Editors' Summary

THIS ISSUE of the *Brookings Papers on Economic Activity* contains articles, reports, and discussions presented at the fifty-fifth conference of the Brookings Panel on Economic Activity, which was held in Washington, D.C., on April 1 and 2, 1993. The first article examines a common critique of American capitalism: that the stock market systematically undervalues long-term investments and relatively intangible assets. The second article presents a comprehensive analysis of the September 1992 crisis that led to the breakdown of the European monetary system, and offers a prescription for reconstituting that system. The third article takes as its starting point the disappointing recovery from the recent U.S. recession and looks at what is distinctive about the economy's behavior in the periods around recessions and what was special about the latest recession. The first of three reports in this issue investigates the role of various factors, including governance, in transforming state enterprises in Poland, and suggests implications of the Polish experience for the privatization process elsewhere in Eastern Europe. The second report analyzes whether the recent rapid advance in U.S. productivity is as special as some have suggested. The last report examines the likely effect of proposed changes in the investment tax credit on future investment, drawing upon historical evidence about the importance of tax incentives for equipment investment.

A COMMON CRITIQUE of American capitalism is that the stock market is dominated by myopic investors, undervaluing firms with long-term payoffs and diverting managers from efficient, long-term investments toward activities with lower, but immediate, rewards. In the first article of this issue, Bronwyn H. Hall and Robert E. Hall examine the first part of this critique: that the market systematically undervalues long-term investments and relatively intangible assets. The simplest version of the critique is that the market is systematically shortsighted with respect to all activities, placing too little value on deferred payoffs. This version is simply a restatement of the equity premium puzzle: expected returns on stocks appear to exceed the return on bonds by much

more than can be explained by differences in risk. In addition to documenting this fact for the S&P 500, Hall and Hall examine a variety of hypotheses about specific characteristics of firms. Does the market undervalue firms that invest in R&D and other forms of intangible, difficult-to-value capital relative to firms with more tangible assets? Does it overvalue firms that pay high current dividends at the expense of future dividends or those firms that have higher current accounting earnings or that are heavily investing in plant and capital?

In order to examine these hypotheses about market myopia, the authors make use of the basic proposition of finance theory: that the market value of a stock should reflect the present discounted value of expected future dividends, to which the stock is a claim. The authors begin by examining the relationship between aggregate market value, as captured in the S&P 500, and the present discounted value of the dividends on those stocks. In particular, for each year beginning in 1959, Hall and Hall compute the present value of the actual dividends paid through 1991, treating the value of the S&P index in 1991 as a terminal dividend. Initially, they use the risk-free discount factors implicit in the Treasury securities market for the year in question. If the risk-free discounts are appropriate, deviations of market value from the calculated present values should be unpredictable surprises, averaging zero. Not surprisingly, the authors find market values systematically below the calculated present values; on average, discount rates higher than the risk-free rates on Treasury securities are implied by the stock market's valuation of dividends. Using a procedure that takes account of serial correlation in the value shortfall, the authors find that the discount rate on the S&P is about 4 percent higher than the risk-free rates used in their calculations. Using this higher discount rate would eliminate the appearance of systematic undervaluation of the market, but it is difficult to rationalize in terms of risk. Furthermore, whatever constant discount rate is used, substantial discrepancies remain between the predicted values and actual market values over time. For example, relative to the calculated present values, market values were high during the late 1960s and 1970s and low from 1974 to 1979. The authors believe that such discrepancies could simply be the result of expectation errors about future dividends, rather than systematic changes in the risk premium.

Market critics suggest that the market tends to undervalue some activities, such as R&D expenditures, and overvalue others. Aggregate

data conceal any information on such misvaluation. But by comparing the valuation of individual firms, it is possible to test whether the market systematically under- or overvalues specific observable characteristics. The authors make use of panel data on publicly traded firms, using Compustat data on balance sheet and operating characteristics and using the CRSP data on dividends, stock prices, and terminal prices due to takeovers. The analysis parallels that used for the aggregate data, except that the discount rate applied to a firm's future dividends is allowed to depend on the firm's characteristics. Specifically, Hall and Hall estimate how the discount rate varies with six firm characteristics: R&D expenditures, advertising, investment, debt, recent book earnings, and dividends. All variables are divided by total assets of the firm.

The authors' findings give modest support to skeptics of market efficiency. Two of the variables are highly significant. Firms with relatively high levels of investment in plant and equipment enjoy substantially lower discounts and higher share values. In particular, a firm that has an investment ratio one standard deviation higher than average has approximately a 0.5 percentage point lower discount rate. The authors are aware that they cannot establish the direction of causation behind this result. Firms with higher-than-average book earnings, on the other hand, have significantly higher discounts than average. Rather than favoring the current bottom line, the market seems to place a lower value on a firm with unusually high earnings. A firm with book earnings (relative to assets) one standard deviation higher than average faces a discount about three-quarters of a percentage point higher than average. Other variables are not statistically significant, but suggest that R&D-intensive firms enjoy lower discounts and that advertising-intensive firms face slightly higher discounts.

