison des Sciences de l'Homme. The seminar is organized jointly by Robert J. Gordon of NBER and Northwestern University and Georges de Menil of the Ecole des Hautes Etudes en Sciences Sociales (EHESS).

This year's program focused on supply-side problems in Europe, with a particular emphasis on labor markets. The papers and their discussants were:

Toshiaki Tachibanaki, Kyoto University, "Labor Market Flexibility in Japan, Europe, and the United States"

Discussants: Richard Layard, London School of Economics, and Jacques Mairesse, NBER and ENSAE

Olivier J. Blanchard, NBER and MIT, and Lawrence H. Summers, NBER and Harvard University, "Fiscal Increasing Returns, Real Wages, and Unemployment"

Discussants: Masaru Yoshitomi, OECD, and James Symons, Center for Labour Economics

Henri Sneesens, Université de Lille and CORE, "Unemployment and Investment in Macroeconomic Models with Quantity Constraints"

Discussants: Edmond Malvinvaud, INSEE, and Richard Portes, NBER and Centre for Economic Policy Research

Guiseppe Tullio, Commission of the European Community, "Long-Run Implications of the Increase in Taxation and Public Debt for Employment and Economic Growth in Europe"

Discussants: David Begg, Bank of England, and Martin Feldstein, NBER and Harvard University

Gordon Hughes, University of Edinburgh, and Barry McCormick, University of Southampton, "Housing Markets, Unemployment, and Labor Market Flexibility in the United Kingdom"

Discussants: Martin N. Baily, The Brookings Institution, and T. Inoki, Osaka University

Andrew Newell, Centre for Labour Economics, London School of Economics and Political Science, and James Symons, "Corporatism, Laissez-Faire, and the Rise in Unemployment"

Discussants: Lawrence H. Summers, and Jean Walbroeck, Free University of Brussels

Robert J. Gordon, "Productivity, Wages, and Prices Inside and Outside of Manufacturing in the United States, Japan, and Europe"

Discussants: William H. Branson, NBER and Princeton University, and Heinz Konig, Universitat Mannheim

Tachibanaki examines labor market flexibility in Japan, Europe, and the United States, emphasizing Japan. He investigates the importance of such factors as labor supply, mobility, adjustment costs, the flexibility of wages, and the seriousness of unemployment. He finds that the rate of unemployment in Japan is a poor indicator of labor market conditions, because it does not include the large number of discouraged and involuntary part-time workers. Also, despite large fluctuations in output, the rate of unemployment does not vary much for other reasons, particularly the flexibility of working hours, including overtime hours. In some respects Japanese labor markets are flexible; however, in other ways they are quite rigid. Tachibanaki concludes that the flexibility does not contribute to an improved performance of the labor market, and that there are costs (for example, exit of women from the labor force) paid in order to achieve flexibility.

Blanchard and Summers discuss the widely held view that real wages must fall if European unemployment is to be reduced. They show that this conclusion is valid only in the absence of increasing returns to labor and the production of output for private consumption. They claim that increasing returns can arise for two reasons. First, there will be fiscal increasing returns if increases in private output permit reductions of the tax rate necessary for a government to attain its desired level of spending. Second, the production function itself may exhibit increasing returns. The effects of increasing returns, particularly of the first type, are sufficiently important that reductions in European unemployment would probably be associated with increases in the standard of living of employed workers.

Sneesens develops a macroeconomic rationing (or disequilibrium) model that distinguishes three possibilities: Keynesian unemployment, classical unemployment, and repressed inflation in a setting of monopolistic competition. Prices and the capital stock are endogenous and determined by the optimal behavior of firms. Under monopolistic competition, firms are uncertain about the demand for their products and the availability of productive factors (labor and capital). In the short run, they set prices so as to maximize expected profits. In the longer run, productive capacities are adjusted until expected pure profits are zero. Firms are assumed to have perfect expectations. The rationing of consumers on goods markets occurs only because firms have to announce prices before uncertainty is resolved. Sneesens shows that prices adjust slowly to changes in the average cost of production that result from unanticipated permanent aggregate demand or supply shocks.

The paper by Tullio analyzes the major channels through which the sharp rise in taxation and public debt may have slowed the growth in employment and in GNP per capita in Europe. Government expenditure as a percentage of GNP grew much more in Europe than in the United States between 1960 and 1985. The European increase in expenditures was financed primarily by much higher tax rates, particularly for direct taxes, and to a lesser extent by public debt.

Tullio's central theme is that, since labor unions possess some degree of monopoly power in Europe, taxes have been shifted forward into higher real labor costs. As the long-run elasticity of the demand for labor with respect to the real wage is high, employment has fallen. Another related factor is the value workers attribute to the growth in government expenditure; the less workers value higher government expenditure, the more they will resist a decline in aftertax real wage rates. Tullio concludes that, because public investment fell while transfer payments grew rapidly, the growth of the public sector has probably lowered overall economic growth.

Hughes and McCormick extend their previous work, which showed that British tenants in public housing have significantly lower rates of migration and higher rates of unemployment than other households do. The new paper examines regional migration and house movement for job-related reasons. The results indicate that public housing inhibits local movement for job-related reasons, as well as inhibiting migration. They also find that British migration rates are less than one-half of comparable American rates, after adjusting for the impact of differences in tenure and college education patterns. Further, there is little evidence that British migration operates to reduce interregional differences in rates of unemployment.

Newell and Symons study the relationship between wage-setting institutions and the behavior of unemployment in a number of countries. They argue that *laissez-faire* wage-setting generates a high and often variable unemployment rate. Corporatism (wage-setting by central organizations commanding the obedience of individual workers and employers) generates a lower wage rate than that generated by *laissez-faire*, and hence a higher level of employment. In corporatist economies, unemployment has a strong effect on the product wage. Newell and Symons conclude that corporatism would reduce the real wage and expand unemployment in Europe, but that corporatism is inherently unstable, because of disaffection by workers who could do better, erosion of differentials, and the difficulty of implementing wage cuts in the 1970s after the OPEC oil shocks.

Gordon presents evidence that the previous literature has greatly exaggerated the contrast between the cyclical behavior of labor productivity, wage rates, and price deflators in the United States and Europe. He develops a new data set that provides consistent measures of productivity, wage rates, and prices in the aggregate, manufacturing, and nonmanufacturing sectors in 14 OECD economies. Gordon confirms the

responsiveness of labor inputs to changes in the real wage but shows that this response is similar in the United States, Japan, and Europe, rather than being especially high in Europe. Gordon also finds that productivity exhibits mild procyclical fluctuations in Europe and the United States, in contrast to some previous research that found countercyclical fluctuations in European productivity.

A consistent treatment of the income and hours of the self-employed leads Gordon to develop new "wage gap" indexes that do not show the secular increase in Japan and Europe that appears evident in other research. If anything, real wages in Europe and Japan have been too flexible rather than too rigid, in the sense that temporary increases in wage gap indexes in Europe stem from autonomous wage push episodes in 1968-70 and in Japan from an autonomous wage explosion in 1973-4.

International Asset Pricing

NBER's Program in International Studies sponsored a miniconference on international asset pricing in Cambridge on August 4 and 5. At the conference, organized by Bernard Dumas, NBER and University of Pennsylvania, the following topics were discussed:

ASSET-PRICING THEORY AND CAPITAL FLOWS

Alan C. Stockman, NBER and University of Rochester, and Alejandro Hernandez, University of Rochester, "Exchange Controls, Capital Controls, and International Financial Markets"

Discussant: Rene Stulz, Ohio State University

Rene Stulz, "An Equilibrium Model of Asset Pricing with Nontraded Goods"

Discussant: George Pennacchi, University of Pennsylvania

Bernard Dumas, "Two-Person Dynamic Equilibrium: Trading in the Capital Market" (NBER Working Paper No. 2016)

Discussant: Alan C. Stockman

Lars E. O. Svensson, University of Stockholm, and Sweder van Wijnbergen, The World Bank, "International Transmission of Monetary Policy"

Discussant: Bernard Dumas

George Pennacchi, and Alessandro Penati, University of Pennsylvania, "Optimal Portfolio Choice and the Collapse of a Fixed Exchange Rate Regime"

Discussant: Bernard Dumas

EMPIRICAL INVESTIGATIONS

Davis Hsieh, University of Chicago, "The Statistical Properties of Daily Foreign Exchange Rates: 1974-83"

Discussant: Robert E. Cumby, NBER and New York University

Albert Giovannini and Phillippe Jorion, Columbia University, "Interest Rates and Risk Premia in the Stock Market and in the Foreign Exchange Market"

Discussant: David Hsieh

Kenneth Froot, MIT, and Jeffrey A. Frankel, NBER and University of California, Berkeley, "Interpreting Tests of Bias in the Forward Discount Using Surveys of Exchange Rate Expectations"

Discussant: Albert Giovannini

Robert E. Cumby, "Consumption Risk and International Asset Returns: Some Empirical Evidence"

Discussants: Kenneth Froot and Jeffrey A. Frankel

In the first paper, Stockman and Hernandez analyze the effects on prices and resource allocation of taxes and quantitative restrictions on international financial transactions, purchases of foreign currency (exchange controls), and the income from foreign interest-bearing assets (capital controls). Next, Stulz studies nominal exchange rates in the context of a two-country model with maximizing households, stochastic production and money growth, and perfect capital mobility.

Dumas examines the case of two investors with different risk aversions trading competitively in a capital market. He finds that, in equilibrium, investors revise their portfolios over time so that some trading takes place and that, in the long run, both investors have some wealth.

Svensson and van Wijnbergen study the international transmission of monetary policy. They find that the spillover effects of monetary policy may be either positive or negative depending upon whether home and foreign goods are complements or substitutes.

Pennacchi and Penati use an intertemporal capital asset pricing model to explain the macroeconomic regularities that accompany the collapse of a fixed rate regime. They find that the end of such a regime will be preceded by rising nominal interest rates and accelerated losses of central bank reserves.

Hsieh looks at changes in daily foreign exchange rates for five major currencies against the U.S. dollar from 1974 to 1983, while Giovannini and Jorion consider regularities in returns in the U.S. stock market and the foreign exchange market. Froot and Frankel measure exchange rate expectations, while Cumby finds that real stock returns in four countries are not consistent with consumption-based models of international asset pricing.

Conference on United States-Japan Issues

NBER held a conference on "Economic Issues in the United States and Japan" in Cambridge on August 5-7. The conference was organized by Geoffrey Carliner, NBER, and cosponsored by the Foundation for Advanced Information and Research (FAIR), Japan. The following papers were presented:

Kazuo Ueda, Osaka University, "The Long-Term Prospect of Japanese Budget Deficit"

Laurence J. Kotlikoff, NBER and Boston University, "Deficit Delusion"

Yoshio Terasawa, Nomura Securities International, "Recent Developments in International Financial Markets"

Alan J. Auerbach and Albert Ando, both of NBER and University of Pennsylvania, "Japanese Savings Rates"

Yukio Noguchi, Hitotsubashi University, "Demographic Conditions, Social Security, and Capital Accumulation: An Analysis Through a Behavioral Simulation Model"

Zvi Griliches, NBER and Harvard University, and Jacques Mairesse, NBER and INSEE, "R and D and Productivity Growth: Comparing Japanese and U.S. Manufacturing Firms" (NBER Working Paper No. 1778)

Richard B. Freeman, NBER and Harvard University, and Martin Weitzman, MIT, "Bonuses and Employment in Japan" (NBER Working Paper No. 1878)

Fumio Hayashi, NBER and Osaka University, joint work with Tohru Inoue, "Testing the Q Theory of Investment Against Credit Constraints: Evidence from Micro Data on Japanese Firms"

Paul R. Krugman, NBER and MIT, "Is the Japan Problem Over?" (NBER Working Paper No. 1962)

Motoshige Itoh and Tetsushi Honda, both of Tokyo University, and Kazuharu Kiyono, Gakushuin University, "Policy Formation and Response—The Case of Trade Policies"

Takatoshi Ito, NBER and University of Minnesota, "The Intradaily Exchange Rate Dynamics and Monetary Policies After G-5"

Koichi Hamada, NBER and Tokyo University, and Akiyoshi Horiuchi, Tokyo University, "Monetary and Real Effects of the Internationalization of a National Currency: The Case of the Yen"

In his paper, Ueda simulates Japanese government budget deficits by taking into account central government tax revenues, purchases of goods and services, debt service, and transfers to local governments and to the Social Security trust fund. He finds that increased government debt associated with an increased deficit will not make reduction of the deficit more difficult in

the future than it has been in the past. Ueda concludes that, in the short to medium run, there is some room for expansion in Japan. In the long run, though, the aging of Japanese society will put increasing pressure on Social Security spending and on the budget deficit.

Kotlikoff discusses the problems in measuring federal budget deficits. He contends that the concept of deficits involves arbitrary labeling of transactions between the government and the public and that this concept is not useful for evaluating the effect of government actions on the economy. To illustrate his point, Kotlikoff cites a tax payment made by an individual, coupled with a promise of a future transfer payment by the government, as similar in economic terms to the government borrowing its future repayment. He suggests an alternative measure that better reflects net government saving.

In his luncheon address, Terasawa discussed recent developments in international financial markets. He explained that Japanese investors have wanted to diversify their portfolios to include more foreign assets. Therefore, he predicts a continued flow of capital from Japanese investors into U.S. bonds. Terasawa also predicts international competition among financial institutions, both in New York and in Tokyo.

Auerbach and Ando report their preliminary estimates of the cost of capital for Japanese firms. They adjust this cost for taxes, inflation, the issuance of new debt and equity, and other factors. They then compare estimates based on Japanese national income accounts with their calculations based on data for individual firms and discover several anomalies. They intend to investigate these puzzles in future work.

Noguchi uses an overlapping-generations model to simulate the potential effects of the rapidly rising average age of the Japanese population. People over 65 now constitute about 10 percent of Japan's population but they will be 15 percent by the end of the century and 22 percent by 2020. At that time, Japan's population will be among the oldest in the world. As a result, Japan's Social Security spending and its capital-labor ratio will rise, while personal saving will fall. Noguchi predicts that Japan will continue to export capital in spite of the projected decrease in saving. He concludes that aging itself will not have serious consequences for Japan but that there may be problems created by Japan's Social Security system.

Griliches and Mairesse report their estimates of the effect of R and D spending on productivity growth in the United States and Japan. Using data on large manufacturing firms for 1973-80, they find that R and D spending as a percentage of sales was similar in both countries. Furthermore, differences in R and D spending across firms cannot explain differences in productivity growth among firms during this period, nor can it explain the higher average productivity growth of the Japanese firms. Finally, Griliches and Mairesse find that the average capital-labor ratio grew much faster in Japan than in the United States as did the effect of this ratio on productivity per worker.

Freeman and Weitzman measure how Japanese bonuses vary with changes in profits and revenues. They find that bonuses are more highly correlated with profits and revenues than wages are, and therefore may have different effects than wages on employers' hiring decisions. Freeman and Weitzman conclude that it was the flexibility of wages, rather than of bonuses, that allowed Japan to absorb the oil shocks of the 1970s with relatively little employment and inflation.

