Editors' Summary

THE BROOKINGS PANEL on Economic Activity held its sixty-fifth conference in Washington, D.C., on March 26 and 27, 1998. This issue of *Brookings Papers* includes the papers, reports, and discussions presented at the conference. The first paper analyses the causes and the treatment of the recent financial crisis in East Asia, focusing in particular on the International Monetary Fund's interventions, in order to develop guidelines for new international workout arrangements that would prevent or swiftly resolve future financial crises. The second presents a new model of saving over the life cycle and uses it to examine the effect of instruments that commit savers, such as defined contribution pension plans with penalties for early withdrawal. The third paper challenges the notion that deficit-reducing reforms are politically costly, and relates the "success" of such programs to the composition of the fiscal changes. Using household survey data, the first report depicts patterns of wealth holding and wealth accumulation among American families since the mid-1980s, analyzing the roles of different forms of saving in the accumulation of wealth. The concluding report examines the effects of hours reductions on employment and wages, and considers the motivation behind pressure for work-sharing arrangements in Germany.

THE EAST ASIAN financial crisis struck the economies of the region and the world financial community with little warning and surprising force. It focused international scrutiny on long-standing flaws in the financial, corporate, and government institutions of the affected countries. The International Monetary Fund (IMF) assigned much of the responsibility for the crisis to these institutional shortcomings and made their overhaul a central aim of its rescue efforts. It also insisted on

fiscal contraction and higher interest rates in the countries that applied for emergency loans. These steps were prescribed as a way to restore confidence and head off excessive devaluation, but financial markets did not respond favorably and, after the IMF's original interventions, the crisis deepened in countries throughout the region. In the first paper of the present volume, Steven Radelet and Jeffrey Sachs provide their own analysis of the crisis, questioning the diagnosis and prescriptions of the IMF. While they fully acknowledge the shortcomings of East Asian capitalism that the IMF and others have identified, they see intrinsic instability of international financial markets as the key cause of the crisis. They also offer suggestions for handling the ongoing problems in the region and prescribe measures that would reduce the risk of future crises in the region or elsewhere.

The authors review several historical instances of crises involving developing countries and find that they share certain common characteristics. In each case, economies were buffeted by sudden shifts in financial flows; the shifts were, to some extent, unanticipated; and they provoked deep recessions in the debtor countries and losses to international investors. Analysts have typically explained such crises as the consequence of fundamental changes: either changes in world market conditions that affected the ability of borrowers to repay debts or developments in the debtor country that led creditors to reassess the riskiness of lending to it. But the authors argue that neither explanation applied in the summer of 1997. International conditions were benign, and no fundamental imbalances emerged in the East Asian economies, where real exchange rates were only mildly overvalued and overall debt-carrying capacities presented no imminent risks of default.

The idea that a financial crisis might arise from intrinsic instability in lending, even without a deterioration of fundamentals, has been considered by the authors and other analysts in connection with earlier crises. In this paper, Radelet and Sachs start their discussion of the idea by distinguishing between illiquidity and insolvency. An illiquid borrower lacks ready cash to service debts but has the net worth to repay debts in the long run. An insolvent borrower lacks the net worth to repay debts out of future earnings. Illiquidity gives rise to a financial crisis when the capital market will not provide fresh loans to an otherwise solvent borrower. That occurs when no individual creditor is willing to extend a loan if other creditors do not lend as well. Absent

collective action, and fearing that others will call in their claims, individual lenders have an incentive to get their money out, thus producing a self-fulfilling financial crisis. This idea is closely related to the Diamond-Dybvig model of bank runs, which occur when a large number of individual depositors withdraw their money at the same time not because they coincidentally all need it at once, but because each one fears that the others will withdraw funds and knows that the bank, though solvent, cannot immediately pay off all depositors. In the case of international lending in dollars, the panic arises from the fear that there are insufficient reserves to pay off all short-term dollar claims. Because a liquidity crisis itself may lead to bankruptcies and forced liquidations, in the end it may be hard to distinguish from a problem that originated with fundamentals.

Turning to the specifics of the East Asian economies, Radelet and Sachs evaluate the potential importance of deteriorating fundamentals as an explanation of the crisis. They identify some specific problems. Growing competition from China and Mexico weakened particular export sectors in East Asia, and contributed to the slowdown in export growth from Thailand, Korea, and Malaysia after 1995. The sharp appreciation of the dollar relative to the yen and European currencies pushed down the dollar prices of many exports from the region and raised the real burden of debt service for East Asian borrowers. But they also observe that international conditions more broadly were favorable, with Europe and the United States expanding, inflation low, and interest rates stable. On balance, they reason that internationally generated problems cannot explain much of what happened to the East Asian economies.

The authors acknowledge that haphazard financial liberalization, together with pegged exchange rates, contributed to financial weakness and left the Asian economies exposed to financial market instability. Banks and finance companies were unsophisticated, with little experience in asset management and with inadequate supervision. Investment funds were misallocated and financial institutions ended up with excessive currency exposure and maturity mismatches. However, the authors reject these factors as sufficient explanations for the crisis, reasoning that if they had been important, financial markets themselves would have perceived rising risks. In fact, yield spreads on Asian debt were steady, bond ratings did not change, and capital inflows continued at

high levels right up to the brink of the crisis. They also note that instances of internal mismanagement varied from country to country, as did boom-bust cycles in some of the stock and real estate markets of the region, making such problems unlikely candidates to explain a crisis that hit several countries in the region simultaneously.

Radelet and Sachs use a probit model to test formally their preferred hypothesis—that the crisis was triggered by dramatic swings in creditor expectations about the behavior of *other* creditors—against alternative explanations relying on global or national changes in fundamentals. They use panel data for twenty-two emerging markets over 1994–97 and predict the onset of a financial crisis with a vector of economic and institutional variables. Their panel contains nine instances of financial crisis, defined as a sharp shift from capital inflow to capital outflow. The variables tested as predictors of crisis are the ratio of short-term debt to reserves, the lagged change in the ratio of private credit to GDP, the ratio of capital inflows to GDP, the ratio of the current account to GDP, the ratio of total foreign debt to reserves, the lagged real exchange rate change, and a comparative index of corruption. Using various specifications of their equation, the authors find that only the first three of these variables are significantly associated with a crisis. These all fit their idea that financial instability is the key, indicating, respectively, the importance of limited capacity to pay off foreign creditors, an extended and thus fragile banking system, and a vulnerability to sharp reversal of capital flows. The other variables, which they reason could signal problems of solvency or other fundamentals that might precipitate a crisis, either have the wrong sign or are insignificant.

