Editors' Summary

THE BROOKINGS PANEL ON Economic Activity held its seventy-seventh conference in Washington, D.C., on March 25 and 26, 2004. This issue of *Brookings Papers on Economic Activity* includes the papers and discussions presented at the conference. The first paper analyzes the experience of single mothers since the welfare reforms of the mid-1990s. The second paper offers a diagnosis of the persistence of poverty in sub-Saharan Africa and outlines a long-run program of assistance to promote sustained development. The third paper models the relationship between long-run demographic swings and long-run returns to equities. The fourth paper reports on a survey of Americans' opinions on, and knowledge about, economic policy issues and assesses how self-interest, political ideology, and other factors relate to those opinions.

THE CHANGE IN THE political climate in the United States during the 1980s placed the nation's welfare system under increasing attack, and after caseloads began to grow rapidly in the early 1990s, recalling an earlier surge in the late 1960s and early 1970s, Democrats as well as Republicans supported reform. In 1996, with the support of President Bill Clinton, Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. This legislation replaced the Aid to Families with Dependent Children (AFDC) program with a new program called Temporary Assistance for Needy Families (TANF). Since its inception as part of the Social Security Act in 1935, AFDC had been the federal government's main welfare program, providing assistance to low-income single mothers. TANF continued this assistance but mandated nationwide time limits on welfare receipt and work requirements for recipients—popular features that some states had introduced earlier under federal waivers. At the same time, the new law reduced federal control over welfare policy. Federal matching of state expenditures on AFDC was replaced with fixed

block grants, and states were given considerable leeway in how the block grants were used.

The 1996 reform is widely regarded as successful. Welfare participation among single mothers has dropped from 25 percent in 1996 to 9 percent in 2002, and the fraction working has increased from 74 percent to 79 percent. But there is as yet no agreement on what features of the reform deserve the most credit, or on the extent to which its success reflects the extraordinary growth in output and employment that the economy enjoyed for several years after the reforms were passed. In the first article of this issue, Hanming Fang and Michael Keane address these issues, using detailed information on the behavior of a large sample of single mothers and exploiting the significant differences among states and over time in the salient features of welfare policies.

A significant literature on these issues has developed in the eight years since welfare reform was enacted. The authors provide an extensive critical review of this literature, highlighting differences between their own approach and those of previous studies. The aspect of the 1996 reform that has received the greatest attention is the elimination of the entitlement status of welfare, in particular the imposition of time limits on welfare receipt. But a broad range of other factors may also have influenced the welfare and work decisions of single mothers, including other features of the reform itself (such as work requirements), other policy changes (such as the expansion of Medicaid eligibility and the earned income tax credit, or EITC), and the strong macroeconomic environment. Most studies have focused on one or a few of these policy and economic variables and thus might have misattributed the observed improvement in outcomes to the feature or features being examined, when the change was really due to other, omitted factors. The authors discuss at length the pitfalls in the widely used difference-in-differences methodology, which compares behavioral changes in a group subject to a policy change with behavioral changes in other groups not subject to the change. They also note several anomalous or disconcerting results in studies that have used other approaches. Many studies, moreover, do not explain the rise in caseloads *before* reform, leaving open whether a reversal of unidentified factors responsible for the rise may have contributed to the later decline. An analysis by the Council of Economic Advisers, for example, leaves unexplained fully 70 percent of the rise of caseloads from 1989 to 1993 and attributes

34 percent of the decline in caseloads over 1994–96 to "other unidentified factors."

The authors make two general observations about the studies they review. First, all of the studies use only dummy variables (indicating, for example, whether or not a state has implemented a time limit) rather than more precise measures to capture policy effects. The authors suggest that the effects of time limits and other policy changes are likely to build through time, working mostly by affecting the rates of entry into or exit from welfare. To allow for such effects, in their own analysis they include measures of the time elapsed since a policy was implemented. Second, all of the previous studies include state dummy variables to control for differences in welfare and work participation across states that the model otherwise leaves unexplained. The authors note that this use of state fixed effects can lead to seriously biased estimates of policy effects in a dynamic model. For example, suppose that single mothers' decisions about whether to work or go on welfare depend on their impressions of the generosity of their state's program, but that the women ignore fluctuations in welfare benefits in forming their impressions. Then an analysis using state fixed effects, which capture differences in mean benefit levels across states, may lead to underestimates of the effect of benefits. On the other hand, in some circumstances, using state fixed effects can improve the precision of estimates of policy effects, for example when they absorb the effects of unmeasured factors affecting welfare participation that differ on average across states and are independent of policy variables. They can also protect against attributing the effects of such unmeasured factors to correlated differences in the average level of policy variables across states. The authors are not greatly concerned with the first consideration, since their models do a good job of explaining the persistent differences in welfare and work participation across states.

A major advantage of this paper over previous work is its combination of data on individuals from the Census Bureau's Current Population Survey (CPS) with a more articulated description of economic and policy variables. Focusing on households headed by single mothers, the authors use the CPS to provide demographic information—including age, race, education, marital status, and number and ages of children—about every member of the household and to construct measures of welfare and work participation. They collect detailed information about states' policies from

many different sources. It is striking how many features of states' welfare programs that appear the same on the surface in fact differ in essential respects. For example, although the 1996 welfare law prohibits states from using federal funds to provide benefits to adults for more than five years, the actual time limit in a given state can be less or more than five years, because some states set a shorter limit whereas others use their own funds to provide benefits beyond the federal limit. Among the latter, Michigan, New York, and Vermont have no effective time limit, and six other states continue to provide the child portion of the benefit when the limit is exceeded. These and other differences across state programs are key sources of variation that help identify the effects of policy on welfare and work participation.

The authors collect such information on all the major features of states' welfare policies. The listing of these features in an appendix to the paper conveys the magnitude of this task. The authors examine, state by state and year by year, data on work requirements and exemptions, benefit reduction rates and earnings disregards, diversion programs (under which welfare applicants who agree to stay off welfare for an extended period receive short-term cash payments), child support enforcement and treatment of child support income, and child care subsidies. They also gather detailed information about states' policies other than those directly related to AFDC and TANF. Among these are the state earned income tax credit (as of 2003, seventeen states had enacted their own EITCs supplementing the federal credit), food stamps (the rules for which are set at the federal level), Medicaid (for which the timing of implementation of various limits and mandates differs among states), and the State Children's Health Insurance Program (created in 1997, which gave states some flexibility in the use of federal grants for health insurance for children).

The authors' data set contains 127,119 observations on the households of single mothers eighteen years and older over the period 1980–2002. Before reporting the results of their econometric study, the authors provide a rich description of the salient features of this sample. They find that the racial composition of their sample has been stable over time at about 62 to 65 percent white and 32 to 35 percent black, but that the proportion of single mothers who were never married has grown steadily and dramatically, from 15.6 percent to 41.3 percent. The proportion of single mothers with only one child increased somewhat, and the share with four or more children decreased from 7.7 percent in 1980 to 4.7 percent in 2002.