Breaking the sample into subperiods—1964–70, 1971–80, and 1981–90—sharpens the results. The advantage of firms with high investment ratios and the disadvantage of firms with high book earnings appears to have grown over time. The advantage of firms with high investment ratios is almost 50 percent greater in the last decade than for the sample as a whole; the disadvantage (higher discount rate) for firms with high book earnings has almost doubled. The advantage of high R&D firms also appears to have increased with time, and the coefficient is significant for the 1971–80 period. Recent dividends relative to assets, insignificant both statistically and economically for the entire sample period, appear

to be significantly undervalued in the 1981–90 period, with a discount rate for a firm with a ratio one standard deviation higher than average facing a discount rate approximately 1 percentage point higher than average. Advertising, insignificant for the period as a whole, appears to have been significantly overvalued during the 1960s and undervalued in the 1980s.

The authors calculate the discount for a typical firm, a firm with median or mean values of the various characteristics. Their results suggest that the discount rate was highest during the 1970s, falling substantially during the 1980s. According to their calculations, for a firm with the median characteristics for the entire period, the discount rate in the 1980s was only slightly above the risk-free rate.

The authors believe that, taken as a whole, their results provide mixed support for critics of the market. Tangible investments do appear to yield high values in the market, given actual subsequent performance. On the other hand, they reject the critics' proposition that the market overvalues firms with high reported current earnings; on the contrary, the results suggest that such firms are bargain-priced, and are likely to yield high ultimate value to their shareholders.

IN SEPTEMBER 1992, devaluation of several European currencies in the face of speculative pressure derailed the planned transition of the European monetary system (EMS) into a European monetary union. The year that had started with confidence among European leaders that the transition would succeed, based on more than five years of exchange rate stability, ended with the Italian lira and British pound withdrawing from the EMS altogether and the future of monetary arrangements for Europe highly uncertain. In the second article of this volume, Barry Eichengreen and Charles Wyplosz provide a comprehensive analysis of the September crisis. They review the history of the EMS and the developments that led to the crisis, evaluate alternative models for explaining the crisis, and offer prescriptions for how the monetary system can be reconstituted effectively.

Between the inception of the EMS in 1979 and early 1987, there were eleven currency realignments among the members of the system, necessitated mainly by differentials in members' inflation rates and accomplished within the ground rules of the system. These inflation differentials had narrowed by 1987, at which time a new no-realignment strategy

was adopted, supported by more generous credit facilities, a strengthened commitment to currency intervention, and a greater emphasis on policy coordination among the member nations. By 1990, the last capital controls, which had been used to insulate currencies against speculative attack in the earlier years of the system, had been eliminated. Yet nominal exchange rates remained stable despite gradual changes in real exchange rates resulting from some continuing inflation differentials. In the authors' view, this stability prevailed because the new no-realignment strategy was viewed as credible by potential speculators and so generated self-validating expectations. Once doubts emerged, as they did by the summer of 1992, the system became vulnerable.

The authors discuss three preconditions for maintaining a system of pegged exchange rates, of which fixed exchange rates are a special case. First, there must be a way to respond to needed adjustments in relative prices, either through wage and price flexibility or through changes in the exchange rate pegs under prescribed conditions, such as the escape clauses of the original EMS ground rules. The authors see the post-1987 EMS ground rules as a gamble in which the escape clause was traded for the added credibility of a fixed rate system. Second, monetary policy must follow what the authors call robust rules, which make credible the commitment to change parities only in response to prescribed changes in fundamentals. Third, the system must have the ability to withstand speculative attacks.

The authors observe that, although the original EMS rules met these three preconditions in various ways, eventually the post-1987 EMS did not. Ruling out realignments made it difficult to adjust relative prices. Eliminating capital controls left central banks more vulnerable to speculative attack. And while countries committed to robust monetary rules as a condition for joining the prospective monetary union, once the prospects for union dimmed, so did the credibility of that commitment, making speculative attacks more promising.