Radelet and Sachs are critical of the IMF's response to the countries' crises once they were recognized. Between August and December 1997, the IMF signed emergency lending agreements with Thailand, Indonesia, and Korea, promising financial support conditional on various reforms. The reforms included macroeconomic measures of fiscal tightening, higher interest rates, and restrictive domestic credit, as well as measures to dramatically restructure the financial system and deal with other aspects of the domestic economic system. The authors describe how the individual countries reacted to these requirements and document that the programs failed to restore financial confidence, stabilize exchange rates, or support domestic economic activity. They also describe how in late December 1997, with Korea on the brink of default,

the management of the crisis changed. The previous fiscal restraints were relaxed and foreign debt problems were addressed directly rather than by trying to restore the confidence of foreign investors.

With an eye to designing programs to help the East Asian nations, and to help with problems that might arise elsewhere in the future, the authors assess what went wrong with the IMF's efforts in 1997. They offer several reasons why these failed to reestablish market confidence in time to prevent a collapse of debt servicing or to achieve early stabilization of exchange rates. First, since its arrival signals that a problem is serious, they see the IMF as inevitably disadvantaged in its attempts to rally market confidence in the short term. Second, they believe that the IMF added to market concerns by declaring at the start that the financial crisis stemmed from fundamental weaknesses, and not from a self-fulfilling panic among creditors. Third, they question the basic IMF approach to restoring confidence, which relied on tough restructuring of countries' financial markets through bank closings and tighter regulation. Far from convincing creditors to roll over short-term claims, the realization that banks would not be bailed out incited panic. Fourth, the authors question the contractionary fiscal and monetary policies in the IMF programs. They note that the initial measures of fiscal tightening, which aimed to achieve surpluses in the face of the severe contractionary effects of the crisis itself, were justified as confidence builders that would help to stabilize currencies. But foreign exchange markets neither reacted favorably when these measures were imposed nor reacted adversely when the fiscal targets were eased in early 1998. And they argue that tighter monetary policy, which would strengthen a country's exchange rate in normal circumstances, may have the opposite effect in financial panics by draining liquidity from the domestic economy, weakening business borrowers, and adding to the stresses on the banking system. Fifth, the authors reason that the uncertain nature of the IMF loan packages compromised whatever confidence they might otherwise have given lenders. They calculate that out of total announced loan commitments of $114 billion to Indonesia, Korea, and Thailand, only $23 billion had been disbursed by the end of 1997, and only $35 billion had been disbursed through the first quarter of 1998. Indonesia alone had received only $3 billion of the $40 billion committed.

Looking ahead, Radelet and Sachs outline urgent issues that still

need to be addressed. They urge that the IMF and Asian countries insist on debt restructurings as the way to meet short-term claims coming due in the future, conserving IMF funds to facilitate badly needed adjustments in the domestic economy. Because a large part of the net worth of domestic banks has been wiped out by currency depreciation and many banks are unable to obtain new funds through conventional channels, Asian firms that rely on these banks for trade credits face a sharp squeeze. For the immediate future, the authors suggest using a portion of IMF loans to help finance the working capital needs of these exporters. For the medium run, they suggest using such funds to establish deposit insurance programs and to help to recapitalize banks in preparation for selling them to private investors. The authors also believe that once market confidence is restored by debt rescheduling and other steps that put banks on a firmer footing, some part of IMF funds could usefully be deployed to nudge up interest rates.

Turning to the systemic questions raised by recent crises in East Asia and elsewhere, the authors argue that current arrangements for integrating emerging economies into the global financial system are clearly defective. They note that, frequently, capital market liberalizations in Latin America, eastern Europe, and Asia have been followed by financial crises and deep economic dislocations. Moreover, the emergency bailout programs for Mexico, Argentina, and East Asia have arguably contributed to new moral hazards in international lending. In light of their conclusion that international financial markets are inherently unstable, at least for countries borrowing heavily from abroad at short maturities, the authors see the push to fully open capital markets in developing countries as misguided. Short-term borrowing is useful for financing trade flows but inappropriate for longer term investments and adds to currency risks of highly leveraged financial institutions. The authors believe that policy should support long-term capital flows, especially direct investment, and aim to confine short-term international flows mainly to short-term trade transactions. They also urge that foreign banks be allowed to operate in developing countries, because their presence would have a stabilizing effect.

Should panics threaten in the future, Radelet and Sachs urge a policy approach that relies on orderly workout arrangements for troubled loans, rather than IMF bailouts, which have proved ineffective in the past. Their idea is to create mechanisms that serve a purpose similar to

that of chapter 11–style bankruptcy workouts in the United States. These mechanisms would provide a framework for negotiations between creditors and debtors to overcome the collective action problems which the authors find at the center of financial crises. They suggest that a resolution of these problems would involve a standstill on debt servicing, debt for equity swaps, and ways to give debtor countries access to capital markets by granting repayment priority to new loans. Creating such a framework and integrating it with bankruptcy laws within each country would be a complex task, but the authors believe that policymakers must tackle it. However, they hope that limits on short-term capital flows would make the need for such interventions less likely.

ECONOMISTS USUALLY ASSUME that the intentions and actions of agents are perfectly aligned. But it is a rare individual who is not aware of everyday situations where there is a gap between intention and action. Surveys suggest that such gaps are systematic, and in some cases, involve behavior of economic significance. For example, in a 1997 survey by Public Agenda, three-quarters of the respondents believed that they should be saving more for retirement; a variety of other surveys have also found a substantial gap between households' estimates of what they should save and what they actually are saving. Such systematic, self-acknowledged error not only contradicts the standard economic model of the maximizing consumer, but may help to explain the prevalence of households with negligible net worth and seemingly uneconomic use of credit card debt.