In their work, Hayashi and Inoue calculate Tobin's q for a sample of 430 Japanese manufacturing firms for 1975-84. This requires adjusting the firms' balance sheets for the value of land holdings, financial assets, and taxes. Hayashi finds very large variations across firms in the value of q . Furthermore, most of the changes in firms' q over time are caused by changes in the price of the firms' stock. Hayashi and Inoue also find that investment depends on current, but not on lagged, values of q . They conclude that other factors are more important than q in explaining investment by individual Japanese firms.

Krugman's paper analyzes trends in Japan's trade balance. By comparing the trade patterns of various countries, he finds that U.S.-Japanese trade frictions are primarily the result of the rapid growth of Japanese exports rather than of the level or composition of these exports. The rapid growth in Japanese exports since 1973 was primarily caused by the large rise in oil prices in the 1970s and to a lesser extent to the rise in Japanese capital exports. Now that oil prices have fallen dramatically, it is very likely that Japanese export growth will slow or even cease altogether. Krugman concludes that a very strong yen will probably be necessary to achieve this new balance.

Itoh and Honda analyze the formation of government policy toward trade and subsidies. They use a game-theoretic model in which firms operating in imperfectly competitive markets can make investments or set prices that will affect the tariff or quota level set by the government to restrict imports. They find that lack of government information about the firms' costs, differences between politicians' and firms' discount rates, and alternative government objective functions all will influence the outcome of the process.

Ito considers the importance of government intervention versus fundamental market factors in determining changes in exchange rates. Because exchange rates can move very rapidly in response to new information, Ito focuses on daily changes in the dollar-yen exchange rate in the Tokyo, European, and New York markets following the G-5 meeting in September 1985. He finds that the decline in oil prices and changes in monetary and fiscal policies in the United States, Japan, and Europe all contributed to changes in exchange rates. However, Ito finds little support for the hypothesis that sterilized intervention can affect interest rates.

Finally, Hamada and Horiuchi present evidence on the internationalization of the yen. They find that the yen is not used in merchandise trade or in international financial transactions as much as other currencies are.

Furthermore, although Japanese capital markets have been substantially liberalized in recent years, the use of the yen has increased very little. They attribute this lack of use to the importance of Japan's trade with the United States, and the fact that the dollar is widely used internationally. In addition, past government restrictions on domestic financial markets may continue to have effects. These restrictions were loosened recently, and the effect on the use of the yen in international trade and finance remains to be seen.

In addition to the authors, conference participants included: Akio Ariyoshi, International Monetary Fund; Tom Bayard, Ford Foundation; William H. Branson, NBER and Princeton University; Martin Feldstein, NBER and Harvard University; Jeffrey A. Frankel, NBER and University of California, Berkeley; Harry Grubert, Department of the Treasury; Bronwyn H. Hall, NBER; Graciella Kaminsky, University of California, San Diego; Yasunori Kobayashi, Ministry of Finance; Richard C. Marston, NBER and University of Pennsylvania; Warwick J. McKibbin, Harvard University; Jack Mutti, University of Chicago; Yoichi Namoto, FAIR; Masahiro Okuno, Stanford University; Richard Portes, NBER and Center for Economic Policy Research; J. David Richardson, NBER and University of Wisconsin; Joel Slemrod, NBER and University of Minnesota; and John Walsh, Washington University.

Public Sector Unionism

NBER's Program in Labor Studies held a conference on Public Sector Unionism on August 15–16 in Cambridge. The conference was organized by Richard B. Freeman, NBER and Harvard University. The following papers were presented and discussed:

H. Gregg Lewis, Duke University, "Union/Nonunion Wage Gaps in the Public Sector"

Discussant: Zvi Griliches, NBER and Harvard University

Charles C. Brown, NBER and University of Michigan, and James L. Medoff, NBER and Harvard University, "State and Local Government Wage Rates: Unions, Employer Size, and Ability to Pay"

Discussant: Daniel S. Hamermesh, NBER and Michigan State University

Alan B. Krueger, Harvard University, "Are Public Sector Workers Really Overpaid? Evidence from Longitudinal Data and Queues"

Discussant: Lisa Lynch, NBER and MIT

Henry S. Farber, NBER and MIT, "The Evolution of Public Sector Bargaining Laws"

Discussant: Edward P. Lazear, NBER and University of Chicago

Gregory Saltzman, Brandeis University, "Delayed but Not Denied: The Enactment of Public Sector Bargaining Legislation in Ohio and Illinois"

Discussant: William T. Dickens, NBER and University of California, Berkeley

Casey Ichniowski, NBER and Columbia University, "Public Sector Union Growth and Bargaining Laws: A Proportional-Hazards Approach with Time-Varying Treatments" (NBER Working Paper No. 1809)

Discussant: John M. Abowd, NBER, Cornell University, and MIT

Ronald G. Ehrenberg, NBER and Cornell University, and Richard P. Chaykowsky, Cornell University, "On Estimating the Effects of Increased Aid to Education"

Discussant: Richard Murnane, Harvard University

Morris Kleiner, NBER and University of Kansas, and Daniel Petree, University of Kansas, "Unionism and Licensing of Public School Teachers: Impacts on Wages and Output"

Discussant: Joe Stone, University of Oregon

Richard B. Freeman, and Robert Valletta, Harvard University, "Does the Legal Environment Affect the Outcome of Public Sector Collective Bargaining?"

Discussant: Harvey S. Rosen, NBER and Princeton University

Steven G. Allen, NBER and North Carolina State University, "Unions and Job Security in the Public Sector"

Discussant: Joseph J. Altonji, NBER and Columbia University

Casey Ichniowski, and Jeffrey S. Zax, NBER and Queens College, CUNY, "The Effects of Public Sector Unionism on Pay, Employment, Department Budgets, and Municipal Expenditures"

Discussant: Harry J. Holzer, NBER and Michigan State University

David E. Bloom, NBER and Harvard University, "Empirical Models of Arbitrator Behavior under Conventional Arbitration" (NBER Working Paper No. 1841)

Discussant: Morris Horowitz, Northeastern University

Orley C. Ashenfelter, NBER and Princeton University, James Dow, University of Pennsylvania, and Daniel Gallagher, University of Iowa, "Arbitrator and Negotiator Behavior under an Appellate System"

Discussant: Robert Gregory, Australian National University

In his paper, Lewis reviews the methods of estimating union/nonunion wage gaps used in 75 previously conducted studies. He discusses the problems with

these methods and tries to adjust the estimates to take account of their shortcomings. He finds overall that there is much variation in the union/nonunion wage gap across groups of workers within each of the two sectors, public and private, and that although public sector gaps are typically somewhat below their private sector counterparts, there are important exceptions to this difference, especially among employees of local governments.

Brown and Medoff look at the interaction between employer size and ability to pay in determining the wages of local government employees. They find that both employer size and the ability of the government to pay (measured by family income and property value per capita in the jurisdiction) raise wages, but that the two factors are more or less independent. The size-wage relationship is not simply a reflection of a relationship between size and ability to pay. The authors conclude that controlling for employer size and ability to pay has fairly small effects on estimates of the impact of unions on the wages of public sector workers.

Krueger performs longitudinal analyses of public sector pay and finds that wages of federal workers exceed those of private sector workers, while wages of state and local government workers are roughly equivalent to wages of private sector workers. He also finds that more workers apply for each job opening in the federal government than in the private sector. He concludes that the union wage gap is significantly smaller in the public sector than in the private sector.

Farber studies the relationship between the passage of state laws defining collective bargaining rights of public employees and the number of states prohibiting bargaining. He attempts to specify and estimate a reduced-form model of the determination of state laws governing public sector bargaining. He finds that his basic model is an effective approach but that additional work is necessary to define more appropriate explanatory variables and to refine and test the econometric structure.

Saltzman studies public sector collective bargaining in Ohio and Illinois. Both states, although highly industrialized and unionized, had no statute granting public employees the right to bargain until 1983; yet both had many public sector collective bargaining contracts. Using open-ended interviews and quantitative data, he studies the reasons why comprehensive bargaining statutes were finally enacted in 1983, and why previous attempts to secure legislation failed. He observes that bargaining statutes were delayed in Illinois chiefly by the desire of the Chicago Democrats to maintain patronage arrangements, and in Ohio chiefly by the insistence of unions that they get a strongly pro-union statute or none at all.

Ichniowski estimates the relationship between collective bargaining policies at the state level and union growth in the public sector. He uses data on approximately 800 municipal police departments and finds that the timing of unionization in these departments clearly indicates that unionization rarely precedes the

enactment of a statute. Where bargaining laws have not been enacted, formal collective bargaining between municipalities and their police is virtually nonexistent. In addition, when he controls for the effects of other factors at the state and municipal levels, he finds that bargaining laws and policies are the most important determinant of unionization among police. However, there appears to be no difference in the unionization rates between the states that have duty-to-bargain provisions along with an interest arbitration mechanism and those states that have duty-to-bargain provisions without such a dispute resolution mechanism.

Using data from a panel of 700 school districts in New York state, Ehrenberg and Chaykovsky explore how school districts will respond to future changes in federal aid as compared to how they responded to changes in state aid during 1978-83. They focus on changes in teacher salaries, tax rates, teacher/student ratios, and other staff/student ratios. However, they are unable to find systematic and significant effects of financial variables, and their results shed little light on the effects of changes in state aid. They conclude that changes in aid probably affected the timing of capital expenditures and the issuance and retirement of debt much more than they affected the outcomes on which their paper focuses.

Kleiner and Petree analyze the effect of unionization on teachers' earnings and on the quality of public education. They observe that unions in the public sector increased wages by 7-15 percent from 1972-82 through contract coverage and the political process. Unionism also increased student/teacher ratios and nonwage expenditures per student. Kleiner and Petree also find a positive direct effect of union membership and, to a lesser extent, of contract coverage, on students' SAT and ACT scores and their graduation rates. They note that this effect may be the result of lower teacher turnover, greater teacher voice at the workplace, or standardization of the workplace.

In their paper, Freeman and Valletta find that the legal environment has a significant direct and indirect influence on the economic outcomes of public sector labor markets. Whereas union coverage raises wages and employment, a legal environment that is favorable to bargaining raises wages but tends to reduce employment. The authors also find evidence of significant "spillovers" of union effects on noncovered departments across and within cities, with wages higher and employment lower in departments without collective bargaining contracts than in states with strong collective bargaining laws. They conclude that unlike private sector unions, public sector unions use their resources to shift demand for labor as well as to raise wages.

Allen shows that the odds of being unemployed are identical in the public and private sector for nonunion workers with similar characteristics. Although public sector jobs are less subject to seasonal and cyclical shocks, and cyclical patterns lag those in the private sector, these factors seem to be exactly offset by the inability to produce for inventory and the labor intensi-

ty of the production process in the public sector. Allen also finds that the impact of unions on employment and permanent layoff probabilities varies substantially between private and government jobs. For union workers, the odds of being unemployed are much higher in the private sector than in the public sector.

Ichniowski and Zax report that municipal unions successfully employ a distinctive strategy at the bargaining table and through political activity: by increasing spending on their own functions, they can raise their employment as well as their wages. The effects of municipal unions in labor negotiations are to accept employment reductions in return for compensation increases. The authors note, however, that the unions' political activity increases own-function expenditures and thereby increases demand for their own services. This increased derived demand in turn increases municipal employee compensation beyond the increase won at the bargaining table. On net, then, these unions achieve both compensation and employment gains. Ichniowski and Zax conclude that unions achieve their objective by influencing budget expenditures and not just levels of pay.

Bloom analyzes conventional arbitration decisions. He finds that conventional arbitrators tend to split the difference between the parties' final offers. Bloom notes that since there is a substantial amount of unexplained variance in the arbitration decisions, this evidence of mechanical compromise behavior should be viewed as characterizing the overall operation of conventional arbitration mechanisms and not the behavior of individual arbitrators in any particular case. Bloom finds that his results are consistent with the view that individual arbitrators pay close attention to the facts of the cases, but that there is considerable variation in the structure of different arbitrators' preference functions.

As this issue of the *NBER Reporter* went to press, a description of the Ashenfelter-Dow-Gallagher paper had not been received.

A volume containing these papers, edited by Richard B. Freeman and Casey Ichniowski, will be published by the University of Chicago Press. An announcement of its availability will appear in a future issue of the *NBER Reporter*.

Conference Calendar

Each *NBER Reporter* includes a calendar of upcoming conferences and other meetings that are of interest to large numbers of economists (especially in academia) or to smaller groups of economists concentrated in certain fields (such as labor, taxation, finance). The calendar is primarily intended to assist those who plan conferences and meetings, to avoid conflicts. **All activities listed should be considered to be "by invitation only," except where indicated otherwise in footnotes.**

Organizations wishing to have meetings listed in the Conference Calendar should send information, comparable to that given below, to Conference Calendar, National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. Please also provide a short (fewer than fifty words) description of the meetings for use in determining whether listings are appropriate for inclusion. The deadline for receipt of material to be included in the Fall 1986 issue of the *Reporter* is November 15. If you have any questions about procedures for submitting materials for the calendar, please call Kirsten Foss Davis at (617) 868-3900.

November 6-8, 1986

North American Conference, International Association of Energy Economists*

November 7, 1986

Program Meeting: Financial Markets and Monetary Economics, NBER

November 9-12, 1986

79th Annual Conference, National Tax Association-Tax Institute of America*

November 13-14, 1986

Macro Coordination Regimes and Policies, Center for Economic Policy Research-Brookings Institution

November 17, 1986

Conference: The Economics of Tax Policy, NBER

November 21, 1986

Program Meeting: Productivity-Patents Group, NBER

November 21-22, 1986

Universities Research Conference: The Economics of Government Expenditure Programs, NBER

November 21-22, 1986

Conference, Carnegie-Mellon University-University of Rochester

*Open conference, subject to rules of the sponsoring organization.

