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Editorial, NBER Macroeconomics Annual 1990

The fifth edition of the NBER Macroeconomics Annual 1990 contains six papers. Three deal with topics in the news. Robert J. Barro and Xavier Sala-i-Martin examine world interest rates, and offer an explanation for the high real interest rates of the 1980s. Francesco Giavazzi and Marco Pagano look at the macroeconomic effects of recent European fiscal stabilizations. And Gur Ofer discusses macroeconomic issues in Soviet reform. Two papers deal with important topics at the interface of macro- and labor economics. Steven J. Davis and John Haltiwanger use a new micro-data base on firms' employment to study the cyclical behavior of job creation and job destruction. Mark Bills considers the behavior of employment and wages under labor contracts that largely predetermine wages. The final paper, by Giuseppe Bertola and Ricardo J. Caballero, explores new directions of research, with a characterization of the macroeconomic implications of infrequent adjustments at the microeconomic level. We limit ourselves in this introduction to brief descriptions of the papers; an important contribution of the conference, however, is in the formal and informal comments that follow each paper.

To the pessimists, the high real interest rates of the 1980s were the unavoidable implication of large government deficits; to the optimists, the high real rates were a signal of good times to come, of high anticipated profits. In their paper, "World Real Interest Rates," Barro and Sala-i-Martin review the evidence, then develop a framework of interpretation and use it to provide a coherent, quantitative, picture of the movement in real interest rates and their determinants.

First, they rightly argue that, even if the goal is to understand the 1980s, one should look at that period in the context of a longer time period. They therefore concentrate on the behavior of real interest rates

over the last 30 years. Second, in a bold simplifying stroke, they decide to focus primarily on “world real interest rates,” and to think of them as being determined by the equality between world saving and world investment. Based partly on data considerations, and partly on the degree of capital market integration between countries, they define the “world” as composed of nine OECD countries, the Group of 7 countries minus Italy, but plus Sweden, Belgium, and the Netherlands.

They start by constructing a world real interest rate series, constructed as a weighted average of each country’s short nominal rate minus a forecast of inflation, obtained by time-series forecasting. They confirm that real rates were indeed high in the 1980s, 3.5% compared to 0.4% in the 1970s and 2.0% in the 1960s.

Barro and Sala-i-Martin then sketch a model of saving and investment along neoclassical lines. They assume saving to be a function of real interest rates and of temporary income, and suggest taking the price of oil as an index of temporary income. They take investment to be a function of the market value of capital. While they recognize that market value is in turn a function of fundamental factors—expected profits and user costs—their strategy is to take it as a proximate determinant, and leave the next step to future research. This leads them to estimate a reduced form relation for real rates with two basic determinants, the market value of capital and the price of oil. While Barro has in the past argued that neither deficits nor money should have significant effect on real interest rates, much of the discussion in the 1980s focused on the Volcker-Thatcher disinflation and later on, on the Reagan deficits. Thus, Barro and Sala-i-Martin, in an eclectic mood, allow also for money, measured as $M1$, and for fiscal policy, measured by a number of alternative variables, as determinants of saving, and thus of real interest rates in the reduced form.

Their next step is to estimate the reduced form relations for real rates and investment. They find a strong positive effect of both the price of oil and stock market returns on real rates. More surprisingly to them, they find a strong effect of changes in money; they are, however, unable to find much effect of fiscal policy, measured either by the ratio of cyclically adjusted deficits to GNP, or by the ratio of debt to GNP, or by the ratio of government consumption to GNP. The strong positive relation between stock market returns and real interest rates is of particular interest. In a world dominated by shifts in savings, one would instead expect the market to go down as interest rates went up; the positive relation is, therefore, *prima facie* evidence of a major role of shifts in the investment schedule.

Equipped with their estimated reduced-form relation, Barro and Sala-

i-Martin provide their interpretation of why real rates were high in the 1980s. Of the 4% increase in rates between 1975–80 and 1981–86, they attribute 2.5% to the increase in the stock market, 1.9% to the increase in the price of oil, and only .3% to tight money. Thus, they come out on net on the side of optimists, attributing much of the rise in interest rates to perceptions of good times to come.