A discrepancy between intentions for the long run and current actions may not simply represent a desire for instantaneous gratification. Consumers may be discouraged from saving by an awareness that today's saving will be consumed long before they reach retirement. In this case, they might actually prefer forms of saving that are committed for long periods, so that the savings are invulnerable to premature future spending impulses. In the second paper of this issue, David Laibson, Andrea Repetto, and Jeremy Tobacman explore the implications of a model from the psychology literature that makes explicit a systematic time inconsistency in intertemporal decisions. Modifying the standard life-cycle model of consumption to incorporate such behavior, they explore its implications for the magnitude of undersaving and examine the

importance of commitment features in saving plans as an aid to increasing national saving and consumer welfare.

The conflict between a consumer's desire for, on the one hand, instantaneous gratification when trading off today and tomorrow, and on the other, patience when contemplating intertemporal trade-offs far in the future, can be captured by assuming an instantaneous discount rate, or rate of time preference, that declines as the trade-off moves further away from the present. In this case, the implied discount function, which assigns a present value to future utilities, declines at a steeper rate in the short run than in the long run. This contrasts with the standard assumption of a constant discount rate, which implies a discount function that declines at a constant exponential rate. A discount rate that varies according to how far it is from the present leads to time-inconsistent behavior. For example, a twenty-year-old individual with such preferences might discount utility from next year's consumption at 20 percent, while regarding consumption at ages forty and forty-one as roughly equivalent—discounting utility from consumption at age forty-one by, say, an extra 2 percent. But when this individual is forty, impatience will lead him to discount what is then next year's utility by 20 percent.

Is a consumer aware today that he will feel quite differently about future trade-offs when they are closer in time? In making plans, does he take into account that his future self will not follow a plan that would be optimal from today's perspective? Consumers who are unaware of their own time-inconsistency are "naifs," constantly modifying their consumption plans, even in the absence of unexpected shocks to income or interest rates, but not taking their future, inconsistent, behavior into account. Self-aware consumers, by contrast, take the behavior of future selves into account, and in the absence of shocks, early selves would not be surprised by the consumption path that unfolds.

Self-awareness raises a range of interesting issues of self-regulation with intrapersonal strategic characteristics. Early selves would like to commit later selves to honor the preferences of those early selves, but later selves will do their best to maximize their own interests when their time comes. Self-aware individuals recognize that the savings they set aside today for retirement may be impatiently consumed before retirement. Whether this leads them to increase or decrease saving today is theoretically ambiguous: it may discourage them from saving as much

as they would if they could prevent such premature consumption in the future, or it may lead them to increase saving to compensate for the premature consumption prior to retirement. Self-awareness will also lead consumers to seek out forms of saving that cannot be tapped prematurely. In their analysis, the authors assume that consumers, although they exhibit time-inconsistent behavior, are self-aware individuals rather than naifs. And they assume, though recognizing its artificiality, that time-inconsistent consumers, like exponential consumers, have the virtually unlimited sophistication required to perform the complex backwards induction involved in optimization.

To explore the implications of time-inconsistent consumers both for individual life-cycle behavior and for the importance of the commitment elements in saving plans such as Individual Retirement Accounts (IRAs), the authors simulate an overlapping generations model in which the typical consumer maximizes expected discounted utility, subject to a lifetime budget constraint. They incorporate the idea of near-term impatience with a computationally tractable discount function, which they call quasi-hyperbolic. This discount function is exponential, except that for all periods after the present, utilities are scaled down by a constant factor. This makes the discount between this year and the next much greater than the discount between any two adjacent years in the future. Thus the current period receives greater weight relative to every future period than in the standard exponential function. The rest of the specification of preference is standard. The utility of consumption in any period is given by a "felicity" function that implies constant relative risk aversion, and further weighted by the probability of survival to that period. The authors consider two parameter values in this function, corresponding to low and high risk aversion of consumers.

For their simulations, the authors take great effort to use realistic assumptions about the stochastic processes describing income, bequests, and mortality—processes central to household consumption and saving decisions. Individuals enter economic life at age twenty, and are assigned survival rates given in ordinary life tables but constrained to live a maximum of ninety years. Further, individuals are divided among three educational categories—no high school diploma, high school diploma, and college degree—with approximate population weights from the Michigan Panel Study of Income Dynamics (PSID). Income includes labor income and transfers, such as aid to families with depen-

dent children, supplemental security income, workers' compensation, and unemployment insurance, but excludes asset income. For each educational category, the authors use PSID data to estimate an income process, taking into account family size, age, cohort, and regional unemployment. The panel structure of the PSID is used to estimate the stochastic component of nonasset income for the typical household, with different processes for pre- and postretirement income. The authors also use the PSID to model realistically the process governing bequests. And they assume a progressive tax structure that approximates 1997 tax law. In performing the simulations, households from each educational group are assigned a fixed family size and the mean retirement age for their educational group. Aggregate unemployment is assumed constant. Although fixing household size and retirement age greatly simplifies the analysis, it prevents examination of how different stages of the life cycle—such as marriage, birth of children, and paying for college—affect saving decisions, and how the choice of retirement age responds to shocks to income or wealth.

How does the saving behavior of time-inconsistent consumers differ from saving behavior under the standard assumptions, and what difference do such preferences make to aggregate saving? One might expect that time-inconsistent consumers would save less during working years and would be more likely to be liquidity constrained. To make such differences concrete, the authors compare simulations of the saving behavior of consumers with quasi-hyperbolic preferences and standard preferences, calibrating their preference parameters to fit general features of saving behavior. For each educational group and each assumption about the level of risk aversion, the authors choose a rate of time preference to replicate the median level of preretirement wealth observed in 1983. This requires assigning the time-inconsistent consumers lower long-term discount rates to offset the scaling down in their discount functions after the first year. The discount rates used for exponential consumers range from 3 percent to almost 9 percent. For the hyperbolic consumers, with future utilities scaled down by 15 percent, the long-term discount rates are lower, varying from slightly above 2 percent to 7.5 percent.

The simulations show that liquidity (or borrowing) constraints are very important for both types of consumers during the early stages of life, and are more important the less educated the household. The au-

thors show that hyperbolic consumers behave as if their discount rates vary according to the amount of current saving they expect will be consumed in the next period. Thus at low levels of wealth, when they are likely to be liquidity constrained in the following period, hyperbolic consumers will behave as though they were less patient than exponential consumers. Low levels of cash on hand are self-reinforcing, since they increase the chances that any saving today will be consumed by tomorrow's self. Hence they are more likely to be liquidity constrained. Differences between the quasi-hyperbolic and exponential consumers are much greater for low than for high levels of risk aversion. With low risk aversion, almost 60 percent of thirty-five-year-old hyperbolic high school dropouts are liquidity constrained; with exponential preferences, only about 20 percent of this same group are constrained.