Although the share of high school dropouts fell substantially and the share with at least some college substantially increased over the period, demographic shifts have been gradual since 1996, suggesting that they do not account for much of the huge drop in welfare caseloads that has occurred.

National welfare and work participation rates were quite stable until 1993. Welfare participation then declined spectacularly, from 32 percent in 1993 to 7 percent in 2002, and work participation grew significantly before dropping back with the 2001 recession. Levels and trends of both welfare and work participation rates differ markedly among eight large states that the authors examine in detail. For example, the trends in welfare participation in California, Florida, and Texas are roughly consistent with the national trends, but the downtrend started much earlier in Michigan (in 1983) and Illinois (1987). The peak in Pennsylvania came in 1984, but a second runup followed, peaking in 1992, and participation in New York and North Carolina peaked a bit earlier than in the nation as a whole. Differences in the patterns of work participation are just as noticeable, and in each of the large states the trends are roughly opposite to the trends in welfare participation. Such differences across states are hard to explain without using information about states' differences in policy and implementation, and the differences in states' experiences should help identify which elements of welfare reform have had the greatest effects.

The authors find substantial differences in the levels and trends of welfare and work participation rates for mothers of different races, educational attainments, and marital status. Although most of these differences are consistent with what one would expect and shed little light on the importance of particular reform features, they do highlight the value of distinguishing demographic groups in the estimation and taking into account demographic composition when explaining individual states' experiences. Some findings are suggestive. For example, the fact that the drop in participation from 1994 to 2002 is not systematically larger for mothers with younger children seems inconsistent with effects being purely anticipatory. (The authors distinguish the direct effects of welfare reform, such as the effect of time limits in removing recipients from the rolls, from the anticipatory effects, which result from single mothers taking into account how their current acceptance of benefits might affect their future access to the welfare system.) Time limits are less likely to discourage welfare receipt if a woman's children are older, because it is then more likely that she will be ineligible for welfare in any case should

she need assistance in the future. The fact that the increase in work participation from 1993 to 2002 was much greater for single women with two or more children than for those with one child suggests the possible importance of changes in the EITC. The EITC phase-in rate for women with one child increased by only 5.8 percentage points during that period, while that for women with two or more children increased by 13 percentage points. In general, the authors reason, a model explaining changes in work and welfare participation by state needs to recognize differences in states' demographic composition and the importance of interactions of policy variables with demographic characteristics.

As already discussed, the authors believe it is important to avoid reliance on state and time dummy variables, instead bringing to bear the detailed information they have gathered about each state's welfare policy in each year. They devote great care to constructing variables from this information that, they believe, capture the important incentive effects of welfare policy. For example, their estimation equations include a dummy for whether a state imposed a time limit in a given year, as well as a dummy for whether the time limit could have been binding for a particular woman, given the ages of her children. They also include variables allowing the anticipatory and direct effects of limits on welfare and work decisions to develop gradually over time, including variables for the number of months since the implementation of time limits, the number of months since the limits could first have been binding, the time remaining until a woman's youngest child reaches eighteen, and the stock of eligible months remaining to her. Similar care is devoted to capturing other elements of the welfare laws and how they potentially affect individuals. This substantial menu of variables, intended to capture the entire range of policy changes that occurred at the state level over 1980–2002, is interacted with a range of demographic controls to allow for the fact that policies affect different groups differently. In addition, the authors include several variables to control for state and national economic conditions, including state unemployment rates, the minimum wage (the higher of the national or the state minimum), and certain features of the income tax. All in all, their model requires estimation of 245 parameters. Although this may seem like a large number, the authors suggest that it is remarkably parsimonious relative to specifications that interact both time and state dummies with demographic characteristics. They also note that, despite the number of variables, their 127,000 observations leave many degrees of

freedom. In assessing the success of their specification, they stress that the list of variables was chosen a priori, not by a specification search; they neither added variables in an attempt to improve the fit nor deleted variables that proved insignificant.

The authors observe that the credibility of the model's policy implications depends in part on how well the model fits the data. They display how the model tracks actual welfare and work participation rates for single mothers for the entire 1980–2002 period at the national level, for each of the eight large states, and for the various demographic groups. As might be expected given the rich parameterization, at the national level the model tracks work and welfare participation almost exactly. Many parameters are allowed to differ by demographic group; nevertheless, it is impressive how well the model tracks the significantly different behaviors of mothers who differ in educational background, marital status, number of children, and race. Even more impressive, given that the model neither uses state fixed effects nor allows coefficients on variables to vary by state, is that it replicates quite well the differences across states in terms of both levels and changes over time. For example, in the early 1990s welfare participation in Texas was around 20 percent, while in Michigan it was around 45 percent, yet the model captures both extremes. Strikingly, the model also correctly predicts the downward trend in welfare participation in Illinois, Michigan, and Pennsylvania that began in the mid-1980s, well before the national downtrend. It has similar success in predicting work participation rates, catching the upward trend in Michigan over 1983–2000 while also predicting the plateauing of the participation rate in California from 1980 to 1995, the rapid jump in 1996–98, and the subsequent flattening. It also predicts the several turning points in Florida and Pennsylvania. The model's main failure is that it consistently overestimates welfare participation in California by about 5 percentage points.

In a model with so many interaction terms, it is difficult to interpret the parameter estimates or to assess their plausibility. To give an intuition of the estimates' implications for behavior, the authors use the model to predict the effects for welfare participation of imposing work requirements and time limits at various unemployment rates. They perform these calculations for single mothers with sixteen different combinations of demographic characteristics. Imposing time limits and work requirements is found to have a much greater effect on high school dropouts than on college graduates. Women with younger children respond more than

women with older children, and blacks respond more than whites. The effects of imposing work requirements and time limits are substantial, generally reducing participation on the order of 20 to 35 percentage points for those demographic groups with the highest welfare participation rates. Increasing the unemployment rate from 4 percent to 8 percent increases welfare participation, but not dramatically.

The major questions the paper attempts to answer are the importance of the 1996 welfare reform legislation overall and the relative contributions of its various provisions and of other features of the economic environment to the dramatic reductions in welfare and increases in work participation since its enactment. The authors answer these questions by conducting six counterfactual experiments, simulating for each of several economic or policy variables what welfare and work participation from 1994 to 2002 would have been if that variable had stayed fixed at its 1993 level while all other variables followed their actual path. These calculations show that eliminating time limits in all states that imposed them would have had relatively little effect: time limits are credited with only 2.5 percentage points of the total 23.8-percentage-point drop in welfare participation from 1993 to 2002. In contrast, the simulations imply that the drop would have been only 10 percentage points in the absence of work requirements, making that the most important feature of reform. According to the model, the expansion in the EITC was second in importance, accounting for 6.2 percentage points of the drop. Not surprisingly, given the recession of 2001, the unemployment rate accounts for only 1.6 percentage points of the reduction over the whole period, but it contributed 2.4 percentage points (21 percent) of the total decline by 1997 and 2.9 percentage points (about 15 percent) of the total decline in 2000. The other policies considered, child care subsidy programs and Medicaid expansion, also had significant effects. The simulations show interesting differences in the effects of time limits and work requirements for different groups. Macroeconomic conditions played a more important role for blacks than for whites; work requirements and the extension of the EITC are more important than time limits, irrespective of the age of the youngest child, but there is evidence that time limits are more important for mothers with younger children. Time limits also appear to have significant effects on the participation of never-married mothers and of mothers with two or more children.