November 23-25, 1986
Annual Meeting, Southern Economic Association*

December 8-10, 1986
Annual Conference on Business Forecasting, International Association of Business Forecasting

December 12-13, 1986
State and Local Government Finance, NBER

December 28-30, 1986
Annual Conference, American Economic Association*

January 30, 1987
Program Meeting: Economic Fluctuations, NBER

February 12-13, 1987
International Economic Association Conference on Global International Macroeconomics: Policy Conflict and Cooperation, Center for Economic Policy Research

February 12-14, 1987
Conference on Trade Issues, NBER

February 19-22, 1987
Mergers and Acquisitions, NBER

February 27, 1987
Program Meeting: Financial Markets and Monetary Economics, NBER

March 1987
Misalignment of Exchange Rates, NBER

March 6-7, 1987
The United States in the World Economy, NBER

March 13-14, 1987
Macroeconomics, NBER

March 20, 1987
Program Meeting: Productivity, NBER

March 20-21, 1987
Conference on Aging, NBER

March 26-27, 1987
Program Meeting: Taxation, NBER

March 26-28, 1987
Annual Meeting, Midwest Economic Association*

March 27-28, 1987
Income and Wealth Conference: Measurement of Savings, NBER

April 1987
Annual Conference, Atlantic Economic Society*

April 3-5, 1987
International Coordination of Economic Policy, NBER

April 10-11, 1987
State and Local Government Finance, NBER

April 24-25, 1987
Conference, Carnegie-Mellon University-University of Rochester

May 1-2, 1987
Universities Research Conference: Labor Studies, NBER

May 7-8, 1987
Misalignment of Exchange Rates, NBER

June 3-5, 1987
3rd International Conference, Institute for Monetary and Economic Studies-Bank of Japan

June 16-17, 1987
Conference: The Economics of Inventory Management, Wesleyan University-International Society for Inventory Research

July 7-11, 1987
Annual Conference, Western Economic Association

August 2-5, 1987
Annual Meeting, American Agricultural Economics Association*

August 17-20, 1987
Annual Meeting, American Statistical Association*

August 24-28, 1987
43rd Congress: Public Finance and Performances of Enterprises, International Institute of Public Finance

September 9-12, 1987
18th Annual Conference, Center for International Research on Economic Tendency*

September 27-October 1, 1987
Annual Meeting, National Association of Business Economists*

November 8-11, 1987
80th Annual Conference, National Tax Association-Tax Institute of America*

November 22-24, 1987
Annual Meeting, Southern Economic Association*

August 8-11, 1988
Annual Meeting, American Statistical Association*

September 25-28, 1988
81st Annual Conference, National Tax Association-Tax Institute of America*

September 25-28, 1988
Annual Meeting, National Association of Business Economists*

November 20-22, 1988
Annual Meeting, Southern Economic Association*

August 14-17, 1989
Joint Statistical Meetings, American Statistical Association*

September 17-20, 1989
Annual Meeting, National Association of Business Economists*

October 8-11, 1989
82nd Annual Conference, National Tax Association-Tax Institute of America*

November 19-21, 1989
Annual Meeting, Southern Economic Association*

*Open conference, subject to rules of the sponsoring organization.

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Six Fellowships Available for 1987-8

John Olin Fellowships in Economics are designed to bring outstanding young economists to NBER's Cambridge office for a year of intensive research on important economic issues. Olin Fellows are free of all teaching and other university responsibilities. Six fellowships are available for the 1987-8 academic year.

The fellowships provide a stipend equal to one's university salary and a limited travel budget to cover moving expenses, travel connected to the research, and participation in scientific meetings. Funds are also available for research assistants, data, and computing costs.

Olin Fellows are selected from economics departments and business schools. To be eligible, you must have a Ph.D., preferably completed within the last five years. Anyone under the age of 35 is eligible. The key criteria for selection are general excellence and promise as an empirical researcher on a subject of potential national importance.

Anyone interested in applying should send a curriculum vitae, a list of publications, and a brief summary of research plans (not to exceed 1000 words) by November 21 to: Yasuko McDougall, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138. Winners will be announced by December 19.

When Griliches arrived at the Bureau, he was already interested in the problems of measuring productivity. At about that time, at the federal government's request, NBER appointed a committee chaired by future Nobel Laureate George J. Stigler to examine price statistics. Griliches wrote a staff paper on "Hedonic Price Indexes" for this committee, using the automobile industry as his focus. This work was influential in the development of the hedonic measurement literature. It was only recently, however—in January 1986—that the federal government came around to using hedonic price measurement methods officially in one of its major price indexes. It used them to revise the measurement of computer prices in the PPI (Producer Price Index). Griliches's continued interest in this area is reflected in NBER Reprint No. 712, "Automobile Prices and Quality: Did the Gasoline Price Increases Change Consumer Tastes in the United States?" (with Makoto Ohta), June 1986.

Griliches's current work on analyzing productivity growth is also concerned with the quality of the measurements used: the measurement of capital and depreciation; the role of education in changing the quality of labor, and more generally the econometric issues associated with data that may be subject to errors. His May 1984 NBER Technical Working Paper No 37 (with Jerry A. Hausman), "Errors in Variables in Panel Data," (published in the *Journal of Econometrics*, 1986) describes some of this work. Similar NBER studies, which ask whether "the data say what they seem to say," have been done by James M. Poterba and Lawrence H. Summers (measuring unemployment), Richard B. Freeman (measuring union status), Steven G. Allen (evaluating construction statistics), and Robert W. Fogel and co-authors (estimating 19th-century economic growth using data on nutrition and height). In the future, NBER's Program in Productivity is planning to expand this type of work to a more systematic evaluation of the measurement of output in the U.S. economy.

NBER Publishes 2000th Paper

NBER published its 2000th Working Paper in August: "Errors in Measurement in Output Deflators" by Frank R. Lichtenberg and Zvi Griliches. This paper, which focuses on the quality of the data used in economic research, extends a tradition of such work that dates back to the Bureau's earliest days.

According to Griliches, professor of economics at Harvard University, who joined NBER in 1959 as a research fellow, there is a long history at NBER of concern about the quality of the data being used in the research and the data being produced. In fact, Griliches recalled, before the computer age, NBER required that each computation be done twice, independently, in order to assure the accuracy of the results.

Mussa Joins CEA

Michael L. Mussa, a member of NBER's Program in International Studies since 1981, recently joined the president's Council of Economic Advisers. Mussa was previously a professor of international business at the University of Chicago.

Mussa received his A.B. in mathematics and economics from the University of California at Los Angeles, and his Ph.D. in economics from the University of Chicago. He has taught at the University of Rochester and was a research fellow at the London School of Economics and the Graduate Institute of International Studies, Geneva. In the past, Mussa has written NBER papers on content protection, trade liberalization, and real exchange rates.

1986 Summer Institute

Over 300 economists from nearly 100 academic institutions and organizations worldwide attended NBER's ninth annual Summer Institute. Funded in part by a grant from the Lynde and Harry Bradley Foundation, the Summer Institute ran from early July to mid-August and included 24 separate sessions. The Bureau's Programs in Financial Markets and Monetary Economics and in Economic Fluctuations met in July; Taxation, International Studies, and Labor Studies convened in August; and the Program in Productivity held workshops throughout the summer. In addition, three Bureau projects met in August to discuss recent and ongoing research: Mergers and Acquisitions; State and Local Government Finance; and Economics of Aging.

Financial Markets and Monetary Economics

R. Glenn Hubbard, NBER and Northwestern University, organized a workshop on "Issues in Contracting and Financial Markets." Eight papers were discussed, on topics ranging from hostile raids and firms' financial structure to the "farm crisis" and credit rationing. During the same week, Andrew Lo, NBER and University of Pennsylvania, chaired a workshop on "New Econometric Methods in the Specification and Estimation of Dynamic Asset Pricing Models." The six papers discussed all dealt with statistical techniques and model building as applied to financial studies.

A third workshop, organized by Philippe Weil, NBER and Harvard University, had a broader scope. The six papers involved consumption, interest rates, deficits, inflation, exchange rates, and asset prices. A fourth set of meetings, chaired by Herschel I. Grossman, NBER and Brown University, dealt with more theoretical issues in the study of financial markets. Finally, James H. Stock, Harvard University, led a workshop on "Common Trends, Cointegration, and Asset Price Movements."

In addition to these smaller sessions, the program met as a whole each day to discuss such topics as "Why Don't the Prices of Bonds and Stocks Move Together?" and "Bank Loans and Information Accumulation."

Economic Fluctuations

Russell Cooper, NBER and University of Iowa, organized a workshop on "Coordination Failures and Underemployment" that ran throughout July. Toward the end of the month, Kenneth J. Singleton, NBER and Carnegie-Mellon University, led a week-long workshop on "Modeling Aggregate Economic Fluctuations." Models of business cycles played prominently in the discussions.

Another organizer, Julio J. Rotemberg, NBER and MIT, led a group that discussed excess capacity in U.S. industry, monopoly pricing, oligopoly, and imperfect competition. Lawrence H. Summers, NBER and Harvard University, chaired a fourth workshop on efficiency wages.

The Program in Economic Fluctuations also held a general research meeting in Cambridge on July 25. That meeting is described in detail elsewhere in this issue.

Taxation

The Program in Taxation, directed by David F. Bradford, NBER and Princeton University, met for three weeks in August. For one week, the discussion focused on taxes on capital income, asset income, international direct investment, and corporations in general. In addition, the group participated in a panel discussion of tax reform. During the other two weeks, members of this program met jointly with members of the projects on mergers and acquisitions and on state and local government finance. Those sessions are summarized later in this article.

International Studies

The first sessions of the international studies group, led by Program Director William H. Branson, NBER and Princeton University, covered such topics as: international borrowing; exchange rate crises; coordination of fiscal policies; and budget deficits. In the following week, Alvin Klevorick, NBER and Yale University, chaired a day-long workshop on "Empirical Studies of Strategic Trade Policy." Among the topics discussed were trade and industrial policy; competitiveness between the United States and Japan in autos and semiconductors; voluntary restraint arrangements in the U.S. auto market; and international competition in 16K random access memories.

Robert C. Feenstra, NBER and Columbia University, and J. David Richardson, NBER and University of Wisconsin, organized a week-long series of discussions on trade topics, including protection of infant industries, policies on high tech trade, and multinational corporations. Finally, as part of the Summer Institute, two trade conferences were held in Cambridge during the week of August 4. The conferences, on international macroeconomics and issues related to Japan, are described in detail elsewhere in this issue.

Labor Studies

The Program in Labor Studies, directed by Richard B. Freeman, NBER and Harvard University, met during the week of August 11. Among the topics discussed were: unions and pensions; strike activity; functional and structural unemployment; merit pay for school superintendents; and collective bargaining. The labor studies program also met jointly with the Bureau's project on international migration. Papers on immigrants' wages and migration decisions, and their effects on the unemployment and wages of natives, were discussed. In addition, program members attended an NBER conference on Public Sector Unionism on August 15-16. The proceedings are described in this issue of the *NBER Reporter*.

Productivity

The Program in Productivity, under the direction of Zvi Griliches, NBER and Harvard University, met from July 8 to August 7. Among the topics discussed were: issues in the measurement of productivity with special reference to capacity utilization and international comparisons; the use of patents as indicators of inventive activity; the role of R and D in corporate mergers; and measurement of the impact of spillovers from the R and D activity of one firm on the behavior and fortune of other firms. Program members also gave progress reports on their research in several lunch and afternoon meetings per week. The various sessions were organized by Zvi Griliches; Ernst Berndt, NBER and MIT; and M. Ishaq Nadiri, NBER and New York University.

Mergers and Acquisitions

This project, led by Alan J. Auerbach, NBER and University of Pennsylvania, involved members of the taxation and productivity programs, as well as invited specialists in the field. Among the papers discussed were: "Management, Ownership, and Corporate Performance"; "The Effect of Takeover Activity on Corporate Research and Development"; "Share Repurchases and Cash Tender Offers"; and "The Growth of the Junk Bond Market and Its Role in Financing Takeovers."

State and Local Government Finance

This project, discussed in detail in the Program Report beginning on page one of this issue of the *NBER Reporter*, is under the direction of Harvey S. Rosen, NBER and Princeton University. The group met from August 11–15 and discussed such topics as lotteries as public finance instruments and the future of the property tax for U.S. cities.

Economics of Aging

This emerging project, directed by David A. Wise, NBER and Harvard University, met on August 14–15 to discuss ongoing work (rather than completed papers). They focused on issues in elderly housing, health care, wealth and consumption, and Social Security.

Macroeconomists Hold Summer Meeting

Members of NBER's Program in Economic Fluctuations and invited guests met in Cambridge on July 25 to discuss their recent research. John B. Taylor, NBER and Stanford University, and N. Gregory Mankiw, NBER and Harvard University, organized the following program:

Ben S. Bernanke, NBER and Princeton University, and Mark Gertler, NBER and University of Wisconsin, "Financial Efficiency, Collateral, and Business Fluctuations" (NBER Working Paper No. 2015)

Discussant: Stephen R. King, NBER and Stanford University

Bruce Greenwald, Bell Communications Research, and Joseph E. Stiglitz, NBER and Princeton University, "Information, Finance Constraints, and Business Fluctuations"

Discussant: Michael Woodford, Columbia University
Peter R. Hartley, Rice University and Monash University, and Carl E. Walsh, NBER and Federal Reserve Bank of San Francisco, "Inside Money and Money Neutrality" (NBER Working Paper No. 1890)

Discussant: Robert G. King, University of Rochester
Rudiger Dornbusch and Stanley Fischer, NBER and MIT, "Stopping Hyperinflations Past and Present" (NBER Working Paper No. 1810)

Discussant: Robert E. Lucas, Jr., NBER and University of Chicago

Stephen Zeldes, University of Pennsylvania, "Consumption and Liquidity Restraints: An Empirical Investigation"

Discussant: Robert E. Hall, NBER and Stanford University

Edward Prescott, University of Minnesota, "Theory Ahead of Business Cycle Measurement"

Discussant: Lawrence H. Summers, NBER and Harvard University

Three of the papers dealt with the relationship between financial intermediation and real economic activity. Bernanke and Gertler analyze how real and financial factors interact in the initiation and propagation of output fluctuations. In their model, capital formation is financed through a combination of debt and equity. The authors also use a model in which collateral is procyclical. They show that random real shocks to the economy are amplified and become more persistent as the real and financial sectors interact. They also show how shocks to collateral have real effects on the economy, and they suggest that "debt deflation," which occurred in the early 1930s, may have been one cause of the severity of the Depression.

Greenwald and Stiglitz describe another avenue by which imperfect financial intermediation leads to amplification and persistence of shocks to real economic activity. They present a model in which inputs to the production process must be purchased one period before the output is sold. With uncertain future prices, production is thus risky. Managers of firms are averse to the risk of bankruptcy, and this risk cannot be entirely eliminated through diversification. The probability of bankruptcy decreases as the amount of equity in the firm increases, and the costs of bankruptcy increase with the output (size) of the firm. Therefore, managers can reduce the risk associated with bankruptcy by reducing the output at the cost of expected profits. As the equity in a firm decreases, the exposure to bankruptcy increases, and this risk will be partially offset by reducing output. Increased uncertainty about future prices and profitability will also lead to reductions in output.

Hartley and Walsh presented a third study focusing on the interaction between the real and financial sectors of the economy. Their model stresses the difference between perceived transitory and permanent shocks to the monetary base. They argue that shocks to the money base perceived to be temporary change the current price level but leave expected future prices unchanged. This leads to a change in the expected rate of inflation. Nominal interest rates also change, but they do not entirely offset the change in expected inflation and thus there is a change in the real rate of interest. Intertemporal substitution then leads to a change in real economic activity. Shocks to the monetary base perceived as permanent have no effect on real economic variables, but permanent and temporary shocks are perceived only imperfectly. Agents attempt to unscramble these shocks from noisy observations. Announcements by the monetary authority lead agents to update their expectations of the permanence of past shocks and, consistent with the empirical evidence, lead to changes in the real rate of interest.

Dornbusch and Fischer examine six 20th-century hyperinflations with a goal of identifying general lessons from the successful stabilizations. They find three key issues in stabilization: the budget, the exchange rate, and the rate of growth of money. In the successful stabilizations in Germany, Austria, and Poland in the 1920s, and Italy after World War II, the budget deficits were significantly reduced in all cases, the exchange rate was pegged in each case, and money growth was high immediately following the stabilization. In all stabilizations, real interest rates were high. Two recent attempts at stabilization, in Israel and Argentina, also imposed wage and price controls as an attempt to mitigate the painful transition to lower inflation.