Eichengreen and Wyplosz next examine three possible reasons why the economies of Europe could have been vulnerable to speculative attacks based on economic fundamentals. Looking first at prices and labor costs, they find clear evidence of deteriorating competitiveness in Italy, but only ambiguous evidence in other countries whose currencies were affected, and so conclude that overt competitiveness offers only a partial explanation. They next model the consequences of German unifica-

tion, showing that prices and costs in other EMS countries had to decline relative to those in Germany. This real appreciation of the deutsche mark could be accomplished either through nominal appreciation of the DM—a step the Bundesbank advocated but other EMS members rejected—or through more domestic inflation in Germany than in the other economies—an outcome that required depressing the other economies because the Bundesbank was committed to checking inflation in Germany. Because unification required significant changes in relative prices that did not occur, it contributed a hidden, as opposed to overt, competitiveness problem. But the authors regard this, too, as only a partial explanation for the exchange rate crisis because the crisis did not occur for more than two years after unification, a period during which some of the needed relative price changes did take place. Finally, the authors consider a third explanation based on the expectation that governments would eventually be forced to shift monetary policies in those countries suffering high unemployment as a result of maintaining exchange rate parities. While they find some support for this explanation, they again find it far from complete because unemployment was rising and governments were weak throughout Europe, not only in countries whose currencies came under speculative attack.

Finding explanations based, even remotely, on fundamentals to be incomplete, the authors consider a model of self-fulfilling speculative attacks that requires neither actual nor expected fundamental disequilibrium. In this model, speculators anticipate that monetary policy will be eased because policymakers will be unable or unwilling to maintain tight monetary policies when subjected to a currency attack. Under these conditions, the speculators profit and the economy shifts to a new equilibrium. Eichengreen and Wyplosz believe that the situation that existed within the EMS fits this model. Countries seeking to qualify for inclusion in monetary union were expected to maintain an exchange rate within the narrow EMS ban without "severe tensions" for the two preceding years. Attempting to meet these conditions might require restrictive policies and entail costs in output and employment that had to be weighed against the benefits of joining the union. A speculative attack that created severe tensions in the country's foreign exchange market would reduce the chances of qualifying for the union or, at least, delay the date for joining. In turn, for some countries, these altered prospects would tip the balance between the costs incurred to qualify for membership and the benefits of

future membership. Anticipating this conditional policy change, speculators would expect to profit from attacking such a country's currency.

The authors conducted a mail survey of European currency traders as a way of discovering directly what informed their actions during the summer of 1992. Based on 132 responses, the survey provides some support both for the importance of fundamentals and for the authors' model of self-fulfilling attacks. For example, only 22 percent of the respondents were expecting a realignment before the Danish referendum rejecting Maastricht, which suggests fundamentals were not a prime factor to most. On the other hand, unemployment was not considered important to speculators, which suggests that they attached little weight to the possibility that a deteriorating economy would force a government to abandon defense of its currency. Taking together the evidence from their survey and their detailed look at the experience of individual economies and the politics of the time, the authors conclude that the three fundamental explanations they consider and the explanation based on self-fulfilling attacks all apply to the 1992 crisis in one or another affected country. But they reason that the possibility of self-fulfilling attacks is key to evaluating future options for Europe.

Eichengreen and Wyplosz point out that any workable arrangement for the future will have to sacrifice at least one of three incompatible objectives: pegged exchange rates, monetary policy independence, and full capital mobility. They consider six options. First, they see attempting to proceed as before, with EMS countries renewing their efforts to harmonize policies, as not feasible because it affords no protection against self-fulfilling attacks. Second, they see a monetary marriage between Germany and France as unrealistic because neither would cede the necessary control to the other. While the Maastricht treaty creates a broad institutional framework within which some compromises might be palatable, an understanding between France and Germany would not carry similar force. Third, if an early monetary union were attempted within the Maastricht framework, they believe that not many countries would meet the Maastricht requirements for membership.

A fourth option, flexible exchange rates, would permit policy independence and full capital mobility, which is mandated by the Single European Act. But while this option appears attractive to many U.S. observers, the authors explain why it is unacceptable to most Europeans. It would open the possibility of competitive devaluations, which are be-

lieved to have contributed to the economic problems and political crises in Europe in the 1930s. As intra-European trade expands, import penetration stemming from exchange rate fluctuations will be politically unpopular. In addition, investments that would link markets would be impeded by the uncertainties of exchange rate fluctuations. Ultimately, the political future of the single market could be jeopardized. The authors offer the same objections to a fifth option—the use of wide exchange bands that permit substantial exchange rate swings—and add that it is hard to make the defense of such bands credible.

Having found the alternatives wanting, Eichengreen and Wyplosz advocate an admittedly less than ideal solution—"throwing sand in the wheels of international finance," they call it—to protect against destabilizing speculation while countries converge toward monetary union. To do this, they advocate either a Tobin tax on foreign exchange transactions or deposit requirements like those imposed in Spain during the 1992 crisis that increase the cost of foreign currency purchases. Either measure would substantially increase the cost of short-term currency trading while having little effect on the cost of taking long-term currency positions.

While the authors find that feature compelling in view of their conclusion that self-fulfilling speculation against currencies still poses a problem, they also discuss several drawbacks of such measures. Either could inhibit the development of local financial markets and, by impairing the liquidity of these markets, inhibit long-term investment, as well as speculation. They could also weaken monetary discipline and so jeopardize the convergence process, a risk they share with plans that would widen or eliminate currency bands. Despite these valid concerns, Eichengreen and Wyplosz conclude that the sand-in-the-wheels approach is the best alternative for the European monetary system in the near future.

