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FORMATION, AND CAPITALISM

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FISCAL POLICIES, CAPITAL  
FORMATION, AND CAPITALISM

ABSTRACT

This lecture examines the effects of tax policy and social security retirement benefits on capital accumulation and economic welfare.

The paper begins by examining how capital income taxes reduce the real return to savers and then discusses the welfare loss of capital income taxation relative to the alternatives of taxing consumption and labor income. The analysis shows that capital income taxes impose a very substantial dead weight loss even if they do not alter private saving. The first section of the paper also discusses the theory and empirical literature on the effect of capital income taxes on national saving.

The second part of the lecture deals with social security retirement benefits. In 1994, the aged members of the U.S. population will receive cash and medical benefits that cost the government \$530 billion or \$16,000 per person over age 65. The likely impact of these benefits on private saving and the empirical evidence on this subject are then reviewed. The second part of the paper concludes by discussing the welfare loss of unfunded social security benefits and the possibilities for alternative arrangements.

A final section discusses the implications of international capital flows for this analysis. As capital flows become more important, particularly in Europe, the response of government policy may be to compete for foreign capital inflows and to tax domestic savers more heavily. This would lead to a smaller total volume of capital.

The sharp decline in the net national saving rate -- from more than 8 percent of GDP in the United States in the 1970s to only 4.5 percent in the 1980s and from more than 14 percent of GDP in Europe in the 1970s to 9.9 percent in the 1980s -- may not only create lower real incomes and slower growth but may weaken capitalism itself. In the United States, a decade of slow growth has increased protectionist tendencies in international trade and led to a new interest in industrial policies that expand the role of the government in guiding the direction of technology and of private investment. In these ways, the government policies that discourage saving might make the Schumpeterian vision of a shift from private capitalism to a government-dominated economy more likely.

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**Fiscal Policies, Capital Formation, and Capitalism**  
**The 1994 Joseph Schumpeter Lecture of the European Economic Association.**

Martin Feldstein<sup>1</sup>

I am pleased to be here and honored by your invitation to deliver this year's Joseph Schumpeter Lecture. I am delighted to be doing so as my old friend Roger Guesnerie assumes the Presidency of the European Economic Association.

Joseph Schumpeter was a remarkable scholar and thinker whose life and work spanned Europe and the United States. Although he died nearly half a century ago, he continues to have a substantial -- indeed an increasing -- impact on economists and economic thinking. Our profession's growing interest in the process of technical change has recently led to a reawakened interest in Schumpeter's 1911 book, The Theory of Economic Development. Business cycle theorists are again examining the ideas about the relation between innovation waves and business cycles that Schumpeter presented in The Theory of Economic Development and then developed more fully in his specialized book Business Cycles (1939).

Joseph Schumpeter's professional life began in Vienna and ended at Harvard University. Since Schumpeter was the first incumbent of the chair that I now hold at Harvard (the George F. Baker professorship), I feel a special affinity for Schumpeter and a particular pleasure in your invitation to deliver this lecture in his honor.

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<sup>1</sup>George F. Baker Professor of Economics, Harvard University, and President of the National Bureau of Economic Research. These remarks were presented at the annual meeting of the European Economics Association in Maastricht, The Netherlands, on September 4, 1994.

Schumpeter worried about the fragility of capitalism, a subject that was the focus of his justly famous book, Socialism, Capitalism and Democracy (1942, 1950). If he were alive today, I think he would be relieved that some of the risks that he feared most -- high rates of inflation and the spread of world communism -- have not undermined our capitalist system during the half century since he wrote. Moreover, the experience in frontier industries like biotechnology in the 1980s and 1990s and computer electronics during the 1960s and 1970s has shown that the individual entrepreneur and the small firm continue to be important and have not, as Schumpeter feared, become outmoded because of the success of large industrial companies.

But if Schumpeter were alive today, I think he might worry that the viability of capitalism is now threatened by the very low rate of capital formation in the United States and the sharply declining rate of capital formation in Europe. In recent years, the overall net national saving rate of the United States -- including the saving of households, businesses and governments -- has fallen to less than 2.2 percent of GDP. For the decade of the 1980s as a whole, that net national saving rate was only 4.5 percent, down from saving rates of 10.0 percent and 8.2 percent in the 1960s and 1970s. For the European OECD countries as a group, net saving fell from 14.1 percent of GDP in the 1970s to 9.9 percent in the 1980s.<sup>2</sup>

The low and declining rate of capital formation and its relation to taxes and government

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<sup>2</sup>Private saving rates (i.e., rates that exclude government saving and deficits) have also fallen sharply. For the United States, the net private saving rate fell from 9.3 percent in the 1960s and 1970s to 7.7 percent in the 1980s and 6.3 percent during 1990 and 1991. Among the European OECD countries, the net private saving rates were approximately 11 percent in the 1960s and 1970s, fell below 10 percent in the 1980s and to less than 9 percent in the early 1990s. The sharp decline of the private saving rate in the United States forces us to reject the "nothing affects the saving rate" view that had been argued by Denison (1958) and David and Scadding (1974) on the basis of the apparent stability of the saving rate over previous decades.