A large body of recent empirical work using aggregate time-series data has rejected some of the restrictions implied by a rational expectations version of the permanent-income/life-cycle model of consumption. Zeldes considers one possible explanation of these findings: liquidity constraints. He presents a version of the rational expectations, permanent-income/life-cycle model of consumption that incorporates the possibility of liquidity constraints. He discusses the implications of these constraints for the level of consumption and the marginal rate of substitution between consumption levels in adjacent time periods. He then tests these implications of the model using a representative panel of U.S. families. Zeldes finds significant evidence to suggest the presence of liquidity constraints in the data.

Models of economic growth and technological change were originally developed to explain secular changes in economic activity. Prescott argues that simple modifications of these growth models can be used to explain postwar U.S. cyclical behavior as well. Prescott combines a production function involving capital, labor, and a random technological disturbance, and an intertemporal utility function involving consumption goods and leisure, to produce a simple dynamic general equi-

librium model. By specifying a set of parameters of the production function, the utility function, and the stochastic process of technological change, data can be generated from the "artificial economy." Prescott chooses a set of parameters that are consistent with microdata and long-term relationships between the data. He finds that the artificial data generated display the same type of business cycle behavior found in the postwar U.S. economy.

Nearly 100 macroeconomists attended this summer's program meeting. Mark W. Watson, NBER and Harvard University participated and assisted in the preparation of this report.

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On the Size Distribution of Employment and Establishments

Jonathan S. Leonard
Working Paper No. 1951
June 1986
JEL Nos. 611, 131, 200

Recent arguments that employment growth occurs disproportionately at small establishments are fundamentally misleading because they confuse regression to the mean with structural shifts in the size distribution of establishments and with an aging effect within cohorts. The net growth usually observed in aggregate studies hides the gross flows: 13 percent of the jobs in existence in 1974 had disappeared by 1980, while 18 percent of the 1980 jobs had not existed six years previously. The variation observed here in labor demand over time within individual establishments may help to explain unemployment.

Efficiency Wages and the Wage Structure

Alan B. Krueger and Lawrence H. Summers
Working Paper No. 1952
June 1986
JEL No. 824

This paper examines differences in pay for equally skilled workers in different industries. We find that there is substantial dispersion in wages across industries, even after we allow for measured and unmeasured labor quality, working conditions, fringe benefits, transitory demand shocks, threat of unionization, union bargaining power, firm size, and other factors. We present some direct evidence in favor of efficiency wage theories. The evidence suggests that industry wage differentials are successful in eliciting better performance through reduced turnover and increased effort.

The Canada-U.S. Auto Pact of 1965: An Experiment in Selective Trade Liberalization

Melvyn A. Fuss and Leonard Waverman
Working Paper No. 1953
June 1986

This paper analyzes the Canada-U.S. Auto Pact, a selective trade liberalization agreement that created a duty-free North American market for the major U.S. multinational automobile producers but continued to protect them from offshore producers. The new literature on international trade and industrial organization (I.O.) predicts that there will be large efficiency gains

in Canadian vis-à-vis U.S. production in a free trade environment, given the probable unexploited economies of scale and specialization in the tariff-protected small Canadian economy prior to 1965. We estimate that the Auto Pact did not induce a substantial improvement in the relative efficiency of Canadian production. The missing ingredient seems to have been the effects of free trade in an oligopolistic setting toward increasing competition (that is emphasized by the new trade/I.O. literature). The Auto Pact did not increase the number of rivals in the oligopolistic Canadian industry, because the major players in the industry had production facilities on both sides of the Canada-U.S. border before 1965, and no significant new entry into Canada occurred.

In 1962-4, Canadian automotive production was 27 percent less efficient than U.S. production. By 1970-2, this deficiency had been reduced to 19 percent but was not further reduced by the end of the 1970s. Of the eight-percentage-point reduction in the Canadian disadvantage, we attribute only three percentage points to the rationalization process induced specifically by the Auto Pact.

Merit Pay for School Superintendents?

**Ronald G. Ehrenberg, Richard P. Chaykowski,
and Randy A. Ehrenberg**
Working Paper No. 1954
June 1986
JEL Nos. 824, 912

Given the important role that administrators of school districts play in the educational process, their "performance" ought to be fundamentally important in determining both how much students learn and the cost of public education to taxpayers. Yet, while public debate has considered the issue of merit pay for teachers, virtually no attention has been directed to the methods by which school administrators are compensated.

This paper provides evidence on whether school superintendents are explicitly or implicitly rewarded for their performance by higher compensation and/or greater opportunities for mobility. We analyze panel data from over 700 school districts in New York state from 1978 to 1983. We define measures of performance and then enter them into equations for salary level, salary change, and mobility. While there is evidence that school superintendents are rewarded for performance, the rewards appear to be quite small.

Finite Lifetimes and the Crowding-Out Effects of Government Deficits

James M. Poterba and Lawrence H. Summers
Working Paper No. 1955
June 1986
JEL Nos. 023, 321, 322

This paper explores the sensitivity of the short-run effects on saving of government deficits to assumptions about household planning horizons. Using a life-cycle simulation model, we show that even though deficit policies shift sizable tax burdens to future generations, individuals live long enough for us to assume that an infinite horizon is a good approximation for analyzing the short-run effects on saving. In practice, periods of debt accumulation, such as World War II in the United States, are reversed rapidly enough to make their short-run effects on consumption and national saving relatively small.

The Intrafamily Allocation of Goods—How to Separate the Men from the Boys?

Reuben Gronau
Working Paper No. 1956
June 1986

This paper integrates the basic principles of consumption theory and the economics of human resources to generate a powerful method for estimating the distribution of consumption between parents and children. Invoking the assumption of separability between parents' and children's consumption and the corresponding assumption of two-stage budgeting, I show that one can estimate the parents' share in total consumption by analyzing the effect of demographic changes on the consumption of adult goods (that is, goods consumed exclusively by parents).

Using the U.S. 1972-3 Consumption Expenditure Survey, I find that white married families tend to allocate about three-quarters of their consumption to parents and one-quarter to children. The children's share of consumption in black families is less than their share in white families, and the children's share in white families where the father is absent is even higher. The children's share of consumption increases with the number of children, but the absolute level of consumption per child declines. These findings are quite robust to changes in functional form and database.

Industrial Organization and International Trade

Paul R. Krugman

Working Paper No. 1957

June 1986

This paper reviews recent work on the relationship between industrial organization and international trade. It discusses five strands in the theoretical literature: (1) the role of economies of scale as a cause of intraindustry trade, modeled using monopolistic competition; (2) the effect of tariffs and quotas on domestic market power; (3) the analysis of dumping as international price discrimination; (4) the potential strategy role of government policy as an aid to domestic firms in oligopolistic competition; and (5) recent work that may provide a new argument for protectionism. A concluding section discusses recent efforts at quantification of new trade theory.

The Valuation of Security Analysis

Alex Kane and Alan J. Marcus

Working Paper No. 1958

June 1986

Active portfolio management commonly is partitioned into two types of activities: market timing, which requires forecasts of broad-based market movements; and security analysis, which involves the selection of individual stocks that are perceived to be underpriced by the market. In 1981, Merton provided an insightful and easily implemented means of evaluating market timing skills. In contrast, while Treynor and Blank's (1973) work outlined a normative theory of stock selection, no convenient means of valuing potential selection ability has been devised yet.

We present a framework for computing the value of a security analyst. We also treat market timing ability in this framework and therefore can compare the relative values of each type of investment analysis. We find that stock selection is potentially extremely valuable, but that its value depends critically on the forecast interval, on the correlation structure of residual stock returns, and on the ability to engage in short sales. Finally, we show how to modify the value of selection for the important case in which analysts' forecasts of stocks' alphas are subject to error.

Mortgage Pricing: What Have We Learned So Far?

Patric H. Hendershott

Working Paper No. 1959

June 1986

JEL No. 313

There has been much progress in the valuation of call options and caps on interest rates of default-free mortgages. The evidence suggests that the observed term structure of interest rates (that is, the full structure, not just the end points) and a reasonable estimate of the volatility of spot rates is sufficient for pricing purposes. The precise nature of the interest rate process and the exact market price of interest rate risk, two determinants of the term structure that are not well identified, are not necessary for pricing. (The analogy to pricing stock options is striking; there, knowledge of the observed stock price, the present value of expected future dividends, and a reasonable estimate of the volatility of the stock price are sufficient to price the option.) Moreover, the number of interest rate state variables is also of little import, if the term structure and rate volatility are held constant.

In contrast, pricing the mortgage default option is still in the embryonic stage. The stochastic process analogous to the interest rate process in valuing call is a "house price process": if a house price declines sufficiently, default occurs. The observed house price, the present value of expected future "dividends" (rents), and the volatility of house prices are, in principle, sufficient to value default (again, note the analogy to stock price options). Unfortunately, rents are unknown, and no observable term structure of expected future house price inflation rates exists from which to glean the division of expected housing returns between "dividends" and expected capital gains. Also, a series on the recent volatility of individual house prices is not readily available. Finally, measurement of the costs to defaulters and the losses of lenders/insurers when default occurs is far less straightforward than is the case when call occurs or caps on interest rates are reached. (Here, an analogy can be drawn to the difficulties encountered in pricing the bankruptcy risk of firms.)

Price Contracts, Output, and Monetary Disturbances

Alan C. Stockman

Working Paper No. 1960

June 1986

This paper presents a simple example of how incomplete asset markets create incentives for buyers and sellers to sign contracts that specify a price function

different from the spot market equilibrium price function. The price function can exhibit downward stickiness in nominal prices, in the sense that a fall in the money supply reduces nominal prices less than proportionately and reduces real output. This equilibrium dominates spot market equilibrium in terms of expected utility.

Fiscal Policies and International Financial Markets

Alan C. Stockman

Working Paper No. 1961

June 1986

JEL No. 430

This paper examines the effects of fiscal policies in an open economy when international financial markets are well developed. Consumers use these markets to hedge against the risk of uncertain future changes in government policies, if and when they occur, as compared to a world with more limited financial markets. I discuss three examples. The first involves a change in (productive) government spending, financed by a change in lump-sum taxes, in a large open economy with two goods. The second concerns the effects of temporary changes in distorting taxes. The final example concerns the open-economy effects of changes in government deficits, caused by changes in lump-sum taxes, without Ricardian equivalence. In each example, I show that the existence of opportunities to trade on well-developed international financial markets alters the effects of changes in government policies in important ways. The empirical significance of these differences should grow as international financial markets continue to develop in breadth and sophistication.

Is the Japan Problem Over?

Paul R. Krugman

Working Paper No. 1962

June 1986

This paper argues that Japan's export growth is likely to slow sharply over the next few years, perhaps to zero. For the past dozen years, Japan's export volume has grown much more rapidly than its domestic production. This divergence was necessitated primarily by rising oil prices and secondarily by a shift into current account surplus. Now both of these factors are running in reverse. If Japan's export growth does slow sharply, then the mechanism will be a very strong yen—probably above 140. I argue that Japan's export growth, not its static trade structure, is the main cause of trade tension. Therefore, these developments should lead to a considerable reduction in trade friction.

Interpreting Tests of Forward Discount Bias Using Survey Data on Exchange Rate Expectations

Jeffrey A. Frankel and Kenneth A. Froot

Working Paper No. 1963

June 1986

JEL No. 431

In this paper, we use survey data on exchange rate expectations to divide the forward discount into expected depreciation and a risk premium. Our starting point is the common test of whether the forward discount is an unbiased predictor of future changes in the spot rate. We use the surveys to decompose the bias into one portion attributable to the risk premium and one portion attributable to systematic prediction errors. The survey data suggest that our findings of both unconditional and conditional bias are overwhelmingly caused by systematic expectational errors. Regressions of future changes in the spot rate against the forward discount do not yield insights into the sign, size, or variability of the risk premium as is usually thought. We directly test the hypothesis of perfect substitutability and find support for it: changes in the forward discount reflect, one for one, changes in expected depreciation. Thus we reject the "random walk" view that expected depreciation is zero. Expected depreciation is significantly even more variable than the risk premium. In fact, investors would do better if they always fractionally reduced the magnitude of expected depreciation. This is the same result that Bilson and many others have found with forward market data, but now it cannot be attributed to a risk premium.

Speculative Behavior of Institutional Investors

John Pound and Robert J. Shiller

Working Paper No. 1964

June 1986

JEL No. 313

This paper draws on a survey that compared speculative behavior in two groups of institutional investors. The "experimental" group held stocks that had shown extraordinary price increases over the preceding year and also had high price-earnings ratios. The "control" group held randomly selected stocks. In Shiller and Pound (1986), we argued that the survey results gave some support to certain diffusion or epidemic models that explain interest in the stocks in the experimental group. Here we show that the two groups are similar in describing their investment strategy as relating to a theory about fundamental value rather than about the kind of stocks that are becoming attractive to investors. However, the experimental group is less likely to make explicit comparisons of price with measures of

fundamental value: it differs from the control group in its attitudes toward timing, price changes, and disappointment with short-term earnings. Overall, these results appear consistent with the notion that price changes unrelated to fundamentals may be caused by contagious enthusiasm about fundamentals among institutional investors.

We go on to study the holding patterns of those investors in the experimental group who said that they were unsystematic in their stock choice. These investors tended to show gradually increasing holdings over the period of stock price increase. Finally, we discuss the reasons given by respondents for the gradual increase.

The Relationship between Firm Size and Firm Growth in the U.S. Manufacturing Sector

Bronwyn H. Hall

Working Paper No. 1965

June 1986

JEL Nos. 621, 631

This paper investigates the dynamics of firm growth in the U.S. manufacturing sector in the recent past. I use panel data on publicly traded firms. From a universe of approximately 1800 firms in 1976, I am able to follow most of them for at least three years, and over half of them from 1972 until 1983. I consider several econometric and substantive problems that exist in analyzing these kinds of data: the choice of size measure, the role of measurement error, and the effect of selection (attrition) on estimates obtained from this sample.

Using time-series methods, suitably modified for panel data (in which the number of time periods per observational unit is small), I analyze the behavior of employment over time. I find that most of the change in employment in any given year is permanent in the sense that there is no tendency for it to return to its previous level. Year-to-year growth rates are largely uncorrelated, and there is almost no role for measurement error. I find that Gibrat's Law is weakly rejected for the smaller firms in my sample and is accepted for the larger firms. Other measures of size yield essentially the same results.

Correcting for attrition from the sample changes the results somewhat: I use a simple model in which firms leave the sample because they are small and/or undervalued (since many exits are acquisitions). I find that Tobin's q , the ratio of market valuation to the value of the underlying assets of the firm, is a much better predictor of exit probability than size alone (that is, firms with a low q are more likely to exit the sample). When I use this estimate of the probability of exit to control for selection bias, Gibrat's Law is weakly rejected for firms of all sizes. There are significant positive effects on firm growth from both investment in physical capital and from R and D expenditures, with R and D having a somewhat higher net effect.