The rest of the paper is spent estimating the saving and investment schedules, using the stock market returns and the price of oil as identifying instruments, and looking at saving, investment, and real interest rates in individual countries. Under the hypothesis of perfect capital mobility, real interest rates should not depend on country-specific factors, but investment, saving and thus the current account should. Their results suggest a dominant role of world factors in the determination of real interest rates in nearly all countries.

The paper by Barro and Sala-i-Martin will not leave many readers indifferent. It is bold and forthcoming in its choice of assumptions, and its statement of conclusions. Few readers will accept all features of the model, all identifying assumptions, and all conclusions. But in all cases, this should be an encouragement to improve and extend the analysis, and to make progress on one of the central questions in macroeconomics.

In “Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries,” Francesco Giavazzi and Marco Pagano contrast the standard Keynesian view that budget deficit reductions are contractionary with the so-called “German view” that a fiscal contraction can, through its effects on expectations, lead to an expansion in aggregate demand. They argue that the German view is most likely to be correct if the fiscal stabilization is brought about through a cut in government consumption that is perceived to be permanent, and which therefore carries with it the expectation of lower future taxes.

Because most European countries undertook fiscal stabilizations in the 1980s, Giavazzi and Pagano expect to find evidence in the European experience. There is mild support in a cross-country regression for the view that private consumption increases when government consumption decreases, but rather than pursue the issue on a cross-sectional, multicountry basis, the authors elect to seek lessons in the experience of two countries that undertook particularly severe fiscal contractions—Denmark, and Ireland, which tried to stabilize twice.

The 1982 Danish stabilization provides strong a priori evidence to support the German view: a decrease in the budget deficit by more than 10% of GDP, accounted for in part by a decline in government consumption of 2.8% of GDP, was followed by an increase in both private con-

sumption and investment. The first Irish fiscal stabilization attempt produced a recession and failed, while the second succeeded, growth being restored within two years. Both countries fixed their currencies to the Deutschmark at the time of the successful stabilization, and both had undertaken real devaluations in advance of the stabilization.

Giavazzi and Pagano concentrate on the effects of the fiscal stabilization on consumption demand. They identify several channels through which changes in fiscal policy can affect consumption: (1) the conventional Keynesian channel, whereby consumption falls because disposable income falls; (2) capital gains that accrue on either private assets or government debt as a result of declines in inflation and real interest rates; (3) substitution of private for public consumption (e.g., when the government cuts spending on education, the private sector may increase its educational spending); and (4) expectations of reduced future taxes.

The most striking difference between Ireland and Denmark is that asset values rose sharply in Denmark at the time of stabilization, along with consumer confidence, whereas asset values did not rise in Ireland. This difference in the behavior of wealth helps account for some of the differences in consumption behavior in the Danish and Irish cases. However, after providing econometric estimates of the magnitude of the first three effects, Giavazzi and Pagano still find a substantial unexplained residual in consumption in both countries. They are inclined to attribute this in part to the effects of expectations—though of course some of the expectational effects are already taken into account when changes in asset values are considered.

Any fiscal stabilization is expected to cut real interest rates, and thus should through that channel raise investment spending. Investment, however, is bound to be affected also by expectations of future demand. Giavazzi and Pagano show that the decline in interest rates in Denmark was insufficient to account for the investment surge in that country, but do not otherwise pursue the sources of differences in investment behavior in the two countries.

This paper makes a strong case that a well-executed fiscal stabilization can within a short time lead to an increase in aggregate demand, and it suggests the circumstances in which this may happen. Several issues are left for future research; in particular, the authors clearly suspect that monetary and especially exchange-rate policies played an important role in the successful stabilizations and in the expansionary impact of fiscal stabilization.