THE RECESSION that started in the summer of 1990 was the eighth in the last forty years. Although the recession was not as severe as some of its predecessors, the recovery from it has been the weakest in the postwar period. This disappointing recovery has led analysts to search for its possible causes and has renewed interest in the cyclical behavior of the economy more generally. In the third article of this volume, George L. Perry and Charles L. Schultze attempt to shed light on both these issues, looking for what is distinctive about the economy's motion in the

periods around recessions and at what was special, in either the real or the financial sphere, during the recent recession.

The authors examine real activity relative to the potential of the economy during all recessions since the mid-1950s, organizing their analysis around three subperiods of each recession episode: the four quarters preceding cyclical peaks, the quarters between peaks and troughs—the recession itself—and the first several quarters of recovery. They first document several regularities in real activity. Final sales are always weak in the prerecession quarters, with a mean decline relative to trend of 1.3 percent and a standard deviation across recessions of only 0.5. Inventory investment has no systematic pattern in the prerecession quarters. Recessions thus characteristically originate in weakening final sales, either in response to policy-tightening, endogenous reactions such as accelerator mechanisms, or exogenous shocks, and not from inventory imbalances.

From peak to trough and during recoveries, there is more variability in final sales across recessions. And in contrast to the prerecession quarters, inventory changes and final sales are positively correlated during the quarters of recession and even more strongly during recoveries. This suggests that inventory imbalances are corrected quickly, but adjusting output to correct them adds substantially to the size of the downturn and, even more, to the strength of the recovery. The authors observe that there is a substantial negative correlation between the depth of recessions and the strength of recoveries that would not be predicted if the economy's motion were characterized by a random walk with drift.

Disaggregating final sales into its major components—whose movements relative to trend they express as a percent of potential GDP—the authors find several notable regularities. Consumer spending is far more variable than simple permanent income models would predict. Measured as a percent of the change in total final sales relative to trend, consumption on average accounted for 58 percent of the decline before recessions, 44 percent of the decline during recessions, and more than the entire rise during recoveries. Shocks to consumption may have contributed to causing recessions. But in light of this systematically procyclical behavior over all three subperiods, the authors infer that the behavior of consumption around recessions is largely endogenous, responding promptly to short-run variations in income, confidence, interest rates, job prospects, or other characteristics of recessions.

Residential construction accounts, on average, for only 4 percent of final sales. But, reflecting the effect of changing interest rates, it accounts for more than half the shortfall of final sales relative to trend in the prerecession periods, and for about two-thirds of the increase in final sales relative to trend during the early recovery quarters. Business spending on durable equipment is also sensitive to current developments, and contributes substantially to recessions and, to a lesser extent, to recoveries. Imports are importantly countercyclical, although with noticeably more variation across recessions than the sectors just described. Patterns in other sectors are less systematic or quantitatively less important.

With great regularity, recessions have been preceded by interest rates rising in response to rising inflation. At times, the inflation has reflected external shocks, such as the two OPEC oil price explosions. To examine the contribution of policy changes to the business cycle, Perry and Schultze run regressions explaining GDP during their recession episodes with lagged fiscal policy (measured by the high employment budget surplus) and lagged monetary policy (measured by the federal funds rate). They find that both policy variables are statistically significant and that regressions fit to a subsample covering the period from four quarters before peaks to four quarters after troughs—84 of the 146 quarters in their entire sample—look very different from regressions for the remaining, noncyclical quarters. Although the recession subsample estimates are not very different from the estimates for the entire data period, the authors focus their analysis on the recession subsample on the grounds that it should best capture changing expectations and the timing of responses during the recession episodes.

For recessions before the last one, policy changes can account for a large fraction of the actual change in GDP both up to and following the recession trough. Downturns are worse and recoveries stronger than the equation predicts, but the mean prediction error is well under 1 percent of GDP at the end of both intervals. In the recent recession, in contrast, GDP is 2.8 percent below prediction at the trough, and falls an additional 2.4 percent below prediction in the first five quarters of recovery. Thus not only during the recovery, but in the earlier subperiods as well, the economy has been exceptionally weak compared with past recessions once the effects of policy changes are taken into account.

To look more closely at the recent recession, Perry and Schultze ex-

amine the residuals from equations explaining individual components of final sales. These reveal a weakness in all components compared with earlier recessions, with consumption and residential construction showing the largest overprediction. Among major demand sectors, only producers' durable equipment was exceptionally strong relative to predictions during the recovery, and the authors show that this strength arises entirely from the rapid technical progress assusmed in measuring real output in that sector.