The authors find that the ranking of variables by their impact on work participation differs drastically from that for welfare participation. Until 2001, when the recession set in, the reduction in the unemployment rate, measured at the state level, was the most important contributor to increased work participation, accounting for more than 40 percent of the total rise. However, consistent with the view that macroeconomic conditions are less important for mothers with young children, the authors find smaller effects of unemployment for this group: the EITC expansion and work requirements together explain more than 40 percent of the increase in their work participation by the end of the period. One of the most interesting findings is that different features of the reform are important for different education groups. Work requirements account for 43 percent of the 17-percentage-point increase in work participation among high school dropouts, but a negligible part of the 7-percentage-point increase in work participation of more-educated single mothers. The behavior of the more educated group appears to be driven almost entirely by changes in the EITC and the macroeonomy. The authors suggest that this may be because more-educated women can command higher wages, so that improvements in the EITC push them above their reservation wage. Hence, compared with less educated women, this group is more likely to have been made better off by reform and the improved economy, and less likely to have entered the work force because of a binding work requirement. The authors are troubled by the fact that one quarter of the single mothers who left welfare did not enter the labor force. The study cannot track what has happened to these individuals or their children.

The authors believe they have included reasonable measures of all of the empirical aspects of the policy and economic environment that could be plausibly considered important, including every aspect that Rebecca Blank hypothesized as potentially important in her 2002 survey. But they note that many important questions remain unanswered. Perhaps the most interesting relate to the long-run effects of reform. If the children of mothers who have left welfare and not gone to work have been made worse off, will more of them show up as dependent on welfare in the future than would have under the old system? Or will the effects of reform on the welfare culture have even more dramatic positive results in the long run? Reform may have come too late for the current generation of dependents, but it may lead the next generation to invest in education and the acquisition

of skills—investments that will reduce the future burden on the system. These questions are inherently difficult to answer, and well beyond the capabilities of the authors' model, but they are important areas for future research.

SUB-SAHARAN AFRICA IS THE poorest region in the world and the only major underdeveloped region whose income per capita has declined since 1980. Africa's health conditions are the world's worst, with populations in many areas devastated by the emergence of AIDS and the resurgence of malaria. Africa's rapid population growth, which exceeds that in other developing regions, contributes to keeping much of the population at a subsistence level, and to a strikingly lower life expectancy and higher rate of child mortality than other regions, with 17 percent of newborns dying before the age of five. The apparent worsening of Africa's plight, despite past international attempts to provide aid, has led many observers to conclude that bad governance is the heart of the problem and that, until Africa's governments change, any new aid initiative is doomed to fail. In the second article of this issue, Jeffrey Sachs and six of his colleagues on the UN Millennium Project sharply disagree with this assessment. They argue that the heart of Africa's problem lies in unique structural conditions that have left Africa in a poverty trap. They explain why they believe it can escape the trap only with the infusion of well-targeted and massive aid. And they offer a blueprint for a major international initiative to provide such aid.

The authors start with a theoretical model of the growth process in poor countries. The basic relationships are those of the familiar neoclassical growth model. Output per capita depends on the capital-labor ratio and total factor productivity. In the absence of capital imports, changes in the capital-labor ratio depend on the difference between the gross investment rate, which equals the national saving rate, and the sum of the depreciation rate and the labor force growth rate. In the standard model, an economy with a small initial capital stock and a low capital-labor ratio could be expected to grow by increasing its capital-labor ratio; decreasing returns to this capital deepening would eventually lead to an equilibrium capital-labor ratio at a higher output per capita. However, the authors identify three factors that they believe interfere with this process in Africa's very poor economies, requiring amendments to the standard model. First, the capital stock must exceed some threshold before further

capital accumulation can be productive, and Africa is below this threshold. It is particularly lacking in basic infrastructure and in human capital (literate and numerate workers), and without these the marginal productivity of new capital is abnormally low, not high as the standard model implies. Second, with incomes near subsistence for most of the population, few households can save; in fact, national saving is near zero in many of these African countries. This leaves the economy in a saving trap, in which the already low capital stock declines rather than rising toward an equilibrium. Third, Africa suffers from a demographic trap, in which rapid population growth pushes the capital-labor ratio and income per capita still lower. Together these factors create a poverty trap, from which Africa cannot extricate itself without outside financial assistance. Low and only slowly rising productivity adds to the region's problems.

The authors discuss five main structural reasons that they believe explain why Africa remains caught in a poverty trap while countries in other parts of the world have escaped. These are very high transport costs, low-productivity agriculture, a very heavy disease burden, adverse geopolitics, and very slow diffusion of technology from abroad. Most Africans south of the Sahara live and work in the interior of the continent. Few natural navigable waterways provide access to coastal ports, and no highway network exists to connect these populated inland parts of Africa with each other and with the coast. By the standard metric, kilometers of paved road per 1,000 population, Africa lags far behind all other developing regions. The resulting very high transport costs are a serious hurdle to development—a point that, the authors note, was first made by Adam Smith. Agricultural productivity is very low because the continent has relatively few large rivers, insufficient and erratic rainfall, and no infrastructure to manage the water that might be available, and because the high transport costs make chemical fertilizers uneconomic. The share of Africa's agricultural land that is irrigated is one-twentieth that in other developing regions, and African farmers use only 6 percent as much fertilizer per acre. The burden of disease has always been a problem for Africa and has worsened in recent times. The prevalence of AIDS is many times that in other regions. Malaria is both more widespread and more severe than elsewhere, and its control would require far larger outlays than Africa can afford.

Turning to the historical geopolitics of the region, the authors remind us that Africa suffered at the hands of Europeans and Arabs for centuries. The

slave trade was followed by exploitative colonial rule, which left behind a totally inadequate infrastructure and an undereducated population, a poor framework for self-governance, and unnatural borders that ignored tribal relations. More recently, when aid to developing regions has been influenced by the cold war and by economic considerations in the rich countries, Africa has been too distant and too small a market to get much attention or assistance. Even today trade discrimination by the world's industrial countries limits potential exports from Africa. Finally, advances in agricultural and health technology have been of little use to Africa, in part because they were unaffordable, but also because they were often unsuitable to Africa's needs. In particular, the Green Revolution that so benefited most of the developing world was based on scientific crop breeding that did not easily transfer to conditions in Africa and that required fertilizer and irrigation that African farmers did not have.