The Demand for Health Inputs and Their Impact on the Black Neonatal Mortality Rate in the United States

Theodore J. Joyce

Working Paper No. 1966

June 1986

JEL No. 913

Relatively high birthrates among black adolescents and unmarried women along with inadequate access to medical care are considered the primary reasons why the black neonatal mortality rate is almost double that of whites. Using household production theory, this paper examines the determinants of input utilization and estimates the impact of utilization on the survival of black infants across large counties in the United States in 1977. The results indicate that expanding the availability of family planning clinics increases the number of teenagers served, resulting in a lower neonatal mortality rate. Accessibility to abortion services operates in a similar manner. Moreover, the use of neonatal intensive care, which is strongly related to its availability, is an important determinant of newborn survival. The initiation of early prenatal care, on the other hand, is not. Overall, the results suggest that lowering the incidence of low-weight and preterm births among blacks by helping women to avoid an unwanted birth may be the most cost-effective way of improving black infant health.

Money and the Open-Economy Business Cycle: A Flexible Price Model

Robert P. Flood and Robert J. Hodrick

Working Paper No. 1967

June 1986

JEL No. 431

This paper develops a model of the business cycle in an open economy. The nominal prices in the model are flexible. We develop monetary nonneutrality by using information confusion about the sources of disturbances to demand along with differential persistence of demand shocks. Firms use inventories to smooth their production, and consumers follow a stochastic permanent income expenditure function. The major implication of the model is that unperceived monetary disturbances improve the terms of trade and increase real output; in contrast, in sticky price models, the terms of trade deteriorate. We then examine the implication of the model empirically.

Reflections on the Interindustry Wage Structure

Alan B. Krueger and Lawrence H. Summers

Working Paper No. 1968

June 1986

JEL No. 824

This paper reviews evidence on the interindustry wage structure. The interindustry wage structure is remarkably similar in different eras, in different countries, and among different types of workers. Industries with high capital-to-labor ratios, monopoly power, and high profits pay relatively high wages. We conclude that without substantial modification the competitive model cannot adequately explain the interindustry wage structure. We then examine the implications of this finding for microeconomic and macroeconomic theory and policy.

The Prewar Business Cycle Reconsidered: New Estimates of Gross National Product, 1869-1918

Christina D. Romer

Working Paper No. 1969

July 1986

This paper shows that existing estimates of pre-World War I GNP exaggerate the size of cyclical fluctuations. That is because Kuznets's original estimates are based on the assumption that GNP moves one-for-one with commodity output valued at producer prices. I derive new estimates of GNP for 1869-1918 using the estimated aggregate relationship between GNP and commodity output for the interwar and postwar areas. The new estimates of GNP indicate that the business cycle was only slightly more severe in the pre-World War I era than in the post-World War II era.

Budget Deficits, Tax Rules, and Real Interest Rates

Martin Feldstein

Working Paper No. 1970

July 1986

This paper examines three sources of the fluctuations in real interest rates during the past three decades: changes in budget deficits; changes in tax rules; and changes in monetary policy. The evidence indicates that budget deficits and monetary policy have had a strong influence on the level of long-term interest rates but fails to identify any effect of changes in corporate tax rates and investment incentives.

The analysis shows that projected future budget deficits, rather than the current level of the actual or structural deficit, influence long-term interest rates. Each percentage point of increase in the five-year projected ratio of budget deficits to GNP raises the long-term government bond rate by approximately 1.2 percentage points; the ratio of the current deficit to GNP (either actual or structural) has no significant effect. The specific parameter estimates imply that the increase in projected budget deficits was responsible for about two-thirds of the rise in interest rates between 1977-8 and 1983-4.

An Evaluation of Recent Evidence on Stock Market Bubbles

Robert P. Flood, Robert J. Hodrick, and Paul Kaplan

Working Paper No. 1971

July 1986

JEL No. 313

Several recent studies have attributed a great deal of asset price volatility to self-fulfilling expectations. This explanation is unattractive, since it allows allocations to occur that need not bear any particular relationship to those implied by market fundamentals. We examine the evidence presented in some of these studies and find that: (1) all of the bubble evidence can be interpreted equally well as evidence of model misspecification; and (2) a slight extension of standard econometric methods points very strongly toward model misspecification as the actual reason for the failure of simple models of market fundamentals to explain asset price volatility.

Dollar Appreciation and Manufacturing Employment and Output

William H. Branson and James P. Love

Working Paper No. 1972

July 1986

JEL Nos. 430, 820

This paper examines the impact of the movements in the real exchange rate on employment and output in U.S. manufacturing industries. We use a simple model of supply and demand to estimate the elasticity of manufacturing employment and output with respect to the real exchange rate, at different levels of aggregation. The data are quarterly, covering 1963:1-1985:1 and 1972:1-1985:1. The employment estimates include 20 manufacturing sectors at the 2-digit SIC level, 125 sectors at the 3-digit SIC level, and 176 sectors at the 4-digit SIC level. In addition, we disaggregate manufacturing employment regionally by the 50 states plus the

District of Columbia. The output estimates include 80 sectors of industrial production at different levels of aggregation. We check for consistency by considering the impact of aggregation among the 2-, 3-, and 4-digit employment estimates, and by comparing the estimates for employment to those for output. We find that exchange rate movements have had important effects on the manufacturing sector, and in particular, the durable goods sector, including primary metals, fabricated metal products, and nonelectrical machinery. Other sectors that suffer large employment losses when the dollar appreciates are stone, clay, and glass products; transportation; instruments; textiles and apparel; chemicals; and rubber and leather goods.

Chronic Excess Capacity in U.S. Industry

Robert E. Hall

Working Paper No. 1973

July 1986

JEL No. 641

Previous research has suggested that firms in a number of industries have considerable market power, in the sense that their prices exceed their marginal costs. However, the observed profits of those industries are not nearly as high as would occur under full exploitation of the market power with a constant returns technology. Rather, because of fixed costs associated with a minimum scale of operation, or for other reasons, industry equilibrium occurs at a point where no abnormal returns are earned even though market power exists. I support this inference with an empirical study that shows that most industries hold capital far beyond the point that would minimize cost given their actual output. In this sense, the industries have chronic excess capacity.

Private Investment in R and D to Signal Ability to Perform Government Contracts

Frank R. Lichtenberg

Working Paper No. 1974

July 1986

JEL No. 620

Official government statistics on the "mission distribution" of R and D investment in the United States are based on the assumption that only the government sponsors military R and D. In this paper, I advance and test the alternative hypothesis: that a significant share of *privately* financed industrial R and D is military in orientation. I argue that in addition to (prior to) contracting with firms to perform military R and D, the government deliberately encourages firms to sponsor

defense research at their own expense to enable the government to identify the firms most capable of performing certain government contracts, particularly those for major weapons systems. To test this hypothesis and to estimate the quantity of private investment in "signaling" R and D, I estimate variants of a model of company R and D expenditure on longitudinal, firm-level data, including detailed data on federal contracts. My estimates imply that about 30 percent of U.S. private industrial R and D expenditure in 1984 was procurement-related (largely defense-related), and that almost *half* of the *increase* in private R and D between 1979 and 1984 was stimulated by the increase in federal demand.

Issues in the Measurement and Interpretation of Effective Tax Rates

David F. Bradford and Charles Stuart

Working Paper No. 1975

July 1986

Marginal effective tax rates on investment that are derived from the user cost of capital are widely used nowadays to assess the effects of capital taxation practically. In this paper, we examine several troublesome issues in the construction and use of marginal effective tax rates and user costs of capital. Our comments fall into two classes. First, there are concerns about the adequacy of the current generation of models of capital-market equilibrium, into which marginal effective tax rates (user costs) are incorporated. Second, there are concerns about the appropriateness of the assumption, implicit and nearly universal in calculations of marginal effective tax rates, that investors expect a given tax code to remain unchanged forever. We show that effects of current changes in the law on expectations about future changes may undo or even reverse the effects predicted by traditionally calculated effective tax rates.

The Wage-Productivity Hypothesis: Its Economic Consequences and Policy Implications for LDCs

Joseph E. Stiglitz

Working Paper No. 1976

July 1986

This paper explores the implications for less developed countries (LDCs) of the hypothesis that workers' productivity depends on the wages they receive. In particular, I show that this hypothesis may explain the high urban wages and unemployment found in many such countries.

The market equilibrium in LDCs is not Pareto efficient. If the government could not control urban-rural migration but could control wages and urban employment, in general it would set wages and employment levels differently. I identify the sources of inefficiency. The (constrained) Pareto optimal policy can be implemented via taxes and subsidies, but two instruments (both specific and ad valorem wage tax/subsidies) are required.

More generally, policy changes will affect both the urban wage and the level of employment, and these consequences need to be taken into account, both in the determination of shadow wages to be used in cost-benefit analysis and in the analysis of the incidence of any set of taxes and subsidies. The shadow price of labor may differ markedly from what it would be if wages were arbitrarily fixed and there were no migration. In particular, in the special case of the Harris-Todaro migration model, with fixed rural wages and productivity depending only on the absolute wage received, the shadow wage is the market wage, regardless of the relative evaluation of current and future consumption. I also analyze shadow prices under other specifications of the wage-productivity relationship.

Incentive-Compatible Trade Policies

Robert C. Feenstra

Working Paper No. 1977

July 1986

JEL Nos. 411, 422

This paper considers a two-country trade model with production uncertainty. If complete contingent markets do not exist, then governments will likely adopt some trade policies to share the production risk. A policy of full information involves income transfers across countries, which can be achieved by equal import tariffs and export subsidies. With incomplete information, I consider incentive-compatible trade policies that are designed to reveal truth while partially sharing the production risk. In this case, the tariff in one country may differ from the export subsidy abroad.

Gains from Trade in Differentiated Products: Japanese Compact Trucks

Robert C. Feenstra

Working Paper No. 1978

July 1986

JEL No. 421

This paper presents a methodology for estimating the welfare gains from a product with new characteristics and applies it to Japanese and American compact trucks. This approach can be used on any products for which

a hedonic regression can be estimated. For 1979-80, I estimate average welfare gains of \$500-600 per Japanese truck. In later years, the benefit to consumers is reduced by the tariff on imports and the introduction of American compact models. American compacts have much smaller consumer gains than the average for Japanese models, since for each American compact there is an import with very similar characteristics.

In the Wrong Place at the Wrong Time: The Extent of Frictional and Structural Unemployment

Jonathan S. Leonard

Working Paper No. 1979

July 1986

A major cause of unemployment, distinct from inadequate aggregate demand and instability of workers, is the instability of jobs themselves. In an average year, about one in every nine jobs disappears and one in every eight is newly created. This finding is based on an analysis of year-to-year employment changes among the private employers of Wisconsin between 1977 and 1982. This job loss may account for roughly 2.2 percentage points, or one-quarter of the average unemployment rate. As much as 50 percent of the transitions of workers from employment to nonemployment may be explained by the destruction of jobs.

Establishments appear to adjust their employment quickly, usually within one year. Employment growth rates one year apart are negatively correlated, and thereafter they nearly follow a random walk. Establishments exhibit considerable heterogeneity in employment growth rates, with some positive cyclical variations but little industry effect. Employment shifts across establishments within an industry are of far greater magnitude than shifts across industry lines.

Irreversible Investment, Capacity Choice, and the Value of the Firm

Robert S. Pindyck

Working Paper No. 1980

July 1986

JEL Nos. 022, 520

I develop a model of capacity choice and utilization consistent with value maximization when investment is irreversible and future demand is uncertain. Investment requires the full value of a marginal unit of capacity to be at least as large as its full cost. The former includes the value of the firm's option not to utilize the unit, and the latter includes the opportunity cost of

exercising the investment option. We show that for moderate amounts of uncertainty, the firm's optimal capacity is much smaller than it would be if investment were reversible, and a large fraction of the firm's value is created by the possibility of future growth. I also characterize the behavior of capacity and capacity utilization and discuss implications for the measurement of marginal cost and Tobin's q .

A Time-Series Analysis of Representative Agent Models of Consumption and Leisure Choice under Uncertainty

**Martin Eichenbaum, Lars Peter Hansen,
and Kenneth J. Singleton**
Working Paper No. 1981
July 1986

This paper investigates empirically a model of aggregate consumption and leisure decisions in which goods and leisure provide services over time. The implied time nonseparability of preferences introduces an endogenous source of dynamics that affects both the comovements in aggregate compensation and hours worked and the cross relations between prices and quantities. We examine these cross relations empirically using postwar monthly U.S. data on quantities, real wages, and the real return on the one-month Treasury bill. We find substantial evidence against the overidentifying restrictions. The test results suggest that the orthogonality conditions associated with the representative consumer's intratemporal Euler equation underlie the failure of the model. Additionally, the estimated values of key parameters differ significantly from the values assumed in several studies of real business models. We discuss several possible reasons for these discrepancies.

Endogenous Drinking Age Laws and Highway Mortality Rates of Young Drivers

Henry Saffer and Michael Grossman
Working Paper No. 1982
July 1986
JEL No. 913

This paper estimates the effects of the drinking age and beer taxes on youth motor vehicle mortality. The data set is a 1975-81 time series of cross sections of the 48 contiguous states. We present separate regressions for 15- to 17-year-olds, 18- to 20-year-olds, and 21- to 24-year-olds and use a simultaneous estimation model to explain the endogeneity of the drinking age. The results show that during the sample period an increase

in the drinking age to 21, which is approximately 8 percent, would have reduced mortality in the 18- to 20-year-old group by approximately 14 percent. Also, a 100 percent increase in the real beer tax, which is approximately \$1.50 per case, would reduce highway mortality of 18- to 20-year-olds by about 19 percent. This increase in the beer tax would also reduce mortality by about 8 percent for 15- to 17-year-olds and by about 18 percent for the 21- to 24-year-olds.

The Failure of Ricardian Equivalence under Progressive Wealth Taxation

Andrew B. Abel
Working Paper No. 1983
July 1986

The Ricardian Equivalence Theorem holds under a linear, but not under a nonlinear, estate tax schedule. In a representative consumer economy, a temporary lump-sum tax increase reduces contemporaneous consumption. If different consumers face different marginal estate tax rates because they leave bequests of different sizes, a lump-sum tax increase redistributes resources from consumers in low marginal estate tax brackets to consumers in high marginal estate tax brackets. Aggregate consumption may rise, fall, or remain unchanged. These departures from Ricardian Equivalence hold more generally under any nonlinear tax on saving, wealth, or income accruing to wealth.

Why Are Children Poor?

Victor R. Fuchs
Working Paper No. 1984
July 1986
JEL No. 914

This paper uses data from the 1960, 1970, and 1980 Censuses of Population and from the Current Population Surveys of 1980 and 1985 to describe and analyze the economic position of children, with special emphasis on cross-section differences and variation over time in the incidence of poverty. Between 1959 and 1979 the income available to children tended to follow the same pattern as adult income. However, between 1979 and 1984 the trends for children were very unfavorable. Poverty rose, average income fell, and income inequality increased. Contrary to popular belief, the increase in female-headed households has played only a small part in the growth of poverty among children since 1979. Income available to children fell because households with children are highly dependent on

labor income, which fell for all age groups. The elderly (65+), who derive 75 percent of their income from non-labor sources (for example, Social Security, private pensions, and interest), were the only age group to experience gains in real per capita income during 1979–84. The conclusions about trends in the money income available to children and adults are relatively unchanged when estimates of the value of nonmarket production and in-kind government social welfare programs are added to money income.