Perry and Schultze turn to potential explanations for the unusual weakness of the economy during the latest recession and recovery. They first hypothesize an employment threshold effect: employment growth after recessions may need to be rapid before it can overcome pessimism and stimulate consumption. This idea, which they relate to Christopher Carroll's model (*BPEA, 2:1992*) in which perceptions of employment prospects affect consumer spending, implies that improving employment expectations are self-fulfilling in a typical recovery. Even if correct, however, this idea would only account for weak consumption in the recovery, when employment has, in fact, grown only slowly. To help explain the weakness that they identify in the prerecession and recession quarters as well as in the recovery, the authors offer an explanation based on permanent job losses. Using an equation relating permanent and temporary job losses, they show permanent losses have been exceptionally high throughout this period, and were underpredicted by 30 percent by the end of 1992. They further show that unemployment associated with permanent job loss explains consumption during recessions better than aggregate unemployment does even in a regression fit through 1989. Thus they identify the high level of permanent job losses in part associated with employment restructuring in many firms as a special factor contributing to the weakness in consumption and the overall economy in recent years.

Perry and Schultze next examine three hypotheses based on financial developments. First, a capital shortage in the nation's banks, partly brought on by new regulation, has produced a leftward shift in the supply of business loans. Second, the explosion of business debt and the rise in interest burdens among many firms in the 1980s has subsequently both raised the cost of credit to such firms and inhibited their willingness to undertake additional credit-financed activities. Third, the massive overbuilding of commercial structures in the 1980s led to a decline in

commercial construction and saddled many financial institutions with a portfolio of soured loans, reducing their ability to extend credits of all kinds.

The authors start with an examination of the role of bank capital shortages. Because lenders use a more stringent credit screen as a way of allocating credit when the supply is tight, published data on interest rates do not reveal how the effective "price" of credit to a given business firm changed relative to open market rates. Analysis is forced to rely upon a comparison of *ex post* credit flows during various stages of the business cycle. According to Perry and Schultze, the pattern of credit flows supports the widely held view that a constriction in the supply of bank credit preceded and may well have contributed to the onset of recession. The flow of bank loans to both corporate and noncorporate business fell before the 1990–91 recession in a way not matched in the three prior recessions. Indeed, the flow of bank credit to noncorporate firms turned negative as early as 1988. The authors cite scattered evidence that supply problems arose in several nonbank financial sectors, but conclude that these were not widespread enough to have been a major factor in the credit contraction. Loans from nonbank sources to corporations were reasonably well maintained before the recession; and although nonbank credit flows to noncorporate borrowers fell sharply in the year before the peak, that decline came after the drop in bank loans.

In the next two years of recession and early recovery, both bank and nonbank credit flows turned sharply negative, leading the authors to conclude that factors other than the bank capital shortage became important. During the recession, the flow of credit to business firms fell well below the floor in the three prior recessions, even though the 1990–91 recession was milder than average. This suggests that the contraction in credit was more than simply an endogenous response to declines in aggregate demand. However, while credit flows were also lower after the trough than they had been in earlier business cycles, the recovery was itself significantly weaker, making it unclear whether total credit flows in this recovery were weak relative to aggregate demand.

Turning to the role of business debt burdens, the authors show how the average ratio of credit market debt to GDP among nonfinancial corporations rose very rapidly after the mid-1980s and interest obligations consumed a growing fraction of cash flow. The authors reason that in the aftermath of this buildup, both the supply of and demand for credit have

declined. The 10 to 20 percent of firms with the highest leverage ratios and heaviest interest burdens faced increased price and nonprice costs of credit, if not outright rationing, particularly as product markets weakened. At the same time, given the increased risk of bankruptcy, such firms were themselves less willing to undertake additional credit-financed expansions in activity.

During the past several years, the rise in the ratio of interest payments to cash flow that occurred during the 1980s has been largely reversed. But Perry and Schultze show that the greater part of this improvement has been due to the fall in interest rates and not to a drop in the ratio of debt to GDP originating in nonfinancial corporations. In assessing risks, prudent lenders and borrowers would take account of the possibility of a significant rise in interest rates as an accompaniment to cyclical recovery in a world of low private saving rates and still-substantial budget deficits. So the authors believe that the legacy of the 1980s buildup in debt on both the demand and supply of credit may still be having some repressive effect on the recovery.

IT HAS BEEN THREE YEARS since Poland instituted its "big bang," the program of radical reform intended to create the legal, institutional, and economic basis for a market economy. The reforms have been instrumental in introducing dramatic changes—with much greater foreign competition, large changes in relative prices, and tighter monetary and fiscal policies. But changes in the ownership and governance of state manufacturing companies have lagged behind. Many analysts have argued that the delay in privatizing state manufacturing has placed the reforms at risk, fearing that state enterprises would decapitalize companies by paying out surpluses as wages, and—using their bargaining power to negotiate bailouts with the government—sabotage macroeconomic stability. In the first report of this issue, Brian Pinto, Marek Belka, and Stefan Krajewski examine the consequences of different forms of governance by reviewing the recent performance of seventy-five enterprises accounting for 40 to 60 percent of Polish manufacturing, a sample that represents the core of the manufacturing sector, excluding giants such as the huge tractor company URSUS and the largest shipyards and steel mills.