Support for the authors' description of Africa's problems comes from recent growth accounting studies covering the past two decades. Using the analysis presented by Barry Bosworth and Susan Collins in a 2003 Brookings Paper, they show that Africa's decline in output per worker in the 1980s and 1990s is associated with declines in physical capital per worker and in total factor productivity in both decades. Using their own decomposition of the neoclassical growth model described earlier, they show that it is a good predictor of the differences in growth rates across developing regions. The model ascribes Africa's negative growth in this period to the inadequacy of its saving relative to its population growth and capital depreciation. As conventionally measured, Africa's gross saving was only 11 percent of gross product, compared with saving rates ranging between 19 and 35 percent in other developing regions. They also show that, if the estimated depletion of Africa's natural resources is subtracted from officially measured saving, net saving in the region was only 1 to 3 percent of gross product in these decades.

The authors believe that these structural impediments to growth explain why Africa's development has lagged so badly, but they are also convinced that those impediments can be overcome with help from the developed world of the right amount and kind. The central conclusion that the authors draw from their model is the need to increase Africa's physical and human capital stock above the threshold for self-sustaining growth. With saving kept low by poverty, this will require massive external aid that provides

targeted investment in infrastructure and human capital. Such an enlargement of the capital stock would be expected to set several developments in motion. It would raise the marginal productivity of subsequent investment, raise national saving by bringing more of the population above the subsistence level, and lower population growth, which is now high mainly because children are a source of labor for destitute families. Although the eventual aim is self-sufficiency, the authors warn that achieving it will require aid on a much larger scale than Africa has ever received, and that many African countries will require aid on a large scale for decades. As an intermediate target for their proposals, they choose the UN's Millennium Development Goals (MDGs) for 2015, and they calculate the magnitude and composition of aid flows that would be required to meet these goals.

The authors organize their analysis of needed investments around several broad categories of intervention, such as agricultural productivity, and more detailed subcategories, such as soil health and water management. Appendices list the proposed interventions in detail and relate them to the MDGs. The authors illustrate their approach by summarizing current conditions in Ghana, Tanzania, and Uganda with respect to certain MDG-related indicators such as poverty rates, prevalence of child malnutrition, and school enrollment rates. The shortfalls from the targets for these indicators provide the basis for budgeting investment requirements. The gap between these requirements and how much can be expected from households and from each country's own government then determines the amount of external aid that the country needs.

To achieve the MDGs in these three countries by 2015 would require total annual external aid averaging 13.7 to 16.6 percent of their GDP, which comes to $49 to $60 per capita. These requirements amount to an annual average need for aid of $1.2 billion for Ghana, $2.5 billion for Tanzania (the furthest of the three from meeting the MDGs), and $1.6 billion for Uganda. In all three countries, health services is the area needing the most aid, accounting for over a third of the total. It is noteworthy that the authors' interventions give particular attention to improving the economic and social status of women, not only on humanitarian grounds but also because women are responsible for so much of the work and child rearing in Africa, so that improvements on many important fronts will have to flow through them. The authors' methodology also yields detailed estimates of human resource and infrastructure requirements, such as how

many additional schoolteachers will be needed, but these details are not presented in the paper.

Taken all together, the authors' estimates imply that aid will cover roughly 60 percent of investment needs in the thirty-three countries in their sample, with the remaining roughly 40 percent coming from households and domestic governments. These countries are already receiving official development assistance (ODA), roughly half of which the authors identify as helping toward the MDGs. On the assumption that the other half, which supports judicial systems and other institutions of governance, continues at present levels, this implies a current shortfall of annual ODA of $29 per capita for Uganda, $33 per capita for Ghana, and $42 per capita for Tanzania. Covering these shortfalls brings aid needs up to 19 to 22 percent of GDP. After adding in the overhead costs of delivering aid and some additional "big ticket" items, the authors judge that total ODA to these countries will have to average between 20 and 30 percent of their GDP. This would represent at least a doubling of present aid efforts.

The authors believe such massive aid to Africa can be effective, but others have expressed doubts, and the paper addresses their main concerns. The authors recognize that a reasonable level of governance in recipient countries is essential, and they propose that it be a precondition for receiving aid. But they reject the widespread impression that a governance crisis is the main cause of Africa's poverty. They note that the highly visible examples of terrible governance in Angola, Congo, Liberia, Sierra Leone, Sudan, and Zimbabwe understandably foster such an impression, but they show that it does not characterize most of the nations of Africa. On a measure devised by Steven Radelet based on World Bank governance indicators, twenty-six of the thirty-three countries in the authors' sample have a rating of good or average. This measure rates countries by how their governance compares with that in other countries with similar income per capita (since income correlates positively with government effectiveness). An alternative measure from Transparency International, which also allows for income effects, assigns only one of the thirty-three countries (Angola) a poor governance rating, although thirteen of the countries are not rated, including four of the six with highly visible problems mentioned above. A third ranking, provided by Freedom House, rates those same six countries as not free, along with seven of the remaining countries in the sample. The authors infer that there are many African countries on which

increased aid would not be wasted because of poor governance, and that rising incomes would be expected to improve governance in those countries that receive it.

Another concern is that further aid would end up going to consumption rather than investment. The authors believe that donors can guard against this by targeting aid to priority investments in the public sector and by designing ways to monitor the budgeting and expenditure process, including enlisting local nongovernmental organizations in this task. They also reject the argument that recipient countries would offset the intended benefits of aid by reducing their own efforts in the targeted areas: these countries, they argue, currently undertake so little public investment that there is little scope to reduce it further.

The authors do recognize that efficiently delivering the needed large increase in aid will pose a great challenge to both donors and recipients. They conclude by addressing this challenge along with some other issues of political economy of importance to Africa's development prospects. Mindful of the inadequacies of many past aid efforts, they offer four guiding principles for how both donors and recipients should alter their thinking about aid going forward. First, because the present limits on what African countries can absorb put constraints on what can be done within a short time horizon, they urge lengthening donors' horizons so as to focus on expanding those limits. Targeting outcomes for 2015 accomplishes this. Second, because the present top-down approach to aid planning locks the process into one of allocating predetermined sums, the authors urge a planning process based on a bottom-up assessment designed to reveal the need for greater and more extended assistance. Third, they urge the coordination of donor assistance through international organizations, both to avoid unnecessary transactions costs and to target the aid more effectively toward the identified goals. Fourth, they remind donors that projects will take many years to become financially self-sustaining, which implies that assistance should take the form of grants rather than loans, since loans for the long-term projects that Africa requires would become an insupportable burden long before the benefits materialize. The authors discuss several other issues relevant to Africa's development, such as how the planning and implementation of assistance programs might be organized, the special problems of providing aid in countries with weak governance, and the importance of trade reform as an adjunct to assistance programs. Their thorough discussion of Africa's difficulties and how to deal with

them brings home the immensity of the challenges, but also offers a realistic promise that they can be met.