In their paper, "Gross Job Creation and Destruction: Microeconomic Evidence and Macroeconomic Implications," Steven J. Davis and John

Haltiwanger examine the cyclical behavior of job creation and destruction in U.S. manufacturing. They bring to this investigation a new and important data set, which traces the movement in employment in approximately 160,000 manufacturing establishments over a period of 15 years, 1972 to 1986. And the investigation yields a number of clear, new facts which will affect the way we think both about growth and fluctuations.

The data set they put together comes from the Longitudinal Research Datafile, which is a series of five-year panels of data on manufacturing establishments, and Census-year data. The panel data include nearly all large establishments, sample medium-size establishments, and exclude establishments with less than five employees. The sample represents approximately 75% of total manufacturing employment. From this data set, Davis and Haltiwanger then construct “job creation” and “job destruction” measures as the sum across firms of positive changes in employment and the sum across firms of negative changes in employment, respectively. They construct both quarterly and annual measures, and do so for both aggregate manufacturing as well as for industries at the 2-digit level. Their measures of job creation and destruction are clearly much superior to any we had earlier; they fall short of their conceptual counterpart only in that they net out job creation and destruction at the firm level.

Using those series, Davis and Haltiwanger first find high average rates of job creation and destruction, an observation consistent with the finding of high flows in and out of employment from the work on gross flows of workers. The annual rates of job creation and destruction for that period—during which manufacturing employment decreased on net—are 9.2% and 11.3%, respectively. Thus, roughly 10% of the jobs in a given year did not exist a year earlier, and 10% will not exist a year later. High rates of creation-destruction may a priori be the result of quick ups and downs in employment at the firm level, or instead of stable patterns of employment growth or decline across firms. The evidence points to persistence in job creation and destruction: 68% of the jobs created are still there a year later, 81% of the jobs destroyed are still missing a year later.

Davis and Haltiwanger then turn to the cyclical behavior of job creation-destruction. They find the data to have two clear characteristics. First, job creation and job destruction move mostly in opposite directions. The correlation between annual job creation and destruction is equal to $-.86$; it is lower at the quarterly level, equal to only $-.22$. Thus, not surprisingly, expansions are times when more jobs are created and less jobs are destroyed. This will not come as a surprise to the majority of economists, but the second result may. Much of the movement in em-

ployment comes from variations in job destruction rather than in job creation. Expansions are not so much times when more jobs are created as times when less jobs are destroyed. Davis and Haltiwanger prefer an alternative, but equivalent description of the same findings, namely that expansions are associated with a lower intensity of job reallocation. Thus, higher job creation associated with the expansion is partly offset by lower job creation associated with the decrease in intensity. And lower job destruction associated with the expansion is reinforced by lower job destruction associated with the decrease in intensity.

On the basis of those cyclical findings, Davis and Haltiwanger then develop a theory before returning in a more formal way to the facts. The model is a real business cycle model with a heterogeneous labor market, but enough insurance that the outcome is the same as that of a centrally planned economy. There are two types of shocks, aggregate and allocative. Aggregate shocks tend to move job creation and job destruction in opposite directions, but also affect the intensity of reallocation. Because reallocation takes time, it is optimal to do more of it in times of low activity, when the opportunity cost is lower. Allocative disturbances are instead likely to move job destruction and creation in the same direction, although with job creation lagging destruction.

Davis and Haltiwanger then return to the data, using a just identified vector autoregression approach to the time series for job creation and destruction. The identification restrictions are that aggregate disturbances should affect job creation and destruction in opposite directions, and allocative disturbances should affect them in the same direction, but with job destruction responding more initially than job creation. Their conclusion is that allocative and aggregate innovations account about equally for the movement in creation or destruction. Except at long horizons, however, aggregate disturbances account for the bulk of the difference between the two, for the change in employment itself.

This is another paper that covers a lot of new ground, empirical and theoretical, and reaches strong conclusions. There is little question that much has been learned from this first pass at a new data set. Many readers will object to various aspects of the particular model that Davis and Haltiwanger sketch in their paper. The two cyclical facts they have identified will remain.