Ski-Lift Pricing, with an Application to the Labor Market

Robert J. Barro and Paul M. Romer

Working Paper No. 1985

July 1986

JEL Nos. 022, 023, 820

The market for ski runs or amusement rides often features lump-sum admission tickets with no explicit price per ride. Therefore, the equation of the demand for rides to the supply involves queues, which are systematically longer during peak periods, such as weekends. Moreover, the prices of admission tickets are much less responsive than the length of queues to variations in demand, even when these variations are predictable. We show that this method of pricing generates nearly efficient outcomes under plausible conditions. In particular, the existence of queues and the stickiness of prices do not necessarily mean that rides are allocated improperly or that firms choose inefficient levels of investment. We then draw an analogy between ski-lift pricing and the use of profit-sharing schemes in the labor market. Although firms face explicit marginal costs of labor that are sticky and less than workers' reservation wages, and although the pool of profits seems to create a common-property problem for workers, this method of pricing can approximate the competitive outcomes for employment and total labor compensation.

Reputational Constraints on Monetary Policy

Kenneth Rogoff

Working Paper No. 1986

July 1986

JEL No. 311

Recent advances in game theory have made it possible to study the credibility of monetary policy in a structured fashion. Some have concluded from these models that reputational considerations substantially discourage the monetary authorities from ever attempting surprise inflations. Hence, legal constraints on the growth of the money supply are unnecessary and can only be harmful.

In this study, I critically assess a number of alternative models of monetary policy reputation, including some new variants. The bulk of the paper is concerned with specific details of these models. One general conclusion is that although this first generation of monetary policy reputation models yields a significant number of important insights, it is premature to argue that time consistency is not a major issue in the design of monetary policy institutions. The main problem is that the models either yield a multiplicity of equilibriums, or/and yield conclusions that are very sensitive to apparently minor changes in the information structure. Whereas an optimal reputational equilibrium may arise without any explicit cooperation among atomistic private agents, it is not (yet) clear why we should expect them to coordinate on the most favorable equilibrium. Strategic uncertainty may be an important drawback to institutional setups that place few constraints on monetary policy.

Economic Events and Keynesian Ideas: The 1930s and the 1970s

Michael R. Darby and James R. Lothian

Working Paper No. 1987

July 1986

JEL No. 023

Keynes's *General Theory* was a brilliant attempt to explain the paradox of low interest rates, ineffectual easy monetary policy, and low investment during the Great Depression. We argue that Keynes's failure to distinguish between low nominal and high real interest rates led him to misinterpret a tight and all too effective monetary policy and unnecessarily hypothesize a downward shift in investment demand. Keynesian ideas in turn profoundly influenced economic policy in the 1960s and 1970s. The resulting postwar inflation—rather than scholarship on what actually happened in the 1930s—appears to be the primary reason for the waning influence of the ideas derived from the *General Theory*.

Supply Shocks and Optimal Monetary Policy

Stephen J. Turnovsky

Working Paper No. 1988

July 1986

JEL No. 131

This paper demonstrates that if current shocks are observed instantaneously, output can be stabilized perfectly for completely general supply disturbances, using simple monetary rules based only on: (1) the current shock; (2) the previous forecast of the current shock; and (3) the forecast for just one period ahead.

The optimal rule can be expressed in an infinite number of ways and I consider various alternatives. With optimal wage indexation, the monetary rule is even simpler. If current shocks are not observed instantaneously but are inferred from other signals, then the optimal rules are of the same form with the current perceived disturbance replacing the actual.

The Internationalization of American Banking and Finance: Structure, Risk, and World Interest Rates

Michael R. Darby
Working Paper No. 1989
July 1986
JEL No. 441

This paper analyzes and quantitatively details the transformation of American banking from the parochialism of 1960 to the internationally linked structure of the 1980s. While the liberalization of trade and the existence of and changes in financial regulations profoundly affected the pace and order of this transformation, international banking is the historic norm. On the one hand, international banking provides the opportunity to banks to diversify their portfolios, but it may also simultaneously expose them to increased systematic risk, especially with regard to movements in the U.S. real interest rate. Deposit insurance provides an incentive for banks to take on such priced systematic risk with welfare costs that must be balanced against the welfare gains from the insurance. The paper closes with an exploration of the nature of the linkage of major movements in real interest rates and exchange rates. Further research seems warranted on changes in monetary policy regimes and shifts in investment demand as a result of changes in tax, regulatory, and political climate.

On the Inception of Rational Bubbles in Stock Prices

Behzad T. Diba and Herschel I. Grossman
Working Paper No. 1990
July 1986
JEL No. 313

This paper analyzes the theoretical possibility of rational bubbles in stock prices. It uses a model in which stockholders have infinite planning horizons and free disposal of equity rules out the existence of negative rational bubbles. The analysis shows that if a positive rational bubble exists, then it started on the first date of trading of the stock. Thus, the existence of a rational

bubble at any date would imply that the stock has been overvalued relative to market fundamentals since the first date of trading. Prior to the first date of trading, potential stockholders who anticipated the initial pricing of the stock expected that the stock would be overvalued relative to market fundamentals. The analysis also shows that any rational bubble will eventually burst and will not restart. Thus, even if a positive rational bubble exists, stockholders know that after a random but almost surely finite date, the stock price will conform to market fundamentals forever.

Consumer Spending and the Aftertax Real Interest Rate

N. Gregory Mankiw
Working Paper No. 1991
August 1986
JEL Nos. 130, 300

This paper examines the interaction between consumer durable goods and consumer nondurable goods in determining the responsiveness of total expenditure to the aftertax real interest rate. Introducing consumer durables into the consumer's decision problem can have important effects on the interest elasticity of total spending. The channel highlighted here might be called the "user cost effect," in that the aftertax interest rate enters the implicit user cost of consumer durable goods. Even if a consumer has a one-period planning horizon, possibly because of a binding borrowing constraint, the user cost effect may make his spending highly sensitive to interest. Finally, the paper examines the response of the level and composition of consumer spending to the high real interest rates experienced in the early 1980s.

Measuring the Efficiency Cost of Taxing Risky Capital Income

Roger H. Gordon and John D. Wilson
Working Paper No. 1992
August 1986
JEL No. 323

In this paper, we derive a measure of the efficiency cost of taxing risky capital income in an infinite-horizon stochastic model. The resulting measure differs from all those that have been proposed in the existing literature. This measure equals the product of two factors in each period: (1) the present value of the taxes that would be paid on a unit of investment in a *riskless* project with the same expected depreciation rate and tax treatment as capital invested that period; and (2) the certainty

equivalent to the representative individual of the ex post change in investment in that period resulting from the tax change. The paper then compares this measure with others that have appeared in the literature. We were unable to find support for the argument in Bulow-Summers (1984) that the efficiency cost of taxing risky capital income is much larger than the efficiency cost of taxing risk-free capital income. In fact, we show in special cases that our measure implies a smaller efficiency cost than occurs with a tax on risk-free capital income.

The Cash Flow Corporate Income Tax

Mervyn A. King

Working Paper No. 1993

August 1986

The current debate on tax reform has again raised the question of how the corporate tax system should be altered. The cumulative effect of piecemeal changes to the tax system has been major distortions in the pattern of saving and investment and falling revenue in real terms. To overcome these problems, reform in the United States and United Kingdom has focused on ways to tax the real economic income of companies. The main problems with this approach are the difficulties of: (1) indexing the tax treatment of income from capital in a comprehensive manner; and (2) defining economic depreciation. This paper discusses an alternative way to obtain the objective of fiscal neutrality without a significant erosion of the tax base. I discuss the implications of such a cash flow corporate income tax for financial and investment decisions both theoretically and in terms of potential administrative and practical problems of implementation.

Taxation of Asset Income in the Presence of a World Securities Market

Roger H. Gordon and Hal R. Varian

Working Paper No. 1994

August 1986

JEL Nos. 325, 441

Using a standard CAPM model of securities prices in a world market, this paper shows that even small countries can affect the price of domestically issued risky securities, while large countries can affect the prices of all securities. As a result, countries have the incentive to set tax rates in such a way that investors specialize in domestic securities in equilibrium, and that net capital flows between countries are restricted. Each country does this to increase the utility of domestic residents, taking as given the tax policies of other governments, but the net outcome is a reduction in world efficiency and a reduction in the utility of all individuals is likely.

Supply-Side Macroeconomics

John F. Helliwell

Working Paper No. 1995

August 1986

JEL Nos. 023, 123, 131, 641

This paper tests New Classical and Keynesian explanations of output determination in an encompassing, "factor utilization" model. The output decision by producers is modeled as the choice of a utilization rate for employed factors. In this encompassing model, the ratio of actual to normal output (with the latter defined by a nested CES vintage production function with capital, energy, and employment as factor inputs) is explained by unexpected sales (a Keynesian element), abnormal profitability (one component of which is the Lucas "price surprise" effect), and abnormal inventories.

Using Canadian data, I show that the Keynesian and New Classical elements contribute explanatory power, as does the production-function-based measure of normal output. Each of these partial models is strongly rejected in favor of the encompassing model, though. The highly structured factor utilization model also fits better than an unstructured VAR model does.

U.S. data confirm the results and show that there are significant effects from abnormal demand, profitability, and inventory levels even if the labor and capital components of normal output are defined using hours and utilized capital rather than employment and the capital stock. I also confirm the results by using alternative output (and hence input) concepts, using a translog function instead of a CES function to define normal output, and using data for several other major industrial countries.

The Empirical Analysis of Tax Reforms

Mervyn A. King

Working Paper No. 1996

August 1986

Over the last decade, individual household data have been used increasingly to analyze the gains and losses from tax reform. There has also been much attention paid to the econometric estimation of models of household responses to taxes. But these models yield valid estimates of the welfare consequences of tax changes only when the implied preference orderings are well behaved. This paper discusses the nature of such conditions in detail. Where there are nonlinearities in the budget constraint, two sets of "primal" and "dual" conditions must be satisfied. Analyzing these conditions yields suggestions for the specification of behavioral models and for the use of individual-specific information in the observed data.

The Ins and Outs of Unemployment: The Ins Win

**Michael R. Darby, John C. Haltiwanger,
and Mark W. Plant**

Working Paper No. 1997

August 1986

JEL No. 130

This paper develops a framework for analyzing unemployment in terms of variations in the number and distribution of people becoming unemployed and in individual probabilities of leaving unemployment. Unlike the recent macroeconomics literature that emphasizes exit probabilities, this paper presents empirical evidence in support of the proposition that changes in the size and distribution of the inflow into unemployment are the primary determinant of the unemployment rate. Instead of falling at the beginning of a recession, the outflow rate rises (with a lag) in response to the increased inflows that drive the recession. In contrast to normal unemployment, cyclical unemployment is concentrated in groups with low normal exit probabilities. As a result, the observed procyclical variation in the average exit probability may be explained largely by predictable distributional effects.

Labor Markets and the Choice of Technology in an Open Developing Economy

Joshua Aizenman

Working Paper No. 1998

August 1986

JEL No. 400

This paper highlights the economic factors that determine the choice of technology and openness in an intertemporal context with institutional constraints in the labor market. It considers the case in which a "more aggressive" development strategy involves an investment in a modern technology. This technology raises the degree to which real wages and productivity depend on external factors. At the same time, it also raises the expected value of real income. In the absence of investment in a modern technology, production takes place in a traditional sector, using a technology that limits exposure to external shocks.

This analysis evaluates the dependence of the choice of technology on the volatility of the shocks affecting the economy, the expected productivity gains, the investment cost associated with the modern technology, and the attitude toward risk. It starts with a benchmark case of a flexible wage/employment economy. I derive

the dependence of openness, investment, and real wages on the attitude toward risk for such an economy. The paper then analyzes the implications of departures from the benchmark model. Specifically, it evaluates the effects of minimum wage policy on the choice of technology. I demonstrate that institutional constraints in the labor market tend to discourage adoption of new technologies. The importance of this effect depends on the volatility of the underlying shocks. A rise in the volatility tends to be associated with a drop in the degree to which a given institutional structure constrains the move to the new sector. Thus, turbulent periods provide opportunities for structural shifts in favor of the new sector. The analysis assesses both the positive aspects of policies and the welfare costs associated with departures from fully flexible labor markets. It also discusses the interaction between institutional structure of the labor market and the use of protective measures that attempt to reduce exposure to external shocks.

The Estimation of Prewar GNP Volatility, 1869-1938

Nathan S. Balke and Robert J. Gordon

Working Paper No. 1999

August 1986

JEL Nos. 042, 131, 226

This paper provides new evidence to assess the recent controversy regarding the volatility of real economic activity before 1929 relative to the period since World War II. Some recent work claims that the long-standing stylized fact of greater prewar volatility is "spurious." In contrast, this paper reconfirms the greater amplitude of business fluctuations prior to the Great Depression.

The basic technique is the regression method, which estimates equations for real GNP during 1909-38, with one or more explanatory variables for components of GNP. We then use the estimated coefficients to "backcast" real GNP for 1869-1908. The paper contains an extensive examination of the sensitivity of these regression indexes to alternative dependent variables, sample periods, detrending methods, and the inclusion of alternative explanatory variables. We pay particular attention to the conflicting evidence regarding the amplitude of cycles in construction activity between 1870 and 1890. The resulting prewar/postwar volatility ratios, for 1869-1928 as compared to 1950-80, range from 1.43 to 2.16. The paper concludes by suggesting that this range of volatility ratios is more likely to understate than overstate the prewar/postwar volatility ratio.

Errors of Measurement in Output Deflators

Frank R. Lichtenberg and Zvi Griliches

Working Paper No. 2000

August 1986

JEL Nos. 220, 226, 229

Economists use various price indexes to deflate current dollar values in order to arrive at measures of real output. The quality of such measures depends crucially on the quality of the price indexes used in their construction. In this paper, we use two independent measures of price change at the detailed four-digit SIC industry level to estimate the potential amount of error in such price indexes. One of the measures is based on the components of the Producer Price Index (PPI), while the other uses the Unit Value Relative (UVR) from the Census of Manufactures. Assuming that the measurement errors are random and independent of each other implies that about one-quarter of the observed variance in the PPI-based price changes between 1972-7 may be caused by measurement error, while the UVR-based measures are even more error-ridden, with almost two-thirds of the individual variance attributable to measurement error. We find that quality "scores" assigned by government statisticians to different components of these indexes do provide useful information on their relative reliability. By extending our model to incorporate change in product quality and using the fraction of new items priced in the index (in 1977 as compared to 1972) as an indicator of the magnitude of such changes, we find that less than half of such quality change, which we estimate occurred at a rate of 1.3 percent per year among the products covered by our study, appears to have been adjusted for in the PPI. Consequently, productivity growth measures that are based on output indexes using the PPI components as deflators may underestimate "true" (quality-adjusted) growth by as much as 43 percent.