Young hyperbolic consumers would save more for the later years of life if they had a mechanism to ensure that they would actually receive in the future what they set aside today. To illustrate this, the authors simulate the behavior of hyperbolic consumers in an economy with both a perfect commitment device and a liquid asset. The effects are striking. On average, those with a high school diploma and low risk aversion accumulate 62 percent more in preretirement wealth than they do in the absence of perfect commitment. This reallocation of resources toward later life corresponds to a substantial welfare gain. From the perspective of the beginning of the economic life cycle, it is equivalent to a one-time increase of wealth equal to 36 percent of consumption at age twenty. Later selves benefit more, since they gain most from the higher rates of accumulation early in the life cycle. The effect of perfect commitment is much smaller for highly risk-averse consumers, amounting to the equivalent of a wealth increase of only 2 percent of consumption at age twenty. This sensitivity of results to the degree of risk aversion is a feature of all the more realistic simulations that follow.

Having illustrated the potential importance of commitment devices, the authors examine the effects of defined contribution plans that feature commitment. They focus on 401(k) plans that allow withdrawal before age fifty-nine and a half only under financial hardship, and even then charge a 10 percent penalty. The popularity of these plans does not in itself reveal the importance of their commitment features, since 401(k) plans provide other strong incentives: deferral of taxes, and usually, substantial employer matching contributions. The authors report that in

a 1997 survey, 81 percent of plans involved an employer contribution contingent on the employee contribution; the most common arrangement, reported for 21 percent of the plans, was a 50 percent employer match of contributions up to 6 percent of income.

To quantify the importance of different features of this type of saving plan, the authors simulate their model while varying the characteristics of the plan. They consider four cases, with an employer match of either zero or 50 percent, and an early withdrawal penalty of either 10 percent or 50 percent. In all cases, they cap an individual's annual contributions at $10,000 and also cap the employer's contributions. Focusing on high school graduates and considering the most sensitive case of low risk aversion, three properties stand out. First, for both exponential and quasi-hyperbolic consumers, most accumulation occurs in the defined contribution plan, with tax advantages and employer matching, rather than in the liquid asset. Second, total accumulation is dramatically increased by making the saving plan available to consumers prematurely. Third, compared with exponential consumers, quasi-hyperbolic consumers hold relatively higher levels of savings in the illiquid defined contribution plan, rather than as liquid wealth.

What are the implications of such plans for national saving and wealth accumulation? Answering questions about aggregate performance in an overlapping generations model requires assumptions not only about the life-cycle incomes and bequests of representative members of each educational group, but also about how incomes increase with successive age cohorts and how the population grows. The authors assume that the number of births into successive cohorts increases by 1 percent per year and that income and other per capita magnitudes grow at 2 percent a year in each successive cohort. They assume a small open economy, so that the real interest rate can be taken as fixed, independent of national wealth. Combined with the assumption of an inelastic labor supply, this also implies that wage rates and earned income do not change with changes in saving. The government is assumed to maintain a balanced budget, with tax gains or losses from higher savings or shifts to tax-deferred plans offset by changes in government expenditures. And the authors consider only steady states, so that all cohorts face the same set of saving options throughout their lives.

The effects of making defined contribution plans available are again

greatest with low risk aversion. In this case, economies populated with either exponential or quasi-hyperbolic consumers show dramatic increases in saving, with the tax incentives inherent in all of the plans. Without employer matching and with a 10 percent penalty for early withdrawal, the steady-state aggregate saving rate increases by about 2.5 percentage points with exponential consumers and by more than 3 percentage points with hyperbolic consumers. Several other features of the simulations stand out. College graduates generally benefit the most from the defined contribution plan, presumably because these households save the most and gain the most from tax deferral. But although households are made better off as a result of the tax reduction on saving, for hyperbolic consumers, the commitment element of the plan is also important. For a hyperbolic high school graduate consumer aged twenty, the introduction of a defined contribution plan with a 10 percent penalty and a 50 percent match increases utility by the same amount as a wealth increase of 70 percent of consumption at age twenty. For an exponential consumer, who has no commitment gain to exploit, the comparable gain is only 22 percent. Hyperbolic consumers benefit more from the plans than do exponential consumers, and respond well to higher penalties for early withdrawal.

The authors' simulations using more risk-averse consumers produce sharply attenuated results, illustrating the crucial role of this parameter in their model. In this case, the much smaller saving responses of exponential consumers are consistent with the results of other researchers who have used this assumption, and the difference between the behavior of exponential and hyperbolic consumers is greatly narrowed.

The authors recognize that it is unlikely that all households are either exponential or hyperbolic. They therefore consider an economy consisting of equal proportions of the two. As before, they calibrate the preferences to match preretirement wealth. But this time, they assume that exponential and hyperbolic consumers have the same long-term discount rate, while the hyperbolic consumers again weigh the present heavily relative to the future by scaling down all future utilities. Adding a defined contribution plan now has a larger differential effect on the two types of consumer, since hyperbolic consumers are no longer assumed to have a lower long-run discount rate to compensate for their high short-term rate. There is a larger difference in the proportion of consumers that are liquidity constrained, and presumably a larger dif-

ference in the benefits from the introduction of plans that commit savings.

The authors are encouraged by the ability of their simulations of time-inconsistent consumers to replicate salient features of observed behavior. But they recognize that much remains unknown about the importance of time-inconsistent behavior. Their results do suggest the possibility that early withdrawal penalties are important determinants of the quantity of saving, and that such penalties may even be in the self-interest of consumers. However, they note that while there are many instruments with commitment properties, very few are sold explicitly for this purpose. Do illiquid assets such as housing fulfill the need for such mechanisms? Or are withdrawal penalties an important feature of IRAs and other government-sponsored plans to increase saving? While the authors believe that defined contribution plans provide a rich array of psychologically appealing features, they urge economists to devote much more effort to understanding their effects.