THE U.S. STOCK MARKET can be described as having gone through three distinct twenty-year episodes in the period since World War II: a bull market from the war to the mid-1960s, a bear market in the 1970s and early 1980s, and a spectacular boom from the mid-1980s through the 1990s. A variety of explanations have been offered for the two extended bull markets of that sixty-year period: increased participation in the stock market, fading memories of the great crash of 1929, and raised expectations of productivity growth due to technological innovation and a "new economy." Economists have found it harder to explain the sustained bear market sandwiched in between. The same secular changes that help rationalize the bull markets before and after should also have been at work then. Although the oil crises of the 1970s and slower productivity growth did contribute to lower corporate earnings, they do not explain why those earnings were valued so low by the market. This inability to explain the bear market of the 1970s and 1980s as reflecting rational responses to fundamentals has led some economists to suggest that investors confuse nominal with real interest rates, or to invoke random shocks or unobservable beliefs, to explain the market's cycles. Others, however, have suggested that demographic factors—specifically, wide swings in the U.S. birth rate across the twentieth century—may be important in explaining the fluctuations in the prices of both stocks and durable assets such as housing. As is well known, through most of the century just ended, live births in the United States went through alternating booms and busts, resulting in systematic changes in the age distribution of the population over the postwar period. In the third article of this issue, John Geanakoplos, Michael Magill, and Martine Quinzii examine whether these demographic fluctuations can provide a unified explanation of the long swings in the market.

Motivating the authors' analysis is the observation that individuals have different financial needs at different times of their life, typically borrowing during their young adulthood, saving for retirement when middle-aged, and dissaving during retirement. When the middle-aged savers in the population are numerous relative to the dissavers (retirees and younger households), the demand for assets to hold as wealth is likely to be high, putting upward pressure on the prices of stocks, houses, and the physical capital of

firms. When the cycle turns and dissavers come to outnumber savers, these same prices fall under downward pressure.

To clarify this mechanism, the authors construct a life-cycle model that recognizes the different income and consumption behavior of households of different ages and that assumes that the birth rate, and hence the population age structure, follow a twenty-year cycle. They begin with a highly stylized, nonstochastic version of the model with only three economically active age cohorts—young, middle-aged, and retired—and in which the only asset available for holding savings is a claim on land. The quantity of land is fixed, but the population and its composition systematically vary. Each twenty-year period is characterized by an "age pyramid"; odd-numbered pyramids consist of a large young cohort, a small middle-aged cohort, and a large retired cohort, and even-numbered pyramids consist of a small young, a large middle-aged, and a small retired cohort. The authors later analyze the effects of introducing a variety of more realistic features into the model: a larger number of age cohorts, the need to support children when young, the presence of Social Security and a desire to make bequests, endogeneity of the capital stock, and uncertainty about future wages and dividends. The model embeds a demographic cycle whose amplitude corresponds roughly to the relative sizes of the Great Depression and baby-boom generations. Abstracting from the very long term trend in population growth, as the authors do, the latter generation was about one and a half times as large as the former.

To focus on the implications of demographic fluctuations, other features of the model are kept quite simple. A single physical good is produced each period by labor or land. Middle-aged workers are assumed to produce and be paid for three units of the good, and young workers two units. This ratio of one and a half to one is roughly in line with the ratio of average earnings of individuals in the 45–54 and 25–34 age groups in census data. Retirees have zero earned income, living entirely on savings. Since middle-aged workers produce more than young workers, total labor income and product vary over time with the relative size of their populations, even though the total number of workers is constant. Land is the only physical asset in the economy, and the authors refer to claims on land as equity. The fixed quantity of land is assumed to deliver a constant "dividend" of approximately 20 percent of average labor income, comparable to the combined income share of all forms of capital in the national income accounts (not counting retained earnings, which are assumed to be needed

for growth). Total output, equal to labor income plus dividends, is about 7 percent higher when the middle-aged population is relatively large than when it is relatively small.

Finding the equilibrium real interest rate and the price of land is relatively straightforward in this model. Individuals maximize the sum of the utilities in the three periods of their life, discounted by their personal rate of time preference, subject to the constraint that the present value of lifetime consumption is equal to that of lifetime labor income (there are no bequests in this basic model). Saving and dissaving during an individual's life are accomplished by buying and selling land. Even though individual cohorts save and dissave over their lifetime, in the absence of demographic fluctuations total income and consumption are constant, and so is the market-clearing interest rate. If the interest rate equaled the rate of time preference of individuals, they would want to consume the same amount each period. With both rates set at approximately 3.5 percent a year, consumption of two units of the good in each stage of life is feasible. At that interest rate, individuals choose to consume their two units of labor income received when young, and to save (and invest in land) one of the three units of income they receive when middle-aged. The value of dividends received over twenty years equals the value of the land that generates them, representing a return of 3.5 percent a year. In retirement the proceeds from dividends and the sale of land to the next generation support consumption of two units. The price of land is the present discounted value of the constant future dividends and so is the same at the time of sale as when it was bought twenty years earlier.

When instead cohort size fluctuates, equilibrium interest rates and dividend yields have to vary. If land were priced to yield a constant 3.5 percent annual return, then, when the middle-aged cohort is large (that is, in even-numbered periods), their demand for land (saving) would exceed the supply of land (dissaving) of the smaller retiree population. This would put upward pressure on land prices, and thus downward pressure on interest rates. When the middle-aged cohort is relatively small (in odd-numbered periods), the opposite would be true. But with just two different-sized middle-aged and retiree cohorts, land prices and interest rates simply alternate in value from period to period. How much do they vary between even- and odd-numbered periods as the middle-aged cohort varies between large and small? The calculation is more complicated than in the absence of demographic fluctuations but still quite straightforward by virtue of

the authors' artful assumption of regular cycles. As is evident from the above discussion, the ratio of peak to trough land prices will depend on the relative size of the cohorts (in the central case the large cohort is roughly 50 percent larger than the small) and on the elasticity of saving with respect to interest rates. The authors assume a utility function with constant relative risk aversion, with 4 as the degree of risk aversion. This is a relatively high value, corresponding to a relatively low value of 0.25 for the intertemporal elasticity of substitution. For this value (as for any elasticity less than 1), an increase in the interest rate decreases saving, since the income effect then dominates the substitution effect. Small cohorts in their middle-aged years face relatively low land prices and high rates of return. Although the higher rates encourage these cohorts to shift consumption toward retirement, they can and will also use their higher incomes to increase their consumption in middle age. Thus the systematic fluctuation in rates favors the small cohorts. If individuals are forward looking, as assumed, these cohorts will anticipate this positive income effect when young and increase consumption then, too. Matters are reversed for large cohorts.

The authors show that, in this base model, fluctuations in the population age structure of roughly the magnitude observed in the United States can account for very large fluctuations in interest rates and asset prices. For their central case, with a degree of risk aversion of 4 and with a cohort size ratio of 1.5 to 1, the difference between peak and trough real interest rates would be 6.5 percentage points. Such variation in interest rates corresponds to substantial variation in asset prices. The high rate of return expected by a small middle-aged cohort reflects both a high current dividend return and an anticipated capital gain. The situation is reversed in periods when the middle-aged cohort is large and the retiree population small. With a degree of risk aversion of 4, the land price (and the price-earnings ratio) in even-numbered periods is 2.3 times its value in odd-numbered periods. Capital gains amount to slightly over half of the total 6.5 percent annual return. More-modest demographic fluctuations result in correspondingly moderate fluctuations in rates and asset prices. For example, with a cohort size ratio of 1.15 to 1 (which corresponds to the ratio of baby-boomers to the baby-busters that followed them), the difference in rates would be only about 2.2 percentage points, and the ratio of land prices only 1.3 to 1. Capital gains play a much smaller role than dividends in this scenario. More generally, for a degree of risk aversion of 4,

the variation in land prices is roughly the same as the variation in relative sizes of the middle-aged and young adult cohorts.