According to Pinto, Belka, and Krajewski, these companies, because of their size and bargaining power, exhibit many of the difficult problems

involved in transforming and restructuring manufacturing. They are also potential candidates for the mass privatization program. The authors first visited the enterprises in the summer of 1991, and revisited them in August–September 1992. During their visits, the authors collected a wealth of information on the behavior of the firms in their sample, and on the views and attitudes of firm managers.

The sample of firms exhibits the slow pace of privatization evident for the entire economy. By June 1992, only three of the sixty-four firms included in the second survey were privatized. Twenty-four firms had been "commercialized" and thirty-seven were still state-owned enterprises (SOEs). Hence, while providing little direct evidence on the effect of privatization on performance, the authors' survey provides valuable information about the way behavior has been affected by commercialization, which importantly changes firm governance, and how the changed environment has altered enterprise behavior.

The early results for manufacturing were not encouraging. The big bang of 1990 was followed by a large drop in manufacturing output, which continued until the middle of the year. A relaxation of macroeconomic policy after midyear led to a huge increase in wages. While it was encouraging that bankruptcies did not occur and enterprises overall were doing well financially, many analysts believed that the ownership and control structure of SOEs were incompatible with rationalization and growth. With the collapse of trading arrangements with the former Soviet Union, there was a large and abrupt fall in enterprise profitability as hidden subsidies on energy and inputs vanished and traditional markets were lost. By mid-1991, unsold inventories were building up and sales and profitability were declining sharply. Poland appeared headed for high inflation.

When the authors first visited enterprises in mid-1991, they concluded that managers' attitudes had shifted toward making profits and marketing, and that they were the moving force behind change. The authors also believed a serious principal-agent problem existed. Managers served at the pleasure of workers' councils, and there was insufficient emphasis on the long-term viability of enterprises. Nonetheless, performance improved.

How important was commercialization as a force for change? Commercialized firms differ from state-owned enterprises in three major respects. They are supervised by a board made up largely of members

nominated by the Ministry of Privatization, rather than by workers' councils, which had wielded substantial power in state-owned enterprises. They are exempted from the fixed "dividend" or tax and instead pay a "profits" tax, as well as lower taxes on excess wages; and they are scheduled to be privatized within two years. Hence commercialized firms arguably have both different objectives and different incentives than SOEs. Yet it is striking how few systematic differences have developed.

When the firms are categorized by profitability as of June 1992, thirteen commercialized firms and sixteen SOEs fell into the most profitable AAA category, with net (posttax) profits; ten commercialized and fourteen SOEs fell into the A category, with negative pretax profits. Pinto, Belka, and Krajewski provide a detailed comparison of differences for the population of AAA firms (excluding cigarette companies), and show that most indicators of performance are similar for the two types of firms, including declines in sales and in labor productivity, and increases in average wages and in the ratio of working capital loans to sales. However, as might be expected from the different tax provisions for the two types of firms, the ratios of excess wage tax to disposable cash, interest to sales, and "dividends" (a tax) to profits differ.

Although privatization has been virtually nonexistent and commercialization does not appear to be responsible for significant changes in behavior, fears that worker-dominated firms would lack the will to shed labor or improve efficiency through investment have not been realized. The authors find that wages have not been set to exhaust surpluses; rather, wage-setting—for SOEs as well as commercialized firms—has come to resemble bargaining in the West. Wages rose sharply in 1989, were frozen with the shock of the huge increase in materials, energy, and interest rates in early 1990, and then grew rapidly as the fears of bankruptcy receded later in that year. Unit labor costs have undoubtedly been adversely affected by the fall in output.

Although initially the large drop in output was not matched by labor shedding so that unit labor costs rose, employment reduction has continued while sales have gradually stabilized. For the total sample, labor input was reduced by a remarkable 27 percent, with the most labor-intensive A group leading the way. Beginning in 1991, unit labor costs have stabilized, and most recently have declined, indicating that firms are increasingly successful in controlling labor costs. Interestingly, managers

frequently complained that the excess wage tax, while providing a solid excuse for not raising wages, prevented offering workers rational incentives, and in some cases actually inhibited laying off low-paid workers. They also complained about discriminatory enforcement and the perverse effects of allowing some firms to escape the regulation.

The authors find other evidence of firms' efforts to economize. The switch to international prices caused dramatic increases in materials and energy costs during the first half of 1991. Subsequently the ratio of these costs to sales declined, indicating that the efficiency of use is on the rise.