The Political Economy of the Smoot-Hawley Tariff

Barry J. Eichengreen

Working Paper No. 2001

August 1986

JEL No. 420

Economic histories of the interwar years view the Great Depression and the Smoot-Hawley Tariff as inextricably bound up with one another. They assign a central role to the Depression in explaining the passage of the 1930 Tariff Act and at the same time emphasize the role of the tariff in the propagation of the Depression. This paper argues that popular accounts have conveyed what is at best an incomplete and at

worst a misleading impression of the relationship between the tariff and the Depression. Rather than simply strengthening the hand of a Republican executive predisposed toward protection or increasing the burden borne by a depressed agricultural sector, the uneven impact of the Depression occasioned the birth of a new protectionist coalition comprised of producers particularly hard hit by import competition: border agriculture and small-scale industry engaged in the production of specialty goods. Rather than leading to a dramatic across-the-board decline in the volume of U.S. imports, the tariff had very different effects across sectors. Rather than worsening the Great Depression by reducing foreign demands for U.S. exports, the direct macroeconomic effect of the tariff is likely to have been expansionary. This remains true even when feedbacks to the United States and foreign retaliation are analyzed. In any case, relative to the Depression, the direct macroeconomic effects of the tariff were small. If Smoot-Hawley had significant macroeconomic effects, these operated instead through its impact on the stability of the international monetary system and the efficiency of the international capital market.

Research and Development and Intraindustry Spillovers: An Empirical Application of Dynamic Duality

Jeffrey I. Bernstein and M. Ishaq Nadiri

Working Paper No. 2002

August 1986

JEL No. 620

In this paper we estimate a model of production and investment based on the theory of dynamic duality. We are particularly interested in the effects of R and D spillovers and in calculating social and private rates of return. We identify and estimate three effects associated with the intraindustry R and D spillover. First, costs decline as knowledge expands for the externality-receiving firms. Second, production structures are affected, as factor demands change in response to the spillover. Third, rates of capital accumulation are affected by the R and D spillover. We then estimate these cost-reducing, factor-biasing, and capital adjustment effects of the spillover for four industries.

The existence of R and D spillovers implies that the social and private rates of return to R and D capital differ. We estimate that the social return exceeds the private return in each industry. However, there is significant variation across industries in the differential between the social and private rates of return.

Propagation of Shocks in a High-Inflation Economy: Israel, 1980-85

Leonardo Leiderman and Assaf Razin

Working Paper No. 2003

August 1986

This paper provides empirical answers to such questions about the propagation of shocks in a high-inflation economy as: Do one-time inflationary shocks give rise to long-term persistence, or inertia? Do balance of payments shocks trigger a process that results in long-term changes in inflation through indexation and monetary accommodation?

Within the context of a specific hypothesis, influential both in policy discussions and in economic analyses, the paper addresses these issues using Israeli data and vector autoregression techniques. The evidence does not support the hypothesis that one-time nominal shocks have a persistent effect on the inflation rate, or the hypothesis that long-term changes in inflation are triggered by autonomous fluctuations in the trade balance.

Rational Inflationary Bubbles

Behzad T. Diba and Herschel I. Grossman

Working Paper No. 2004

August 1986

JEL No. 134

This paper analyzes the possible inception of rational inflationary bubbles assuming that the empirically relevant environment precludes the existence of rational deflationary bubbles. The analysis shows that if a rational inflationary bubble exists, then it must have started on the date of initial issuance of the fiat money. Moreover, the existence of a rational inflationary bubble would imply that before fiat money is initially issued, agents anticipate its introduction and expect a rational inflationary bubble to occur.

The analysis also shows that once a rational inflationary bubble bursts, it cannot restart. However, the analysis does not preclude the existence of a rational inflationary bubble that shrinks periodically, but never bursts. The limitations on the inception and existence of rational inflationary bubbles also apply to rational exchange rate bubbles.

Government Spending, Interest Rates, Prices, and Budget Deficits in the United Kingdom, 1701-1918

Robert J. Barro

Working Paper No. 2005

August 1986

JEL Nos. 023, 320

British data from the early 1700s through World War I provide an unmatched opportunity for studying the effects of temporary changes in government purchases. In this paper, I examine the effects of these changes on interest rates, the quantity of money, the price level, and budget deficits. Temporary increases in government purchases, which show up in the sample as increases in military outlays during wartime, had positive effects on long-term interest rates. The effect on the growth rate of money (bank notes) was positive only during the two periods of suspension of the gold standard (1797-1821 and 1914-8). As long as convertibility of bank notes into specie was maintained, there was no systematic relationship between government spending and monetary growth. Similarly, the main interplay between temporary government spending and inflation occurred during the periods of suspension. Temporary changes in military spending accounted for the bulk of budget deficits from the early 1700s through 1918. This association explains the main increases in the ratio of the public debt to GNP, as well as the decreases that typically occurred during peacetime. Over the sample of more than 200 years, I found only two examples of major budget deficits that were unrelated to wartime—one associated with compensation payments to slave-owners in 1835-6 and the other with a political dispute over the income tax in 1909-10. Because of the "exogeneity" of these deficits, it is interesting that interest rates showed no special movements at these times.

Inflationary Consequences of Anticipated Macroeconomic Policies

Allen Drazen and Elhanan Helpman

Working Paper No. 2006

August 1986

JEL Nos. 130, 310, 320

We consider a model in which the level of taxes and seigniorage are too low to finance government expenditures and debt service. Therefore, government debt will grow without bound, implying the eventual need to change policy. Starting with utility maximization, we

analyze the effect of the expected switch on equilibrium time paths before the switch takes place. We analyze stabilization via increasing taxes, increasing money growth rates, or cutting expenditures, both under certainty and under uncertainty about the composition or timing of a stabilization.

Under full certainty, inflation may rise, fall, or remain constant before the stabilization, depending on which policy tool is used to stabilize. Uncertainty solely about the composition of the stabilization will yield paths in between the above cases, with a price jump at the time of stabilization. In general there is no simple correlation between changes in the budget deficit and inflation. With uncertainty about the timing of a stabilization, the inflation rate will most likely exhibit fluctuations and may overshoot its steady-state value, even when real balances move monotonically. Therefore, uncertainty about the timing of a stabilization itself can induce fluctuation in inflation, even if underlying utility and subjective probability functions are smooth.

Tax Policy and International Competitiveness

Lawrence H. Summers
Working Paper No. 2007
August 1986

This paper examines the interactions between tax policy, international capital mobility, and international competitiveness. It demonstrates that tax policies that simulate national investment without affecting national saving must inevitably lead to deterioration in a country's trade balance in the short and the intermediate run. This conclusion, which contradicts a great deal of popular rhetoric, highlights the importance of considering the macroeconomic as well as the microeconomic aspects of tax changes.

More generally, the effects of tax policies depend critically on the extent of the international capital flows that they generate. The paper examines the issue of international capital mobility both theoretically and empirically. A variety of considerations suggest that while tax policies could generate large capital flows, governments pursue policies that tend to inhibit capital flows following tax changes. This makes the analysis of tax policies difficult.

Health Expenditures and Precautionary Savings

Laurence J. Kotlikoff
Working Paper No. 2008
August 1986
JEL No. 913

The precautionary motive for saving is an important issue that is receiving increasing attention. Part of the motivation for this interest stems from the postwar coincidence of two trends: a decline in the U.S. rate of saving and an increase in insurance of various types, including unemployment, annuity, disability, and health insurance.

This paper examines precautionary saving for uncertain health care payments. It uses a simple two-period model and illustrates this model's theoretical insights through simulations of a 55-period life-cycle model. The simulations give the impression that precautionary saving for uncertain health expenditures could explain a large amount of aggregate savings. Adding uncertain health expenditures to the model raises long-run savings by almost one-third, assuming that individuals self-insure. Arrangements for insuring uncertain health expenditures also potentially have quite sizable effects on savings. Introducing actuarially fair insurance to the economy with uncertain health expenditures reduces the steady-state level of wealth by 12 percent. Switching from the fair insurance arrangement to a Medicaid-type program with an asset test further reduces steady-state wealth by 75 percent.

Government Purchases and Real Interest Rates

N. Gregory Mankiw
Working Paper No. 2009
August 1986
JEL Nos. 110, 130, 300

This paper examines the dynamic impact of government purchases in a simple general equilibrium model with both durable and nondurable consumer goods as well as productive capital. The model generates perhaps surprising results. In particular, increases in government purchases are shown to cause reductions in real interest rates. The model thus provides a possible explanation for the observed behavior of real interest rates around wars.

Hospital Admissions, Length of Stay, and Case-Mix Impacts of Per-Case Payment: The Maryland Experience

David S. Salkever and Donald M. Steinwachs

Working Paper No. 2010

August 1986

Maryland has operated per-case *and* per-service hospital payment systems simultaneously since 1976 with varying levels of stringency in setting per-case rates. We use regression analyses of this experience to compare the impacts of these systems on admissions, length of stay, and case-mix costliness for July 1, 1976, to June 30, 1981. We find that the per-case payment approach has a positive effect on admissions and negative effects on case mix and length of stay relative to the per-service approach. More stringent levels of per-case payment are associated with stronger responses in utilization.

Export Supply and Import Demand Functions: A Production Theory Approach

W. Erwin Diewert and Catherine J. Morrison

Working Paper No. 2011

August 1986

JEL Nos. 400, 430, 220

In this paper, we model theoretically and empirically the import demand and export supply behavior of firms for the U.S. economy from 1967–82. We use a producer-theoretic approach based on duality theory to derive econometric systems of producer supply and demand functions that are consistent with profit-maximizing behavior. This system is then empirically implemented and we use the resulting estimates to construct a full set of supply and demand elasticities characterizing import demand and export supply functions as well as domestic output supply and labor demand. These elasticities in turn are used to derive devaluation elasticities and some estimates of the equilibrium real exchange rate that would cause the U.S. trade surplus to reach zero.

Testing the Response of Consumption to Income with (Noisy) Panel Data

Joseph J. Altonji and Aloysius Siow

Working Paper No. 2012

September 1986

JEL Nos. 920, 211

This paper tests the rational expectations life-cycle model of consumption against a simple Keynesian

model and against the rational expectations life-cycle model with imperfect capital markets. The tests are based on the relative responsiveness of consumption to changes in income that can be predicted from past information and changes in income that are unpredictable. Since there is strong evidence that panel data contain substantial measurement error, the tests are constructed specifically to allow for such error in the income process. They also allow for more general income processes than have been considered to date in the literature.

The results reject the Keynesian model and generally support the life-cycle model, although the tests are not sufficiently precise to rule out the possibility that some households are liquidity-constrained. Measurement error does have a strong influence on the relationship between consumption and income. When it is ignored, our tests do not reject the Keynesian model. We show that consideration of measurement error may also reconcile differences in the results of Hall and Mishkin (1982) and Bernanke (1984). Nevertheless, our most important conclusion is that the qualitative finding of Hall and Mishkin, Bernanke, and Hayashi that the vast majority of households obey the life-cycle model is not an artifact of failure to account for measurement error in the income data.

Permanent Homelessness in America?

Richard B. Freeman and Brian Hall

Working Paper No. 2013

September 1986

This paper seeks to determine the approximate number of homeless persons in the United States, the rate of change in the number, and whether the problem is likely to be permanent or transitory. It makes particular use of a new 1985 survey of more than 500 homeless people in New York City. It finds that the much-maligned 1984 study by the Department of Housing and Urban Affairs was roughly correct in its estimate of 250,000–350,000 homeless persons for 1983. The number of homeless has grown since 1983, however, despite economic recovery, and the number of homeless families is growing especially rapidly.

Homelessness is a relatively long-term state for individuals, who tend to be homeless for an average of 6–8 years. Much of the homeless problem, we find, can be attributed to increases in the 1980s in the number of poor and declines, or rough constancy, in the number of low-rent units of housing. Finally, we find that relatively few homeless individuals receive welfare or general assistance money, but a large proportion have

spent time in jail. Overall, the study suggests that economic recovery will not solve the problem of homelessness, and that in the absence of changes in the housing market or in the economic position of the very poor, the United States will continue to be plagued with a problem of homelessness for the foreseeable future.

Interindustry Wage Differences and Industry Characteristics

William T. Dickens and Lawrence F. Katz
Working Paper No. 2014
September 1986

This paper examines the extent of wage differences for nonunion workers in different industries. We find that even after controlling for a wide range of individual characteristics and geographic location, industry differences explain a substantial amount of individual wage variation. In the aggregate, industry effects explain at least 6.7 percent of interpersonal wage variation; at most, they explain 30 percent.

While the importance of industry differences is clear, the reasons for the differences are more difficult to establish. Independent of the problems of interpreting the correlates of industry differences, even the sign of the relationship of many variables with wages is difficult to establish when other variables are included as controls. This conclusion is suggested by a review of the literature and confirmed by an analysis of a large number of alternative specifications of an industry wage equation using individual wage data from the CPS and industry characteristics from a number of recent sources. Only average education and profitability within an industry have the same (positive) sign in every specification and in all the studies reviewed. Of these two, only average education was nearly always significantly related to wages. Average establishment size had a nearly consistent positive relationship.

What emerges from the analysis is a pattern of correlations. There appears to be one major dimension (and perhaps other less important dimensions) along which industries differ. We use a principal components analysis of a data set on industry characteristics to demonstrate this. High-wage industries have lower quit rates, higher labor productivity, fewer women, more educated workers, longer workweeks, a higher ratio of non-wage-to-wage compensation, higher unionization rates, larger establishments and firms, higher concentration ratios, and are more profitable. Analysis of a limited number of industry characteristics in 1939 yields a similar pattern.

Agency Costs, Collateral, and Business Fluctuations

Ben S. Bernanke and Mark Gertler
Working Paper No. 2015
September 1986
JEL Nos. 310, 131

Bad economic times typically are associated with a high incidence of financial distress, for example, insolvency and bankruptcy. This paper studies the role of changes in borrower solvency in the initiation and propagation of the business cycle. We first develop a model of the process of financing real investment projects under asymmetric information, extending work by Robert Townsend. A major conclusion here is that when the entrepreneurs who borrow to finance projects are more solvent (have more "collateral"), the deadweight agency costs of investment finance are lower. This model of investment finance is then embedded in a dynamic macroeconomic setting. First we show that reductions in collateral in bad times increase the agency costs of borrowing, which in turn depress the demand for investment, so the presence of these financial factors will tend to amplify swings in real output. Second, we find that autonomous factors that affect the collateral of borrowers (as in a "debt deflation") can actually initiate cycles in output.

Two-Person Dynamic Equilibrium: Trading in the Capital Market

Bernard Dumas
Working Paper No. 2016
September 1986
JEL No. 433

When several investors with different risk aversions trade competitively in a capital market, the allocation of wealth fluctuates randomly between them and acts as a state variable against which each market participant will want to hedge. This hedging motive complicates the investors' portfolio choices and the equilibrium in the capital market. Although every financial economist is aware of this difficulty, this issue has never been analyzed in detail.

This paper features two investors, with the same degree of impatience, one of them being logarithmic and the other having an isoelastic utility function. They face one risky, constant-return-to-scale, stationary production opportunity, and they can borrow from and lend to each other. I characterize the behavior of the allocation of wealth and the behavior of the rate of interest and that of the security market line. The two main

results are: (1) investors in equilibrium do revise their portfolios over time so that some trading takes place; (2) provided some conditions are satisfied, the allocation of wealth admits a steady-state distribution at an interior point. This contrasts with the certainty case, where one investor in the long run holds all the wealth. The existence of trading opens the way to a theory of capital flows and market trading volume.