The authors recognize that their basic model ignores a number of features of the real world that could significantly affect the behavior of interest rates and prices. In particular, the base model ignores the consumption needs of children, the desire for bequests, and the existence of a pay-as-you-go public pension system (Social Security), all of which are likely to affect the life-cycle pattern of saving. This leads the authors to modify their assumed utility function, recognizing the presence of children when a cohort is young and the desire to make bequests when it is old. They change the budget constraint to reflect the receipt of bequests and the presence of a pay-as-you-go Social Security system, with constant benefits and a time-varying tax rate on earned income that balances the Social Security budget in each twenty-year period. The parameter values chosen for these features are in line with conventional wisdom. A child ends up with half the consumption of an adult; the assumed bequest preferences generate bequests of 15.5 to 18.5 percent of aggregate income; and the Social Security transfers vary between 6.5 percent and 10.5 percent of total income, bracketing the actual ratio of Social Security transfers and Medicare benefits to national income in the late 1990s.

Implicit in the model is that small cohorts have large families and large cohorts have small ones. The presence of children during a household's early years decreases saving and lowers average asset prices, but the decrease in saving is greater when the cohort is small, and this amplifies the fluctuations in interest rates and asset prices that occur. Social Security has a similar effect, decreasing private saving but also amplifying its fluctuations. The reason is that, in odd-numbered periods, with a small middle-aged and a large retired cohort, earned income is relatively low and Social Security benefits are high, requiring a high payroll tax rate. Bequests, by raising incomes in middle age and reducing needs when retired, have the opposite effect, increasing desired saving. This raises average asset prices and, because small cohorts receive relatively larger bequests (individuals are assumed not to take into account how many children they have when planning bequests), dampens asset price fluctuations. The authors show that although each of these features taken individually implies substantial changes in the behavior of rates and prices, when taken together they almost balance out. Although the average level of interest rates is higher and that of asset prices lower, the ratio of asset prices and the difference

in interest rates are roughly in line with the base model. Indeed, simply assuming a less extreme value for the rate of time preference would bring the average level into line with the base model.

In the base model the supply of land, the only asset, is fixed. Changes in desired saving reflecting changes in the age structure can be accomplished only by changing the price of land, with accompanying changes in interest rates. In reality, reproducible assets are available as a store of value and indeed make up a large fraction of wealth. If the asset used as a store of value is elastically supplied, its quantity will adjust to changes in demand, and prices and interest rates will fluctuate less than when land is the only asset. Since demographic changes are slow, such adjustments can be relatively modest on a yearly basis. However, the implied diversion of domestic resources from consumption to investment will in general require some changes in prices and rates, although they will be smaller than in the model where land is the only asset. Furthermore, in a world with integrated capital markets, domestic savers can also invest in foreign capital, further dampening the rate and price fluctuations induced by idiosyncratic national demographics.

To explore the dampening role of reproducible capital accumulation, the authors augment their model with a Cobb-Douglas production function for the single good, which can now be used for additions to the capital stock as well as for consumption. Wages and dividends are now endogenous and depend on the capital-to-labor ratio. The capital stock is relatively low in times of even-numbered pyramids, so that the earned incomes of members of a large middle-aged cohort are lower than in the land-only economy. This reduces their lifetime earnings and their demand for saving in middle age. If the cost of capital in terms of goods does not depend on the rate of investment, the effect of demographic changes on interest rates and equity prices is substantially muted. The interest rate in even-numbered periods is now just 1.3 percentage points lower than in odd-numbered periods. Equity prices rise in this case, not because of changes in the price of a unit of scarce capital in terms of goods, but because firms use retained earnings to add to their capital stock. In even-numbered periods, a share of equity constitutes a claim to 40 percent more capital than in odd-numbered periods, and so the value of a firm is correspondingly 40 percent higher. This contrasts with the 130 percent higher price of land in the base model. In this costless adjustment case, the dividend-price ratio actually fluctuates slightly more than in the land-only model, reflecting the

fact that dividends are low because the single firm retains earnings in even-numbered periods when investment is high.

With what the authors regard as a moderate cost of adjustment, the fluctuations in the value of equity and the size of the capital stock are between these extremes of the land-only case and the case of costless adjustment of reproducible capital. In even-numbered periods, the capital stock is only 17 percent larger, requiring about 0.8 percent faster annual growth in the stock over their twenty-year interval. The price of capital—that is, its cost in terms of consumption goods—is 54 percent higher. Together these increases in the price and quantity of capital yield a total increase in share prices of 80 percent in even-numbered periods. Although this result is reasonable compared with historical fluctuations in the stock market, the part attributed to the price of a unit of capital seems large, and the rise in the capital stock seems small.

Although the essential features of the demographic cycle are illustrated in the three-period model, the authors note that the model's use of twenty-year periods obscures the more subtle dynamics of real-world interest rates and equity prices. To explore these richer dynamics, the authors return to the simple land model and split each twenty-year period into five four-year periods, appropriately smoothing the population growth rates and wage profiles. Consistent with the fundamental intuition that relates land prices to the relative numbers of savers and dissavers, land prices in this version of the model peak when the ratio of middle-aged to retirees peaks (which is also when the ratio of middle-aged to young adults peaks). Land prices are increasing when that ratio is increasing, and decreasing when the ratio is decreasing. Given the cyclical pattern of the birth rate, this rate of change of prices is highest in the middle of the period when equity prices are rising, and lowest in the middle of the period when they are falling; the turning points in the twenty-year rate of return occur at the same points. The authors observe that the synchronous behavior of the ratio of cohort sizes and equity prices and the nonsynchronous behavior of cohorts and rates of return in the model may help explain why empirical studies have found a correlation of age demographics with the level of equity prices, but not with rates of return.

The authors are struck by the similarities in the episodic behavior of the stock market and birth rates, but they do not expect demographic factors to explain more than a fraction of market fluctuations, and thus they are not surprised that their simple model explains less than half of the observed

trough-to-peak fluctuations in the U.S. stock market over the past fifty years. They point to many other, nonpredictable factors that could have been important influences on the market during this period. The 1970s and early 1980s witnessed many identifiable negative shocks, including bursts of inflation followed by restrictive monetary policy, as well as OPEC-related disruptions and adverse productivity shocks. In the 1990s, by contrast, most of the identifiable shocks were positive, including a return to favorable energy prices, low inflation, and high rates of technical progress.