Addendum

The authors' model discussed above can be explained more fully with the help of some mathematical notation. They report that a discount function for events τ periods away that appears to do a reasonable job of capturing the time inconsistency observed in human subjects is the generalized hyperbola of the form $(1+\alpha\tau)^{-\gamma/\alpha}$, where α and γ are preference parameters.

Since it is computationally difficult to solve a life-cycle model with this function, the authors use their more tractable quasi-hyperbolic function that implies similar behavior. The quasi-hyperbolic discount function simply takes on values $\{1, \beta\delta, \beta\delta^2, \beta\delta^3, \ldots\}$ in successive time periods from the present, where δ is a constant discount factor and $0 < \beta < 1$. Thus, valued in terms of tomorrow's utility, all utilities beyond tomorrow are weighted by a standard exponential function with a discount factor δ. But the discount from today to tomorrow will be greater. For example, when a β of 0.85 is used in the simulations, the discount rate is approximately 15 percentage points in this first period, giving the current period much greater weight relative to every future period than in the standard exponential function. The fact that today's and tomorrow's selves discount the utilities of subsequent periods in the same way greatly simplifies the description of the optimal consumption plan for a consumer of any age.

The rest of the specification of preferences is standard. Optimization of lifetime expected utility gives rise to what the authors refer to as the generalized Euler equation, which provides the first order condition for a current saving decision. In the standard exponential model, the Euler equation simply says that consumers save up to a level where the marginal utility of forgone consumption today equals the appropriately discounted expected marginal utility of the extra consumption thereby available tomorrow. Ignoring the risk of death, the equation is

$$u'(C_t) = E_t[R\delta u'(C_{t+1})],$$

where u denotes utility, C is consumption, E is the expectations operator at time t, and R is the gross rate of return on savings. The fact that some of today's saving may actually be consumed in periods after tomorrow does not need to show up directly in the equation, since tomorrow the consumer will optimize with the same preferences, saving to a level that equates the expected marginal utility of consumption beyond tomorrow to the marginal utility of consumption tomorrow. In the presence of borrowing constraints, the Euler condition becomes an inequality, holding with equality only if saving is positive.

The situation is quite different for a self-aware time-inconsistent consumer. Today's self knows that tomorrow's self has different preferences than he for periods beyond tomorrow. Tomorrow's self will relate his present and future utilities using his discount rate, not that of today's self. In particular, tomorrow's self will discount the following period more heavily than would today's self, relative to tomorrow's utility. Since today's self has already discounted tomorrow's marginal utility by β, he will view the β of tomorrow's self as an extra discount. Hence the Euler condition for the decision by today's self has to take into account what fraction of current saving is consumed tomorrow and how much is saved tomorrow for later periods. Specifically, the Euler equation becomes equation 13 in the text:

$$u'(C_t) = E_t\left\{R\left[\left(\frac{\partial C_{t+1}(X_{t+1})}{\partial X_{t+1}}\right)\beta\delta + \left(1 - \frac{\partial C_{t+1}(X_{t+1})}{\partial X_{t+1}}\right)\delta\right]u'(C_{t+1})\right\},$$

where the first term in the square brackets corresponds to the contribution (discounted by $\beta\delta$) to expected utility from consumption tomorrow, and the second term, the contribution from that portion of today's

saving not spent next period. The second term is only discounted by δ, because tomorrow's consumer will do the β discounting relative to his own marginal utility. When β is equal to 1, this equation reduces to the exponential case described above.

The equation shows that the discount factor relevant at time t varies between δ and $\beta\delta$, according to how current saving is expected to be split between increased consumption tomorrow and in later periods. A key point is that this division depends crucially on the existence of the borrowing constraint. If the consumer is against the constraint next period, any additional saving today will be consumed tomorrow and its utility should be discounted by $\beta\delta$. This is more likely for households with low accumulated savings; given life-cycle patterns of income, borrowing constraints are more likely among the young and the very old. By contrast, if household net worth is large and the probability of being liquidity constrained in the near future is low, the relevant discount factor will be low.

FOR MORE THAN a decade, government deficits have been a major economic and political issue for many industrial and developing countries. In the United States, after years of political gridlock, the changing political climate and the good fortune of a rapidly growing economy have resulted in a balanced budget for the first time since 1969. In most European countries, however, substantial deficits continue. Unemployment remains high by historical standards, burdening the transfer system and holding down revenues. At the same time, increasing taxes, cutting social programs, or scaling back large bureaucracies are politically charged initiatives and difficult to achieve. In the third paper of this issue, Alberto Alesina, Roberto Perotti, and José Tavares investigate the interactions between politics, economics, and fiscal reforms, focusing particularly on their political consequences for governments.

What are the elements of fiscal reforms, how do they affect the permanence of reform, and how do they relate to future macroeconomic performance? The authors define a fiscal reform as a decrease in the ratio of the primary deficit to GDP of more than 1.5 percentage points in a given year, and a "successful" fiscal reform as one in which either the average deficit-to-GDP ratio during the three years following a budget adjustment is at least 2 percentage points lower than in the adjustment year, or, three years after the adjustment, the ratio of debt

to GDP is at least 5 percentage points lower than it was at the time of tightening. Examining nineteen countries of the Organisation for Economic Co-operation and Development (OECD) from 1960 to 1995, the authors confirm earlier findings that in general long-lasting budget adjustments rely primarily on cuts in categories of current spending—government wages, social security, and welfare. By contrast, most adjustments that are short-lived rely on cuts in government investment spending or on revenue increases. Using cyclically corrected deficits, they find sixty-nine cases of fiscal tightening, nineteen of which are successful by their definitions. The successful tightenings on average cut the deficit-to-GDP ratio by about 3 percentage points, and slightly more than half of the deficit reductions come from spending cuts of all types. Unsuccessful tightenings average about 2.5 percentage points, and in these cases only one-quarter of the deficit reduction comes from spending cuts, the rest from revenue increases. The most dramatic difference between successful and unsuccessful adjustments is the composition of spending cuts. In unsuccessful adjustments, virtually all of the cuts are in public investment, whereas in successful adjustments, more than half of the cuts are in government wages and transfers.