Persistent Trade Effects of Large Exchange Rate Shocks

Richard Baldwin and Paul R. Krugman
Working Paper No. 2017
September 1986

This paper presents a theoretical basis for the argument that large exchange rate shocks, such as the rise of the dollar from 1980 to 1985, may shift historical relationships between exchange rates and trade flows. We begin with partial models in which large exchange rate fluctuations lead to entry or exit decisions that are not reversed when the currency returns to its previous level. Then we develop a simple model of the feedback from "hysteresis" in trade to the exchange rate itself. Here we see that a large capital inflow, which leads to an initial appreciation, can result in a persistent reduction in the exchange rate that is consistent with trade balance.

Optimal Monetary Policy in an Open Economy

Peter J. Stemp and Stephen J. Turnovsky
Working Paper No. 2018
September 1986
JEL Nos. 431

This paper analyzes the optimal intertemporal trade-off between inflation and output in an open economy under perfect foresight. The announcement of the optimal plan may generate an initial jump in the exchange rate, but that will depend on the real adjustment costs that such an unanticipated change imposes on the economy. If such a jump occurs, the optimal policy will be a time-consistent solution if the policymaker is not too myopic, and if the adjustment costs associated with the jump in the exchange rate are of an appropriate form. We derive the optimal monetary rule and its properties and discuss the overall optimal adjustment of the economy.

Can Union Labor Ever Cost Less?

Steven G. Allen
Working Paper No. 2019
September 1986

This paper examines the effect of unions on efficiency by estimating cost function systems over three different sets of construction projects. The results show that union contractors have greater economies of scale, which gives them a cost advantage in large commercial office buildings. In school and hospital construction, on the other hand, nonunion contractors have lower costs at all output levels. Despite the cost differences, profits for nonunion contractors in school and hospital construction are no higher than those for union contractors because the burden of the higher union costs is shifted to buyers.

Tax Structure and Public Sector Growth

Daniel R. Feenberg and Harvey S. Rosen
Working Paper No. 2020
September 1986
JEL Nos. 321, 324

It has been hypothesized that a jurisdiction's tax structure exerts an independent effect upon the growth of its public sector. We test this hypothesis by examining the relationship between the growth of state general expenditure and the elasticity of tax revenues with respect to income. Our work takes advantage of a very careful set of income elasticities for the personal income and sales tax systems for each state, for every year from 1978 to 1983. The main conclusion is that the data do not support the notion that the form of the tax structure exerts an independent effect on public sector growth.

The Youth Labor Market in the 1980s: Determinants of Reemployment Probabilities for Young Men and Women

Lisa M. Lynch
Working Paper No. 2021
September 1986

This paper analyzes the reemployment probabilities for young workers in the United States. Using data from the new National Longitudinal Survey youth cohort, I develop a model to study the probabilities of

transition from nonemployment to employment. The key factors that I examine are: personal characteristics; unemployment income; local demand conditions; and duration dependence. There are significant differences between the labor market experience of whites and nonwhites, and of males and females. High school dropouts have many more difficulties in the labor market than those who remain in school longer and/or receive other types of training. Local demand conditions are a strong determinant of the duration of spells of nonemployment, and there appears to be strong evidence of negative duration dependence in reemployment probabilities for both young males and young females.

Price Inertia and Inflation: Evidence and Theoretical Rationale

M. Ishaq Nadiri
Working Paper No. 2022
September 1986
JEL No. 130

In this paper we look at some empirical evidence of and theoretical rationale for price inflexibility in the face of a decrease in short-run demand in the Western-type industrialized economies. The empirical evidence suggests that price sluggishness is pervasive but varies across markets, industries, and countries. There are different reasons for the price inertia. The response of firms to uncertainty, the cost of adjusting prices, the contents of the long-term contracts in the goods and input markets, and the extent and variability of excess demand all may differ among firms and industries. The structure of the industry, the degree of heterogeneity of the products in a market, the network of input-output relationship among industries, the nature of international competition, the process of forming expectations about the future, shocks from monetary and fiscal policies, and input price shocks all interact and create the ever-changing environment of the firms. In these changing circumstances, there are incentives for prices to be sluggish; thus arises the dilemma of achieving price stability at a high cost of unemployment. The ability of governments to achieve stable prices is probably endogenous in the system and may depend on a threshold rate of inflation. This paper discusses a number of policy options to address the issue of price inertia that would reduce the adjustment burden of anti-inflationary policies.

Structural and Stabilization Aspects of Fiscal and Financial Policy in the Dependent Economy

Willem H. Buiter
Working Paper No. 2023
September 1986
JEL Nos. 430, 320

This paper considers the response of a small, open, dependent economy to a variety of fiscal and financial shocks and the influence of alternative budget balancing rules on the response of the system to such external shocks as a change in the world interest rate. The approach allows for both uncertain individual lifetimes and population growth, using a slightly generalized version of the Yaari-Blanchard model of consumer behavior. Debt neutrality does not prevail unless the sum of the population growth rate and the individual's probability of death equals zero. The government spends on traded and nontraded goods and raises tax revenue both through a lump-sum tax and through a distortionary tax on the production of traded goods.

Even though the tax on the production of traded goods is the only conventional distortion in the model, changes in this tax rate will have the first-order real income effects even when the distortion is evaluated at a zero tax rate, as long as the individual's subjective pure rate of time preference differs from the interest rate. This can occur even in well-behaved steady states of the Yaari-Blanchard model, as long as the population growth rate plus the probability of death differ from zero. This "intrinsic" distortion effectively causes second-best arguments to apply even when there is only one conventional distortion.

Even in the absence of government budget deficits, fiscal choices relating to the composition of public spending and the structure of taxation have important short-term and long-term consequences for the real exchange rate, the sectorial allocation of production, the level and composition of private consumption, the current account (in the short run), and the nation's stock of claims on the rest of the world in the long run.

Comparing the Global Performance of Alternative Exchange Arrangements

Warwick J. McKibbin and Jeffrey D. Sachs
Working Paper No. 2024
September 1986
JEL Nos. 431, 432

The volatility of the world economy since the breakdown of the Bretton Woods par value system of ex-

change rates has led many policymakers and economists to call for reform of the international monetary system. Many critics of the current "nonsystem" call for tighter international rules of the game in macroeconomic policymaking. The proposed systems cover a wide spectrum of measures including maintaining the current flexible exchange rate system but with increased consultations among the major economies; a "target zone" system as advocated by John Williamson; or a full return to a system of fixed exchange rates as advocated by Ronald McKinnon.

This paper presents and applies a methodology for studying the operating characteristics of a number of alternative monetary arrangements using a large-scale simulation model of the world economy. We consider the performance of the regimes when policymakers do or do not observe the shocks, and when policymakers infer the shocks using an optimal filtering rule. Although the results are specific to the model and at best are illustrative of the issues involved, the approach does have the advantage of providing a richer framework of analysis than is possible in simple models of international interdependence.

This paper shows that upward-sloping wage profiles do not act as a perfect substitute for explicit bonds in a natural extension of the shirking model in which workers have finite lives, the monitoring of worker behavior on the job is costly, and firms have reputations for honesty as employers. In the absence of direct up-front bonding, optimal payment schedules will be in excess of market clearing. The reason why upward-sloping wage profiles that are market clearing will not generally be the optimal labor contract is simple: delayed payment may provide sufficient incentive to prevent shirking late in the life of the contract, but in the beginning of the contract it does not prevent shirking. It turns out, in a variety of stylized cases, that it is cheaper for the firm to pay a wage premium than to accept worker shirking early in the contract. We also analyze the implications of potential worker malfeasance in the absence of explicit bonds for compensation schedules, job assignments, and firm monitoring strategies over the course of a worker's career.

Do Deferred Wages Dominate Involuntary Unemployment as a Worker Discipline Device?

George A. Akerlof and Lawrence F. Katz
Working Paper No. 2025
September 1986
JEL No. 820

In the most widely analyzed type of efficiency wage model of involuntary unemployment, firms pay wages in excess of market clearing to give workers an incentive not to shirk. Such payments and the resultant equilibrium unemployment act as a worker discipline device. This paper concerns what is usually considered the most important theoretical criticism of such models: the so-called bonding argument. The essence of the bonding critique is that contracts whereby workers pay a bond to the firm upon taking a job (or pay an employment fee to gain employment) can eliminate involuntary unemployment. Explicit up-front bonds are observed only quite rarely. A more subtle form of the bonding critique argues that implicit bonding through upward-sloping wage profiles and other deferred payment schemes can substitute perfectly for up-front bonds in providing incentives not to shirk and thereby allow the labor market to clear.

How Important Is Welfare Dependence?

Rebecca M. Blank
Working Paper No. 2026
September 1986
JEL No. 911

This paper develops a theoretical model of welfare dependence in which current participation in Aid to Families with Dependent Children (AFDC) induces greater use of the program. One of the model's predictions is duration dependence in welfare spells. I test that prediction using six years of monthly data on time spent in the AFDC program by female household heads in the control group of the Seattle/Denver Income Maintenance Experiment. I estimate a variety of duration dependence models, investigating the effect of different functional form assumptions, as well as the impact of accounting for time-varying covariates, competing risks, and data heterogeneity in the estimates.

Monthly AFDC participation does not show strong evidence of duration dependence. In fact, during the initial months on the program, the probability of leaving the program, conditional on past participation, appears to be flat or increasing. After about eight months,

the probability of leaving starts to decrease, but it becomes virtually flat after 18 to 24 months. There is some indication that there are two distinct groups on welfare: one group has a very low probability of leaving welfare and a rate of exit that changes little over time; a second group is more affected by time on the program. The propensity of black women to experience longer spells on AFDC appears to be caused totally by their lower probability of leaving AFDC via marriage, rather than to any difference in their probability of leaving via earnings or other increases in income.

However, even where there is duration dependence in the data, it is not adequate for program-induced welfare dependence. The final part of the paper presents a model of earnings change and AFDC participation that contains no welfare dependence effects. Welfare spells simulated from this model show duration dependence effects that appear quite similar to those observed in the actual data.

Death, Population Growth, Productivity Growth, and Debt Neutrality

Willem H. Buiter

Working Paper No. 2027

September 1986

JEL Nos. 133, 111, 321

Debt neutrality is said to occur if, given a program for public spending on current goods and services over time, the real equilibrium of the economy (private consumption, investment, relative prices, and so forth) is independent of the pattern of government borrowing and lump-sum taxation over time. This paper brings together work of Blanchard on individual uncertain lifetimes and debt neutrality and Weil on population growth and debt neutrality. It shows that there will be debt neutrality if and only if the sum of the rate of growth of population and the individual probability of death equals zero. If this condition holds, nonzero rates of growth of labor productivity will not destroy debt neutrality.

Immigrants, Minorities, and Labor Market Competition

George J. Borjas

Working Paper No. 2028

September 1986

JEL No. 800

This paper analyzes the extent of labor market competition among immigrants, minorities, and the native population. The study reveals that immigrants tend to be substitutes for some labor market groups, and complements for other. However, all the effects of shifts in the supply of immigrants on the earnings of native-born men are numerically very small. Even if immigrants are substitutes for some native-born groups, their numerical impact on the wages of the native-born is trivial. In addition, increases in the supply of immigrants have a sizable impact on the earnings of immigrants themselves. Increases of 10 percent in the supply of immigrants reduce the wages of immigrants by about 10 percent. Thus, the main competitors of immigrants in the labor market are other immigrants.

Dividend and Share Changes: Is There a Financing Hierarchy?

Robert L. McDonald and Naomi Soderstrom

Working Paper No. 2029

September 1986

JEL No. 520

The most widely accepted empirical model of dividends was proposed by Lintner, who argued that firms smooth dividends over time. However, many theoretical dividend models either predict that dividends should be highly variable or offer no support for the smoothing hypothesis. We use a switching regression model to test the Lintner model against an alternative that allows dividend behavior to differ depending upon whether or not firms are issuing shares. We reject the Lintner model, finding no evidence of dividend smoothing when firms are not issuing shares, and a high negative dividend growth rate when firms are issuing shares. This description of dividend behavior suggests the existence of a financing hierarchy, in that the marginal source of finance differs over time. To explore the financing hierarchy further, we estimate logit models that explain the decisions by firms to change dividends, and to issue or repurchase shares. The results are consistent with the existence of a financing hierarchy.

The Impact of Medicare's Prospective Payment System on Psychiatric Patients Treated in Scatterbeds

**Richard G. Frank, Judith R. Lave, Carl Taube,
Agnes Rupp, and Howard H. Goldman**
Working Paper No. 2030
September 1986
JEL No. 913

Medicare's Prospective Payment System (PPS) for hospitals was phased in during the 1984 federal fiscal year. While many providers of psychiatric inpatient care were exempted from PPS, patients treated in general hospital beds outside of psychiatric units (scatterbeds) were not. This allows an initial assessment of the impact of PPS on psychiatric patients.

We use a single equation model of length of stay in the hospital to estimate the impact of PPS. We allow for the possibility of both anticipating behavior and slow adjustment to the new payment scheme. The results indicate a substantial response to PPS over the first year of implementation. The estimated response includes sizable anticipatory and slow adjustment components. The findings suggest that policy discussions may be weighted too heavily in the direction of concern over hospital financial status, given that hospitals can change their behavior.

intensity of default, without changing the total cost applied in case of a complete default. At the limit, the incentive scheme converges to an exogenous default cost regime.

I then derive the supply of credit for the case in which there is uncertainty about the total default cost and evaluate the dependency of the supply curve on the incentive scheme. A rise in the elasticity of the penalty with respect to the default intensity induces a higher default rate and *raises* the country risk as reflected in the interest rate associated with a given borrowing. This causes a *leftward shift* in the supply of credit.

Using the expected welfare of a representative consumer, I show that the introduction of partial defaults caused by a variable penalty has adverse effects. Thus, I conclude that variable default schemes that tie the penalty to the default rate are disadvantageous. Finally, I turn to an assessment of the welfare effect of plans that make the interest rate contingent upon realization of shocks. In general, such a contingency plan is advantageous. For example, a plan that will index the interest rate so that it is perfectly correlated with the default penalty eliminates the adverse effects of country risk on expected income. For such an economy, a contingency plan that will index the effective interest rate to the realization of the terms of trade will reduce the effective magnitude of country risk and the incidence of default.

Country Risk and Incentives Schemes

Joshua Aizenman
Working Paper No. 2031
September 1986
JEL No. 400

This paper addresses the role of endogenous default penalties that are contingent upon the intensity of default on the part of the borrowing nation. It also evaluates the effects of contingency plans that make the interest rate dependent upon variables that are correlated with the default penalty.

I consider an economy where default triggers a variable cost the magnitude of which is determined by the intensity of default. I design alternative incentive schemes by varying the responsiveness of the penalty to the

Consumption and Government Budget Finance in a High-Deficit Economy

Leonardo Leiderman and Assaf Razin
Working Paper No. 2032
September 1986

This paper empirically characterizes how government budget variables, such as spending, taxes, and deficits, affected private-sector consumption in the high-budget-deficit economy of Israel during the first half of the 1980s. The paper develops and estimates an intertemporal optimizing model of consumption choice by finite-lived individuals. The evidence supports this formulation against the Ricardian infinite-horizon case, but it does not support it when compared to the unrestricted relations in the data.

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