Recognition of such shocks not only helps in fitting the model to the postwar experience, but also highlights the importance of the risks faced by individuals in planning their life-cycle consumption and saving. This leads the authors to introduce random shocks to dividends and wages in their base model in order to analyze their effects. To capture what they see as the central risks facing individuals, they use a simple stochastic structure that recognizes four states of the world: high wages and high dividends, high wages and low dividends, low wages and high dividends, and low wages and low dividends. They assign probabilities to each of these states that capture the positive correlation between dividends and wages observed in the data and that imply plausible coefficients of variation in dividends and the earned income of the young and the middle-aged.

In this model, financial markets are incomplete, and intertemporal trade can take place only in bonds and equities. The introduction of uncertainty makes equities no longer perfect substitutes for bonds. Solving this stochastic version of the model is much more complicated than solving the nonstochastic version, since one has to keep track not only of the (exogenous) population pyramids and the current state of the world, but also of the portfolio income brought into middle age, which itself depends on past shocks. Fortunately these "history" effects are relatively small, so that the average values of equity prices and interest rates in any current state of the world are representative of equilibrium prices for that state. The authors find that the presence of shocks adds to the realism of the model, yielding fluctuations in asset prices that reflect the risks faced by investors and that produce large discrepancies between the expected risk premiums and the realized difference in returns between stocks and bonds. But the central insight of the nonstochastic model survives: long-run fluctuations in the demographic structure lead to long-run cyclical fluctuations in security prices and interest rates that are similar in magnitude, on average, to those found in the simple model.

What should be the risk premium on equity in a life-cycle model when individuals face risks to their future wages and to dividends? The answer is complicated, both because the relative importance of the different risks varies over the life cycle and because these risks interact with the fluctuating demand for saving arising from changing demographics. The authors' model, with its explicit stochastic process for the shocks to dividends and wages and its realistic demographic features, provides a good laboratory for analyzing this question. Like most equilibrium models, theirs generates smaller risk premiums than those observed historically. But their model offers a wide range of insights about how the risk premium might be expected to vary across different circumstances. The authors discuss why the market risks faced by agents investing in odd-numbered periods are greater than the risks in even-numbered periods (their answer lies in the differences in the relative importance of the risks to dividends and the risks to capital gains) and why the variability of consumption in retirement is greater for large than for small cohorts. These factors help them explain why, despite the fact that the young are less risk averse than the middle-aged, the equilibrium risk premium is higher in odd-numbered periods. The authors also quantify the difference between ex ante and ex post risk premiums, and they show how the ex ante premium depends on the state of the world, and how borrowing constraints and limited participation in equity markets affect the premium.

Although the authors do not undertake detailed empirical testing of their model, they do examine the correspondence of its predictions with the stylized facts of the U.S. experience. In the first half of the last century, fluctuations in the ratio of middle-aged to young adults in the population (the MY ratio) were modest; hence demographics cannot be the major factor explaining the behavior of stock prices in the Roaring Twenties or the Great Depression. The authors focus on the price-earnings ratio for stocks in the Standard and Poor's (S&P) stock index and show that it moved more or less in step with the MY ratio during the second half of the century. A regression of the S&P price-earnings ratio on the MY ratio for the period 1945–2002 yields an R^2 of 0.55; the R^2 for the period since 1965 is 0.78. The model is less successful in explaining rates of return, which in the model should be related to the change in the MY ratio. Although the sign of the estimated coefficients for both the real rate of return on the S&P and real short-term interest rates is as the model predicts, the change in the MY ratio explains only 14 percent of the variation in the return on the S&P, and

almost none of the variation in short-term rates since 1945. It does explain 16 percent of the variation in both rates since 1965.

The model does not do well in predicting interest rates during the 1945–65 period. Stock returns were high in the bull market of the 1950s and early 1960s, but interest rates were low, implying a very large equity risk premium. According to the model, the risk premium should move with the MY ratio. However, actual variations in this risk premium, calculated by assuming that expectations at a given date match the average of actual returns ex post in the following twenty years, are far greater than what the model predicts: They exceed 10 percentage points in the 1940s and the early 1980s, while the model's predictions all fall in a range of 1 to 2.5 percentage points. Although the predictions are thus off by an order of magnitude from the calculated risk premiums, the predicted changes in the premium are in the right direction and occur at roughly the right time.

Viewing their results broadly, the authors see the model's ability to track the major turning points in the stock market as support for the demographic hypothesis. And they note that the model predicts a decline in U.S. price-earnings ratios over the next twenty years, because of the demographic changes on the horizon. The globalization of financial markets, which will be much more important in the future than it was in the last century, implies that demographic changes abroad could alter that outlook. However, most of the world's industrialized countries confront demographic challenges that are at least as severe as those facing the United States. Thus the authors see investors in the developing world as the main hope for avoiding the otherwise poor long-run prospects for U.S. equities.

In their voting behavior as well as in their private economic decisions, individuals are commonly modeled as rational, informed agents who act in their own interest. Except in town meetings or the occasional referendum, they do not vote directly on economic policies, but they elect the officials who do. Those officials are thus heavily influenced by public opinion, which implies, if the standard model is correct, that economic policy reflects the self-interest of well-informed voters. But how close is this description to reality? In a report in this volume, Alan Blinder and Alan Krueger shed light on this question by investigating how, and how well, voters actually inform themselves on economic policy matters and analyzing how their opinions are related to a range of possible influences.

Blinder and Krueger sketch out a model in which an individual's opinion on an issue depends on self-interest, ideology, factual knowledge and understanding, and the degree to which public interest overrides self-interest. People's knowledge, in turn, depends on the strength of their desire to be informed, on the sources of information they use, and on the quantity of information they obtain. The data the authors use to test this model come from a telephone survey conducted in the spring of 2003, which reached 1,002 individuals of voting age. The survey first asked a number of questions about macroeconomic policy, some of which were factual (How large is the federal budget deficit?) whereas others solicited a related opinion (Should the deficit be reduced?). The survey also asked how important the respondent believed it was to be informed about such issues. A series of questions then explored where the respondents got their information about the economy. (For example, Do you watch television to get economic information, and if so, how often?) The survey also collected conventional demographic information about respondents as well as about their income, whether they had voted in 2000, their political ideology (liberal, conservative, moderate, or nonpolitical), whether they were covered by health insurance, and whether their parents were alive.

The authors begin by highlighting some of the findings from their survey. Three-quarters of respondents thought it was very important or extremely important to be well informed about economic policy issues. Fewer than 3 percent thought it was unimportant. This desire to be informed showed little variation by race, sex, education, income, or ideology, but a larger share of self-described voters than of nonvoters said they cared about being informed. (The authors note that the share of respondents who said they had voted in 2000 exceeds the share of the nationwide voting-age population who actually voted that year.) Respondents were asked which of eleven sources of information they used and how frequently they used each of them. "Sources" included types of media and types of individuals (politicians, economists, friends and relatives, and so forth). Television topped the list of media mentioned most frequently, with newspapers, the Internet, radio, magazines, and books following, in that order. When asked which source was the most important to them, television was named by nearly half the respondents, dominating all other sources by a wide margin. Interestingly, 10 percent of respondents named the Internet as their most important source. Among types of individuals, friends and relatives tied with political leaders atop the list of those most

often mentioned. When ranked by which source was most important, friends and relatives were again on top, and economists came in last. The authors also provide a range of more detailed findings relating sources of information to respondents' demographic characteristics. They then use responses to a question about how frequently sources were used to construct a proxy for the quantity of information in their model, but this proxy is never statistically significant in their subsequent regression analysis.