Beliefs about the economic consequences of spending cuts or tax increases—both those of governments and those of the populace at large—presumably help to shape attitudes about fiscal reforms. What are the actual consequences of such reforms, and do they align with beliefs? The authors examine a wide variety of macroeconomic variables before, during, and after fiscal tightening. These include changes in real GDP, unemployment, and nominal and real interest rates—all relative to the same variables in other G7 countries; changes in private investment and consumption; and changes in unit labor costs and the exchange rate. Although they recognize that many fiscal reforms have significant effects on particular groups of individuals or businesses, they do not explicitly consider changes in the distribution of income or in indicators of benefits from social programs. Several interesting results emerge. On average, successful tightenings follow periods of poor economic performance, with lower rates of relative output growth and higher relative unemployment than in the periods preceding unsuccessful episodes. Output growth tends to pick up after successful tightenings and to slow after unsuccessful ones, though the difference is small. Private investment grows substantially faster following successful tight-

enings. The authors also find significant differences in labor market outcomes. Relative unit labor costs fall before and during successful tightenings, but increase during unsuccessful ones. However, in the longer run labor costs rise much more after successful than after unsuccessful tightenings. Both successful and unsuccessful adjustments are typically accompanied by a devaluation of the currency.

The authors observe that governments and international organizations generally believe that fiscal consolidations contract the economy, despite an inconclusive historical record. Their own results suggest that successful adjustments are typically preceded by fiscal stress—a relatively large and increasing ratio of public debt to GDP—which may help to explain why such reforms are associated with increased output and consumption. They note that such outcomes are not inconsistent with theory. The effects of fiscal tightening on demand may be offset by monetary policy. In that case, the primary effects of cutting government expenditures are distributional; private expenditures will take their place. If cuts in government expenditures are accompanied by lower taxes, the reduced tax distortion may actually increase output. Such efficiency gains are likely to be most important for an economy that starts with high taxes, either because it has high levels of primary government expenditure or because it has accumulated a large government debt that must be serviced. It is even possible for an increase in taxes to result in an increase in consumption, with government expenditures constant. If raising taxes in the current period is "tax smoothing," because current taxes are lower than taxes expected in the future, redistributing the tax burden to the current period may provide an efficiency and welfare gain that raises current consumption.

The authors identify the labor cost of firms as one of the main channels through which fiscal reform affects the economy in OECD countries and point to two empirical regularities that suggest this mechanism at work. The first has to do with the direct impact of fiscal reforms: many successful fiscal tightenings reduce government expenditures on wages and, as other studies have shown, refrain from increasing taxes on labor. Second, in terms of indirect influences, unit labor costs and the wage share initially fall during successful adjustments, leading the authors to suggest that when government wage payments fall, the bargaining power of unions is reduced, with beneficial results for the economy. However, the fact that unit labor costs rise in the longer run

after successful adjustments suggests that any such effects are short lived.

The authors note that the inherent permanence of different types of spending cut varies. A cut achieved by postponing the maintenance of public capital is less likely to be permanent than a change in social security or welfare that reduces eligibility or benefits. Moreover, cuts that are seen as permanent are more important to firms and households than temporary cuts, and so should have larger impacts on private behavior. Permanent cuts might stimulate private consumption and investment demands, both by reducing interest rates and by reducing expected future tax liabilities. Some budget reforms may have impacts through other channels. The fact that welfare cuts are particularly unpopular in Europe may actually increase the credibility of governments that undertake such initiatives. By signaling that a government is serious about fiscal adjustment, such cuts may result in greater reductions in interest rates than would less difficult adjustments of the same magnitude. The magnitude of interest rate reductions may also depend on other factors; for example, such reductions may be especially large in high-debt countries, where decisive fiscal reform reduces risk premiums.

Turning to the relationship between the political composition of cabinets and deficit reduction policies, the authors focus on two characteristics of governments: the composition of the cabinet—whether its members are from a single party or represent a coalition of two or more national parties; and its ideological alignment—right, center, or left, as given by an indicator widely used in the political science literature. In their sample, 47 percent of country-years are classified as coalition governments, and as to ideology, 54 percent are classified as right, 12 percent as center, and 34 percent as left. They find that the ideological orientation of government has little relation to the relative frequencies of loose and tight fiscal episodes. Overall, roughly 20 percent of the observations are classified as loose (increases in the deficit-to-GDP ratio of at least 1.5 percentage points), and 12 percent as tight (as defined above). The probability that fiscal tightening will be successful is also virtually identical for left- and right-wing governments. Perhaps the most interesting finding is that the probability of success is much lower for centrist governments than for regimes of either the right or the left, and lower for fragmented than for single party cabinets.

What are the consequences for the political survival of the govern-

ment of undertaking fiscal reform? The authors examine the issue of survival using four indicators: one that signals every change in prime minister, one that indicates a change in the ideological orientation of the cabinet (as defined above), one that is positive when either of the preceding indicators is positive, and one that signals a termination of government for any reason, including a termination that brings back the incumbent government. Out of a total of 631 country-year observations, there are 291 cabinet terminations, 164 changes of prime minister, and ninety-five changes in ideology. Whereas in the United States changes in government almost always result from general elections, in many other countries changes occur without elections. The correlations of these measures of political change with contemporaneous changes in deficits are weak. However, terminations and changes in prime minister are positively correlated with increases in the cyclically corrected deficit and with the average change in the deficit over the government's term in office. Hence loose policies appear to be a political liability, but there is no suggestion that tight fiscal policies lead to electoral defeat. One might expect that the probability of adverse political reaction to fiscal tightening would be greater for large adjustments, and that the reaction might come after some delay. Neither small nor large changes in deficits appear to affect the likelihood of a change in prime minister or ideology contemporaneously. Larger deficit reductions do appear to increase the probability of an ideological change at the next termination, but curiously, the largest effect seems to be for reductions of the deficit-to-GDP ratio in the range of 1.5 to 2.5 percentage points, rather than for even bigger reductions.

Politicians believe that spending cuts, especially in safety net programs and social security, are particularly unpopular. But in most OECD countries it is virtually impossible to achieve significant spending cuts without affecting these components of the budget. In light of this, it is interesting that the authors find that prime ministers have higher survival rates when they cut spending than when they increase taxes, and that their chances of survival are improved by cutting government wages. Other results in the probit regressions are weak, but do suggest some anomalies. Cuts in spending, if anything, appear to increase the chances of a change in cabinet ideology. Likewise, cuts in transfers increase the probability of a change in cabinet ideology but appear to enhance the survival chances of prime ministers. The authors

conclude that, overall, these results provide scant evidence that governments are punished for reducing deficits and, if anything, suggest that permanently cutting government wages may actually enhance their prospects.