Predetermined nominal wages, set for instance in long-term labor contracts, have long been argued to provide a fulcrum for monetary policy to affect real output. In "Wage and Employment Patterns in Long-Term Contracts When Labor Is Quasi-Fixed," Mark Bilts uses labor contract data previously examined by Wayne Vroman to shed light on the nature

of labor contracts and their implications for wage and employment. Wages set in long-term labor contracts clearly rise more rapidly relative to other wages at the beginning of the contract, and then rise more slowly than other wages for the remainder of the contract. The initial wage rise seems to take place almost in step fashion in the first quarter of most contracts.

If labor contracts take the form that the union sets the wage and firms set employment, then there should be a corresponding pattern of employment over the life of a contract: employment should rise over the life of contracts. In fact though, employment growth is typically highest at the beginning of a labor contract, and declines over the life of the contract.

If the simplest labor contracting model does not explain the joint pattern of wages and employment, what does? Bils develops a model in which firms face costs of adjusting labor, and in which there is therefore a concern by firms that add labor late in a contract that their bargaining position in the next contract will be weakened. This introduces an additional factor that should mitigate the effect on employment of a declining real wage over the contract period. In the linear-quadratic model developed by Bils, however, it would not reverse the presumption that employment should rise over the life of the contract.

Bils tests many aspects of his revised model, including, for instance, the implication that employment would be more likely to rise over the life of a contract in an industry in which a single labor union negotiates with many competitive firms than in an industry where a union confronts few employers. The argument is that an individual firm in an industry with many other employers pays less attention to the effects of its actions on future wages than would a single employer.

It is fair to say that the data reject the basic model proposed by Bils. But this paper also confirms that model rejections may be even more useful than nonrejections. The paper presents a clear set of facts that have to be explained, undertakes an impressive amount of further empirical work, and shows that a standard model, and a suggestive extension, will not explain the joint pattern of wages and employment in labor contracts. It therefore poses a clear challenge to researchers to explain the facts, and to subject their explanations to as searching a set of tests as Bils does in his paper.

Many of the decisions we take entail costs. The costs associated with buying or selling a house or a car, buying a new machine or hiring a new worker, for example, are often substantial. Economists have long recognized the existence of those costs, usually formalizing them as convex costs, which lead to a slow adjustment of the actual to the

desired stock. But most of the costs we actually incur are not convex. Selling a car, for example, may entail a fixed cost, as well as proportional costs; the average cost is likely to decrease, not increase with the value of the car.

Until recently, progress on characterizing the behavior of individuals in the presence of fixed and proportional costs, has been slow. And results on the behavior of aggregates in the presence of such costs at the individual level were nearly nonexistent. This has changed in the last few years, and knowledge to date is summarized and substantially extended in the paper, "Kinked Adjustment Costs and Aggregate Dynamics," by Giuseppe Bertola and Ricardo J. Caballero. Because the adjustment function is kinked at the point of no change, they refer to such costs as "kinked costs." The paper has three distinct conceptual parts, the first characterizing optimal individual behavior, the second dealing with aggregation, and the third being a first pass at estimating the demand for durables in the United States as coming from aggregation of individual decisions under kinked costs.

In the first part, Bertola and Caballero review the standard problem of optimal behavior in the presence of both fixed and proportional costs, with the exogenous variable following a Brownian motion. The optimal rule in this case is a four-point rule, (L, l, u, U) for z , the deviation of the actual variable, x , from its desired value, x^* . Whenever z hits the lower bound L , it is returned to l ; whenever z hits its upper bound U , it is returned to u . This is, for the most part, well-traveled ground; however, it will serve as an intuitive but rigorous introduction to this class of problems, and in the process, demystify "smooth pasting" and other "value matching" conditions. Given the rule, one can derive the steady state distribution of z , and thus the distribution of x , the actual decision variable. This distribution is interesting, but is not what is of primary interest to macroeconomists. What we want to know is the evolution of the distribution of x across individuals over time.