Many observers argued during 1990 and 1991 that the stringency of macroeconomic policy was being diluted by bank loans, interfirm bank credit, and tax arrears. The authors' evidence from their survey suggests that the firm-level budget constraint, while lax through 1991, is tighter than feared. They find substantial tightening of bank lending. While interfirm loans substituted for bank loans by A firms, lending by AAA firms leveled off near the end of the period. Tax arrears have become substantial for A firms, which are under financial stress, but AAA firms are essentially current. Not only does the quantitative evidence suggest a hardening of the budget constraint, but the managers surveyed by the authors reported both changed bank behavior and a hardening of internal budget constraints as firms have increasingly installed cash management and reporting systems.

The authors examine various indicators of decapitalization. They find that, in 1990 and 1991, investments comfortably exceed depreciation for AAA and AA firms, but not for A firms. Decapitalization is pronounced in firms suffering losses. The authors thus interpret decapitalization as more of an adjustment phenomenon than a deliberate attempt to squander state assets.

The authors conclude that three fundamental forces help explain why SOEs are responding, even though managers have neither an ownership stake nor compensation linked to profits. First, an increasingly hard budget constraint has forced adjustment. Second, prices have been largely anchored to foreign prices, thereby setting performance targets for prices, costs, and quality. And third, the managers have come to expect that performance will be rewarded once privatization occurs.

From Poland's experience, the authors infer that the shock therapy of moving to world relative prices and the enforcement of hard budget constraints may in themselves provide the impetus to improve firms'

performance. Rapid changes in ownership may be unnecessary at the initial stages of reform, and restructuring before privatization may be desirable. They note, however, that managers overwhelmingly favor commercializing enterprises and that the change in managerial performance and attitudes, even in SOEs, reflects a belief that good performance will be rewarded at the time of privatization, when managers' compensation will depend upon their performance today.

LABOR PRODUCTIVITY in the nonfarm business sector of the economy rose by 3.2 percent during 1992, the most rapid four-quarter advance since the 1970s. Some observers have taken this as a sign that the nation's productivity growth trend, which had slowed disappointingly for nearly two decades, was finally quickening. Even some more cautious observers, who see trend growth in productivity changing only slowly, believe the recent performance could at least reflect a onetime improvement in the level of productivity coming from much-discussed job restructurings as major firms tried to improve their efficiency and profitability. Because productivity has a systematic cyclical component, however, the good performance in recent quarters of economic recovery may not be as special as it seems. In order to judge how special recent quarters really are, Robert J. Gordon, in the second report of this volume, looks at recent experience using his model explaining trends and cycles in productivity over a period of nearly the past forty years.

In the long run, productivity trends are determined by the pace of technical change and the growth in physical and human capital. Over shorter intervals, the cyclical pace of output growth, expectations about future growth, and variations in the industry mix of aggregate demand are all important in determining changes in employment and productivity around the long-run trend. These short-run factors are especially pronounced around periods of recession and recovery. Overhead labor is not varied in proportion to variations in demand and output. Expectations of demand and employment requirements are typically excessive immediately before cyclical peaks and excessively pessimistic at the start of recoveries. And relatively high-productivity sectors such as manufacturing experience wider cyclical fluctuations than other parts of the economy.

These cyclical characteristics have often been modeled as continuous features of economic time series. Gordon, by contrast, has found it use-

ful to identify end-of-expansion effects on productivity that operate in addition to the continuous effects of gap-closing and rates of growth. The end-of-expansion effect predicts subpar productivity growth for an interval before cyclical peaks, which is then offset by an interval of exceptional productivity gains in the early stages of recovery. Once this recovery phase is completed, productivity is expected to be back on the path predicted by its trend and other short-run considerations. The end-of-expansion effect thus has no permanent effect on either the level or growth rate of productivity.

Gordon fits his model in a variety of ways in order to get the best fix on the trend path of productivity and the predicted cyclical departure from it in recent years. For the private nonfarm business sector—the broad aggregate upon which he focuses—his best estimates show a small but disappointing slowdown in the productivity trend for the 1987–92 period, from the 1.3 percent rate estimated for 1972–87 to 1.1–1.3 percent, depending on which equation is used. Along with these estimates of the trend, Gordon finds that the end-of-expansion effect was unusually strong in the late 1980s, leading to a larger than usual shortfall in productivity below trend. The other side of this finding is the prediction of a correspondingly strong cyclical bounce-back in productivity. Thus he interprets the 3.2 percent productivity gain during 1992 as a normal cyclical rebound.

AN ASSESSMENT that the United States is underinvesting, particularly in equipment, and belief in the need to stimulate demand in the economy at present motivated the new Clinton administration to propose an investment tax credit as part of its original stimulus package. In the third report of this issue, Peter K. Clark examines the historical evidence on the importance of tax incentives for equipment investment and analyzes the likely effect on future investment of an ITC like the one that had been proposed.