The authors expand their analysis to allow political change to be affected by economic variables other than deficit changes, by estimating probit equations with a measure of government change as a dependent variable and three macroeconomic variables—growth in GDP, growth of unemployment, and the inflation rate—as well as the change in various deficit measures as explanatory variables. They also include three political explanatory variables: number of years in power, whether the government commands a majority, and whether it is a coalition government. Of the economic variables, including deficit changes, only higher inflation is significantly associated with an increase in the probability of a change in government. The political variables contain much more information and are almost always statistically significant. Government changes are more likely for coalition governments and the longer a government has been in power. Not surprisingly, governments that command majorities are less likely to change.

Popularity polls are another potential source of information about the political costs of fiscal reforms. The authors make use of surveys from sixteen countries to measure the year-to-year change in the popularity of governments for the period 1975–93. While popularity may be imperfectly connected to political survival, for this exercise it has the advantage of being observed more frequently than changes in government. Simple correlations of popularity and deficits indicate a political cost from tightening, but the importance of the deficit disappears once other variables are taken into account. In a regression of popularity on macroeconomic and political variables as well as the change in deficit, the deficit is unimportant—indeed, no single variable appears to matter.

Because they do not deal directly with the possible endogeneity of fiscal reform, the authors pass over some possible reasons for their results. They do not explicitly examine the idea that politicians do what is acceptable at a given time; or, in the context of the paper, that cabinets choose to implement politically unpopular reforms when they are in a strong political position and are unlikely to lose office as a result. However, they provide two pieces of evidence that suggest that

this is not a probable explanation. First, deficit reductions do not appear to be concentrated early in the term of office, when it might be thought relatively safe to undertake a politically costly policy. Second, the average level of government popularity at the time of deficit reductions is no greater than average popularity at other times.

The authors believe that their inability to find a relationship between changes in government and fiscal adjustments shows that voters actually dislike fiscal profligacy and do not punish governments that attempt to end it. But if fiscal adjustments do not have high political costs, why then are they so politically charged and difficult to implement? They suggest two possibilities. One is that governments are simply risk averse and reluctant to rock the boat. The other is that the political influence of some constituencies may extend well beyond their weight in the vote. For example, in some countries unions can take political actions with serious sociopolitical consequences. And in many countries union approval is sought before any fiscal action is undertaken.

DURING THE PAST decade, aggregate personal saving out of current income has been low by historical standards in the United States, yet household wealth has increased substantially. The disproportionate increase in wealth relative to saving reflects the sharp rise in the value of equities and proprietorships owned by many households. Understanding wealth accumulation, its relation to saving, and its distribution within the population is important for many economic issues, such as projecting national saving and aggregate consumer demand and appraising the adequacy of retirement incomes among age cohorts. Traditional time series provide valuable information on wealth and its distribution across broad asset categories and household types. But they are inadequate for examining the reactions of individual households to changes in wealth, or the response of individual households' wealth and the composition of their asset holdings to economic forces. In the first of two reports in this volume, Erik Hurst, Ming Ching Luoh, and Frank Stafford present and analyze data from the wealth supplements to the Panel Study of Income Dynamics. By tracking individual households, these wealth data provide direct information that addresses the issues raised above.

Data on wealth of individual households are now available from the PSID for 1984, 1989, and 1994, based on samples of about 7,000 in each year. The authors note that these data do not include information

on pension and social security wealth and are not reliable for measuring wealth at the very top of the distribution. Subject to these limitations, the PSID supplements provide useful information on the changing wealth patterns of individual households over the survey years. Looking only at households with the same family head across survey years, the authors find considerable wealth mobility across the middle deciles in the distribution and, not surprisingly, much more persistence at the top and bottom. Because individuals can exit the top and bottom in only one direction, some greater persistence is to be expected under most views of transitions. However, the authors regard the actual facts as showing excessive persistence. The bottom 10 percent of families had zero to negative net worth in 1984, and nearly half of those families were in the same position five years later. The top 10 percent of families had net worth over $316,000 in 1984 (here and throughout, in 1996 dollars) and over 60 percent of them were in the top 10 percent five years later. Nearer the middle of the distribution, persistence is roughly half as great as at these extremes. For the five-year period starting in 1989, the transition probabilities are similar. Over the entire period 1984–94, 40 percent of the bottom tenth and over 50 percent of the top tenth remain in the same position, while persistence in the middle of the distribution is less than 20 percent.

The baby boom cohorts have been identified as a low-saving group, which helps to explain the low aggregate saving rate since the mid-1980s. Some analysts have inferred that the boomers will have inadequate resources at retirement, while others argue that as the boomers mature and enter their high-saving years, aggregate saving will return to earlier levels. Hurst, Luoh, and Stafford use their panel data to examine these issues. They show that the senior boomers—the cohort born between 1945 and 1954—had median wealth of $63,446 in 1994, which is only 80 percent of the median wealth at the same point in the life cycle of those born a decade earlier. The junior boomers—those born between 1955 and 1964—were still further behind, with median wealth in 1994 only 67 percent as large as the median for senior boomers ten years earlier. Thus despite the considerable increases in asset values over these years, household wealth accumulation among boomers has not kept pace with accumulation of earlier cohorts at the same ages. Transition probabilities for the senior boomers also exhibit more mobility than for the population as a whole, presumably because they are

a relatively young cohort. However, they do show many people stuck near the bottom of the distribution, with little or no wealth. Of the bottom tenth in 1984, with zero or negative wealth, 33 percent were still in the bottom tenth ten years later, and 64 percent were in the lowest fifth, with less than $10,000 of wealth. Although these data suggest that a substantial number of boomers will enter retirement with little or no household wealth, the authors note that the growing importance of pensions may improve the position of some of these households at retirement.

Breaking net wealth into various asset classes and debt, the authors report that the proportion of households using noncollaterized debt—primarily, credit card debt—leveled off at around 50 percent after 1989; for those using it, the mean value of such debt rose sharply to $12,525 in 1994. The proportion of households with transaction accounts declined modestly among all families, while the proportion owning stocks rose from 25 percent in 1984 to 35 percent in 1994. For both assets, ownership among African American families is well below that of whites: only 45 percent of African American families owned bank accounts and 14 percent owned stocks in 1994. Probit analysis reveals that this substantial difference in stock ownership is not fully explained by income, age distribution, or other life-cycle variables.