This takes Bertola and Caballero to the second part of their paper, the behavior of aggregates. The interesting question is a simple one: Does the fact that individuals adjust infrequently imply that the aggregate will move slowly? A general answer has proven elusive. Caplin and Spulber showed in 1987 that infrequent adjustment could completely disappear at the aggregate level, the aggregate behaving exactly as an individual would have, absent adjustment costs. Caplin and Leahy (1990) have shown more recently that infrequent adjustment could, in another context, lead to a zone of no adjustment at the aggregate level as well. Bertola and Caballero show that, in general, the answer depends on both the exact type of rule used by individuals as well as on the ratio of

idiosyncratic to aggregate shocks. Their main result is that the higher the ratio of idiosyncratic to aggregate shocks, the more sluggish will be the behavior of the aggregate.

Finally, Bertola and Caballero show how such models can actually be estimated on aggregate data, and use as an example the behavior of expenditures on aggregate durables in the United States. Since Mankiw (1982), it has been well known that the time series behavior of durable expenditures is at odds with the permanent income hypothesis, absent adjustment costs. The permanent hypothesis implies that durables consumption should follow roughly a random walk, and thus expenditures should be close to white noise. Expenditures, however, exhibit very high serial correlation. The model estimated by Bertola and Caballero does remarkably well in fitting the data and the degree of persistence of the series. It does so with reasonable values for the underlying parameters. The parameters imply that consumers wait until their stock is 25% below its target value before adjusting, and that aggregate shocks account for 30% of the uncertainty faced by consumers.

The paper represents important progress in two directions. First, together with other recent contributions, it comes close to cracking the aggregation problem in the case of kinked costs. It shows when and how infrequent individual adjustment can lead to slow aggregate adjustment, and emphasizes the role of the relative importance of individual and aggregate shocks. Second, it shows that those models have come of age, to the point where they can now be estimated. While the authors emphasize that their results should be taken as exploratory, one is impressed at how successful this first attempt is. It will surely trigger much more work along similar lines.

While East European economies begin the process of reform, most of them with a clear idea of where they want to end up, the Soviet Union has not yet made the fundamental reform decisions. In "Macroeconomic Issues of Soviet Reform," Gur Ofer first establishes that the economic situation in the Soviet Union has worsened in the five years since Gorbachev came to power. He analyzes the sources of the worsening of performance, and then reviews the reform options. At the macroeconomic level, most of the deterioration results from an increase in government spending, especially on subsidies. At the microeconomic level, the deterioration results from a partial move to freeing up a system that is still heavily monopolistic and run by state control.

Ofer describes three reform options. The first is a big bang approach, along Polish lines; in this option macroeconomic stabilization through a reduction in the budget deficit and tightening of credit and credit con-

straints is accompanied by price and trade liberalization and as rapid a move as possible toward private production. The second is the gradual restoration of macroeconomic balance along with attempts to correct shortages through improved central direction, using resources freed up by declining defense and investment spending. The third is a macroeconomic stabilization that is followed by the gradual introduction of price reform and industrial restructuring. The current leadership is attempting the second option, and perhaps planning the third.

Ofer rejects the big bang approach as politically infeasible and economically inadvisable. He does not believe the Soviet economy has the institutions in place to give such a reform an adequate chance of success, and because the economy is so large he doubts that trade reform can import an appropriate price system. He favors a mixture of all three options: macroeconomic stabilization accompanied by a significant price reform (including a devaluation) that seeks to move prices toward equilibrium levels but does not free them to seek their own levels; at the same time the government should institute changes in property rights and begin the transformation of ownership and management relations in the economy. Because the initial price reform would impose significant costs on many individuals, he argues that further democratization would assist the economic reform process by putting in place a government that can call on the public to make the necessary sacrifices.

Ofer's paper gives little ground for optimism about the near-term success of Soviet economic reform, but it does provide the background information against which future reform moves can be appraised.

The Conference at which these papers were presented and discussed was, once more, remarkably well organized by Kirsten Foss and Ilana Hardesty. David Cutler acted as editor of the papers and comments and as rapporteur for the general discussion. Also once more, his assistance was invaluable.

Olivier Jean Blanchard and Stanley Fischer