Clark focuses his attention on the price or incentive effects of taxes, rather than on the effect of taxes on the cash flow available for investment. Following traditional analysis, he summarizes the price effects in "user cost," a formula that gives the annual cost of holding a unit of capital, taking account of the effect of tax credits, interest, depreciation, and capital gains or losses, and adjusted to reflect the taxes that must be paid on capital income. Clark calculates his measure of user cost for the

1952–92 period, years during which tax changes have been responsible for substantial variation in user cost for aggregate equipment. Not surprisingly, the tax premium is typically positive: highest in the 1950s and lowest in the early 1980s. He estimates that, for all equipment, user costs fell by between 20 and 30 percent between the beginning and end of the period. Tax effects have differed substantially on average and over time across different types of equipment. For example, the tax premium has varied from a high of 57 percent to a low of 14 percent for engines and turbines, from 41 percent to −2 percent for service industry machinery, and from 13 percent to −1 percent for automobiles.

The fact that during the same period that the equipment-to-output ratio rose by between 40 and 50 percent, user costs fell by 20 to 30 percent suggests an elasticity of substitution of roughly two, double that implied by the usual assumption of a Cobb-Douglas production function. Clark is skeptical of such a large estimate, and suggests that other factors influenced the trend in the equipment-to-output ratio.

To sharpen the estimates of the elasticity of investment to user costs, and to better understand the speed of adjustment of investment to changes in price and output, Clark estimates an equation relating equipment capital to distributed lags on output, user cost, and its tax components. Estimating in differences removes the effect of the secular changes in the cost of capital and the capital-output ratio on the estimates of the elasticity of substitution. When output and user cost are the explanatory variables, the equation yields an estimated price elasticity that is near zero. Clark suggests that this result may reflect the endogeneity of interest rates, with shocks to investment raising the interest rate and biasing the estimates of the structural elasticity downward. Arguing that tax variables are less vulnerable to this simultaneity problem, he separately estimates the elasticities of the tax variable and the investment tax credit and regards the resulting estimates as more reasonable. His preferred elasticity estimate, on the investment tax credit alone, is approximately 0.34, substantial but less than half the unitary elasticity frequently assumed. In addition, his estimates suggest a slower response than usual, with the effect of a change in the credit delayed for at least a year.

Different types of equipment receive quite different tax treatment, raising the possibility that the aggregate results are contaminated by mix effects. Fortunately data are available by equipment class, albeit only

on an annual basis. Clark runs equations relating investment by each type to the GNP gap and to changes in the equipment-specific investment tax credit. Seven of the twenty classes have a relative price coefficient above 1.0; fifteen have a coefficient greater than zero. Assuming a common price elasticity, but allowing individual constants and cyclical responses, yields estimates as high as 0.57, roughly consistent with Clark's aggregate results.

One crucial characteristic of a stimulus package, given the federal deficit, is "bang for the buck," the magnitude of the stimulus per dollar of revenue loss. Clark shows that if price or incentive effects are all that matter to investment demand, then the bang per buck is the same for a permanent investment tax credit, cuts in the corporate tax rate, or indeed any permanent change in the tax law with equivalent present value revenue loss. However, the magnitude of the stimulus *does* depend on the life of the asset; a given tax "expenditure" has a greater effect on the user cost, the shorter-lived is the asset. Of course, the time paths of actual tax payments are quite different for tax changes with the same present value because tax credits provide firms with immediate cash and the government with an immediate tax loss, whereas a cut in the corporate tax rate has effects spread over the life of the asset. If cash flow is an important determinant of investment, then tax credits should have a larger immediate effect on investment.

The treatment of preexisting equipment also affects the bang per buck. Clark estimates that reducing the tax on preexisting capital roughly triples the revenue cost in the short run. Similarly, making the credit available only on investment exceeding 70 or 80 percent of investment in a base year can temporarily multiply the bang per buck three to five times. This advantage disappears gradually if the base is kept fixed, and almost immediately if the base is adjusted to actual investment. An incremental credit also creates other complications, including firms creating new leasing companies eligible for the credit and the IRS needing new ways to monitor compliance. Finally, the Clinton plan was to have been temporary for large firms. Clark notes that this would have provided a powerful stimulus to move investment forward from 1995 to 1994, so as to take advantage of the tax credit before it expired. But it would have created a corresponding weakness in investment after 1995.

Clark concludes that although an investment tax credit may affect investment, it is not a good instrument for fine-tuning investment over the

business cycle. He believes the magnitude of the stimulative effect to be smaller and the timing of the effect less certain than is typically assumed. And he is skeptical of the suggestion that shifting the tax burden from equipment to other assets is likely to enhance long-term productivity growth.