Blinder and Krueger are pleasantly surprised by how much their respondents knew about the economy. From the accuracy of individual answers to specific factual questions, they calculate a knowledge score for each respondent and relate it to their answers to other survey questions. Curiously, mean average knowledge scores differed little among those who thought it extremely, very, or somewhat important to be well informed; scores were noticeably lower, however, for those who thought it unimportant. Relating knowledge scores to different media as primary sources of information, the authors find that the very small percentage of respondents who rely mainly on magazines had the highest scores. The even smaller percentage who rely mainly on economists were more knowledgeable than those who use other types of individuals as sources. On average, higher-income individuals scored higher than lower-income individuals, college-educated respondents scored higher than the less educated, voters did better than nonvoters, and the nonpoliticals scored lower than those expressing a political ideology.

Some of the main results on respondents' policy opinions include the following: 61 percent of respondents said taxes are too high, and 36 percent said they are about right. After being told the size of the federal budget deficit, 50 percent of respondents said the deficit is a serious problem, and another 38 percent said it is a minor problem. Eighty-eight percent of respondents said the deficit should be reduced; among these, 45 percent said it should be reduced mostly by cutting spending, and 47 percent favored reducing it about equally through spending cuts and tax increases. Opinions on how to close the prospective Social Security deficits were noticeably different. Among the 78 percent of respondents who voiced an opinion, only 5 percent wanted to rely mainly on cutting benefits; the rest were almost evenly divided between favoring a mixture of benefit cuts and tax increases and relying on payroll tax increases alone. On other issues, 75 percent of respondents thought the minimum wage should be raised, 80 percent favored adding a prescription drug benefit to Medicare (such a

benefit was enacted at the end of 2003), and 71 percent favored universal health insurance coverage for every American. These and other findings were also disaggregated by ideology and other characteristics of the respondents.

Blinder and Krueger next go beyond the simple relationships in the data to a series of regressions designed to test their model of how public opinion is formed. Multivariate regressions explaining knowledge scores show a significant positive relationship between factual knowledge and desire to be informed, as predicted by the model. Income, education, and being married are also strongly and positively related to knowledge scores, as is whether or not the respondent reported having voted. A weaker association is found between knowledge and the use of newspapers, magazines, and economists as information sources. Controlling for these variables, the authors find a significant negative relationship between knowledge and being a white non-Hispanic, but no significant relationship with any other demographic variable, or with being liberal or conservative.

The authors next report a series of regressions relating respondents' opinions on public policy issues to a number of variables, mainly to identify the relative importance of self-interest, ideology, and knowledge. Using ordered probit models, they examine opinions—opposed, mixed, or favorable—on the most recent tax cuts proposed by President George W. Bush (which were signed into law in May 2003). In these regressions, along with the basic ideology, demographic, and knowledge variables, the authors include knowledge of specific tax facts and a range of respondents' views related to fiscal matters, such as whether taxes are too high or too low and whether deficits are a major or a minor (or no) problem. A regression using only income and demographic variables does very little to account for differences in opinions, showing only that more-educated people and blacks are the most opposed to the tax cuts. The regression including all variables shows that ideology matters a lot to views on the 2003 tax cuts: liberals oppose and conservatives support the cuts, those with greater general knowledge tend to oppose them, and those who believe that taxes are too high tend to support the cuts, whereas those who view taxes as too low oppose them. Income is not a significant determinant—a sign that self-interest does not dominate attitudes on this issue, given that the tax cuts were highly regressive.

Similar probit regressions for attitudes on deficits—whether the deficit is seen as a major problem, a minor problem, or no problem—use the same

explanatory variables (with the obvious omission of the deficit attitude variable itself). Those who favor progressive taxation tend to be significantly worried about the deficit, and conservatives and nonpoliticals tend to be less worried than self-identified liberals. Using the subset of respondents who believe the deficit should be reduced, the authors estimate two probit models. One accounts for the view that higher taxes should be part of the solution, and the other for the view that the solution should include spending cuts. Although the signs on the income variable are consistent with self-interest having an influence, the variable is not significant in either regression. Ideology does matter, however. The belief that taxes are too high is significantly negatively related to support for raising taxes, and the belief that taxes are too low is significantly negatively related to support for cutting spending (as is self-identification as liberal).

Results of binary probit regressions for attitudes toward the minimum wage are generally as one would expect. Significant support for a higher minimum wage is found among those with lower incomes, the least educated, women, and blacks, as well as among respondents who knew at least approximately the current value of the minimum wage. Resistance to an increase is significant among those who believe a higher minimum wage costs jobs. Thus, on this issue, self-interest, economic beliefs, and knowledge all appear to be strong influences on opinion.

Turning to Social Security, the authors include as additional self-interest variables whether the respondent's parents are alive, and how important the respondent expects Social Security to be as a source of his or her own retirement income. The latter variable is significant in all the Social Security regressions. An ordered probit regression on whether respondents favor President Bush's proposal to introduce personal investment accounts within Social Security finds significant positive coefficients on being conservative, having more education, and being Hispanic. Opposition to personal accounts is significant among liberals and those who consider Social Security of at least some importance as a source of their future retirement income. Thus both ideology and self-interest matter, but neither general knowledge nor specific knowledge about the Bush proposal, the size of present benefits, or the Social Security deficit was a significant determinant of opinion. To analyze opinions on whether future Social Security deficits should be dealt with by raising payroll taxes, cutting benefits, or both, the authors use ordered probit regressions similar to those used for analyzing opinions on the overall budget deficit. The

regressions explain little of the dispersion in opinions, with neither ideology nor self-interest variables proving significant. There is opposition to cutting benefits among those who were aware of Bush's privatization proposal and among women and students.

The authors' last two reported regressions analyze opinions on health care. A binary probit model explaining whether or not respondents favor universal health coverage finds significant opposition from higher-income people, conservatives, and self-reported voters, but significant support from liberals and those who accurately estimated the share of the population that is presently uninsured. No other variable—neither any demographic variable nor one that indicated whether a family member was uninsured—was significant. Finally, a regression explaining support for a prescription drug benefit for Medicare found that blacks and more-educated people do not support adding such a benefit, whereas students do. Other demographic factors, ideology, and knowledge do not matter.

As a broad generalization of their findings, Blinder and Krueger conclude that ideology plays a stronger role in shaping public opinion on economic policy issues than either self-interest or general knowledge. This implies that their typical respondent differs markedly from the well-informed, nonideological, and extremely self-interested *homo economicus,* the representative agent assumed in most economic modeling. They see their findings as more consistent with the political science view that people use ideology in deciding what position to take when information is scarce. And they speculate that either confusion or, in some instances, generosity of spirit may help explain such behavior.