Turning to regressions explaining wealth holdings, the authors find that wealth is positively related to permanent income (total family income over 1987–91), age, education, and being married. They also find that after accounting for the income and demographic factors, African Americans held on average $27,408 less wealth than others in the population in 1994. To explore the effect of the highest wealth holders on these results, the authors also estimate regressions that minimize the sum of absolute departures from the median, and thus reduce the influence of wealth outliers. In these regressions, the net wealth difference between African Americans and others is estimated at only $2,815 in 1994 and is insignificant. The authors infer that a good part of the average wealth differences that income and education cannot account for may be due to the fact that relatively few African American families have extremely high levels of wealth.

In stylized life-cycle models, wealth accumulation is the consequence of smoothing consumption and is systematically related to saving at different life stages and predictable rates of return. In reality,

saving behavior is highly heterogenous across households at all stages of the life cycle, and returns vary unpredictably both over time and with each household's choice of assets. The authors report that while rates of active saving (the change in wealth less capital gains) declined between their first and second five-year sample period, wealth accumulation relative to income—or realized saving rates—were unchanged. Using regressions to estimate the determinants of wealth accumulation over 1989–94, they find that wealth holdings at the start of the period are significant but account for less than 1 percent a year of growth in wealth. Dividing wealth into major assert categories, they find that holdings of stock or private business add substantially to wealth accumulation, with coefficients seven or eight times as large as the coefficient on total wealth, while home equity is a drag over the period. Because it is likely that the first two asset classes had surprisingly large capital gains, these results suggest target wealth is not a dominant factor in saving decisions; it does not appear that asset appreciation is offset by lower active saving. However, other results do not support this finding.

When they take flows into account, the authors find large positive correlations between wealth accumulation and contemporaneous flows into both stock and private business, and received inheritances. When active saving and capital gains over the period 1984–89 are added to the regressions explaining wealth accumulation over 1989–94, they have modest but significant negative signs. The coefficient on capital gains could reflect target saving with unexpectedly large gains in the previous period. The coefficient on active saving is more of a puzzle, since active saving is deliberate, and it is usually thought that there is persistence to saving behavior. Although these results leave many ambiguities, the authors regard their analysis as a preliminary step in exploiting a new source of information about household saving behavior.

IN MOST U.S. industries, the standard work week has been forty hours since 1940 and there has been little discussion of changing it. By contrast, in some European nations, where the standard work week reached around forty hours only much more recently, there has been considerable interest in reducing it further. Historically, much of the decline in hours worked per year has come about through longer vacations and more holidays, as well as shorter work weeks, reflecting a desire for

greater leisure as incomes grew. Currently, a shorter work week is being promoted as a way to share work and increase employment. In the second report of this volume, Jennifer Hunt reviews these broad developments and reports on her own analysis of the effects of shortening the work week, using panel data from German workers.

Hunt shows that the standard work year for manufacturing workers ranges widely across nineteen advanced economies. Of these, in 1995 Germany had the lowest average work year, 18 percent below Japan's, which was highest, and 16 percent below that of the United States. Over the previous decade, the work year had declined noticeably in about half of the countries. Variations in the standard work week are smaller than in the work year, with Germany's the lowest, at 36.4 hours, and seven countries bunched at forty hours. Given political commitments to reduce the standard work week to thirty-five hours in Italy and France and union pressures to reduce it further in Germany, the variation across countries could widen in coming years.

Although the popular conception is that shortening the standard work week would increase employment by sharing a fixed amount of work, Hunt notes that theory gives ambiguous predictions about its effects. Firms constrained to operate at standard hours higher than their optimal hours per worker will increase employment if the standard work week is reduced and hourly wages are unchanged. By contrast, firms that initially choose to pay some overtime and operate with actual hours above the standard will find that the marginal cost of a worker has risen, because more hours are charged at overtime, although the marginal cost of an employee working an extra hour has not changed. These firms have an incentive to reduce employment and raise average hours per employee. Any increase in the hourly wage to sustain weekly pay would have negative effects on employment. From these and other considerations, including possible effects on labor supply, it is clear that the consequences of reducing standard hours must be examined empirically.

Hunt reports that time-series studies have not pinned down the effects of standard hours reductions on either wages or employment. Her own earlier work exploiting cross-section variation in standard hours reductions in Germany finds that reductions in standard hours translate almost one for one into reductions in actual hours and result in approximately offsetting increases in hourly wages. Thus the weekly wages of workers in industries where standard hours fell approximately kept pace with

the weekly wages of workers in other industries. Employment declined in the industries where standard hours were reduced, though the magnitude of the employment effect was not estimated with precision. Expanding on these results in the present paper, she finds that reductions in the standard hours of primary workers have no significant effect on the probability that a spouse will be employed, but lead to a modest reduction in the hours worked by employed spouses. This could reflect either generalized union pressure or a complementarity in leisure between spouses.

Some recent attempts to explain reductions in standard hours have stressed the gap between actual hours and desired hours of workers. Using information from the German Socio-Economic Panel for the period 1985–94, Hunt examines how this gap has changed in response to reductions in standard hours. These data enable her to separate manufacturing from services and, within these two industry classes, production workers from salaried workers. Between 1985 and 1994, in each of the four groups, the averages of both standard hours and actual hours declined, as did the gap between average actual and desired hours and the absolute value of the gap. Using panel regressions that allow for individual fixed effects and include year, firm size, and industry dummies, Hunt estimates the effect of changing standard hours on actual and desired hours of individual workers. The results for all four worker groups are broadly similar: actual hours fell almost in proportion to standard hours, while desired hours fell by substantially less. Neither the gap between actual and desired hours nor the absolute value of this gap was closed, although they were narrowed.

Together with Hunt's other reported results from the German panel data, these results suggest that incumbent workers benefited from the standard hours reductions negotiated by unions. Actual hours fell but incomes were maintained, spousal hours moved in the same direction as the hours of primary workers, and actual hours moved somewhat closer to desired hours. However, there is neither evidence nor a presumption of a work-sharing effect between incumbents and the unemployed.