spending are the subject of my remarks today.<sup>3</sup>

I believe that the saving rate in the United States is too low and that our tax and spending policies, particularly our social insurance spending, are the primary reason why it is so low. I will begin my remarks by discussing capital income taxes and will then turn to social security retirement programs. Although budget deficits continue to be a major cause of the low national saving rate in the United States and in many European countries, I will not discuss that important subject here. My focus will instead be on the impact of fiscal policies on private saving.

I will also not be discussing the relation between the rate of saving and the rate of economic growth. Some of the recent research on the theory of endogenous growth (e.g., Romer (1987) and Barro (1974)) suggests that a higher rate of saving might permanently raise the rate of economic growth. In contrast, the traditional neoclassical growth theory implies that a rise in the saving rate raises the equilibrium level of income, but not the equilibrium growth rate. But even in the traditional neoclassical theory, economic growth is higher during the very long period of transition to the higher equilibrium level of income. Although the desirability of a higher national saving rate would clearly be greater if it permanently raised the rate of economic growth, I will not make such an assumption. Nor will I assume that there are any externalities associated with a higher saving rate.<sup>4</sup>

The analysis that follows therefore does not argue that fiscal policies should be used to

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<sup>3</sup>Atkinson and Stiglitz (1980) and Sandmo (1985) provide excellent surveys of the analytic issues and evidence about the effect of taxes on saving and portfolio investments.

<sup>4</sup>Although Schumpeter emphasized the role of technical change as a determinant of economic growth, he recognized that capital accumulation raises productivity and saw capital as a necessary factor in the process of technical change itself (Schumpeter, 1911).

raise saving above the level that would prevail in the absence of government intervention. Instead, it shows that the existing government policies reduce saving and imply large deadweight losses. A shift in tax and transfer policies could raise the saving rate and reduce the deadweight loss of the tax system by getting the rate of saving closer to the rate that would have prevailed in the absence of any distorting effects of taxes or transfers.<sup>5</sup>

Although the focus of my remarks is the United States, much of what I say is clearly relevant to any economy. At the end of my remarks I will comment on some of the possible implications of the U.S. experience in the context of the future development of the European Union and on the broader relation of these issues to the viability of capitalism itself.

#### 1. Capital Income Taxes

Before discussing the effect of capital income taxes on capital accumulation and on the overall deadweight burden of the tax system, it is useful to focus on the ways in which capital income taxes in general, and the U.S. system of income taxes in particular, reduce the rate of return to savers.

The combination of the corporate income tax and personal taxes on interest, dividends and capital gains puts a substantial wedge between the pretax marginal product of capital and

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<sup>5</sup>Although the basic tax structures generally discourage private saving, governments also enact rules to encourage saving and thus to offset some of the adverse effects of existing tax structures. Poterba (1994) contains useful essays on saving incentives used in the G-7 countries. See also OECD (1994) for a survey of the recent tax policies in the OECD that affect savings.

the net return received by individual savers.<sup>6</sup> As a very rough approximation, the combination of a 34 percent federal corporate tax rate and a 40 percent federal personal tax rate on higher income individuals implies a 60 percent combined net tax rate. A 12 percent real pretax rate of return becomes a net return of only 4.8 percent. At a return of 12 percent, a dollar of saving today buys more than \$17 of consumption 25 years from now (at today's prices). When that annual rate of return is reduced to 4.8 percent, today's dollar of saving only buys about \$3.20 of consumption 25 years from now.

This calculation understates the tax effect because it ignores the fact that inflation distorts the measurement of capital income and raises the effective tax rate on the return to saving.<sup>7</sup> Consider, for example, the effect of inflation on the taxation of interest income. In the absence of inflation, the rate of interest on a long-term bond might be four percent. An individual with a 25 percent marginal tax rate would pay one percent of the four percent in taxes and have a real net yield of three percent. If an inflation rate of six percent raises the nominal interest rate to 10 percent, the 25 percent tax would rise to 2.5 percentage points, leaving a net of tax return of 7.5 percent and a net of tax real return of only 1.5 percent. Thus the combination of 6 percent inflation and a 25 percent statutory tax rate would produce an effective tax rate of 62.5 percent. For higher statutory rates or higher rates of inflation the effective tax rate can exceed 100 percent. But even a four percent inflation rate turns a 25 percent statutory rate into a 50

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<sup>6</sup>Schumpeter (1950, page 389) advocated eliminating this distortion by ending the double taxation of taxation at the corporate and individual levels (by not taxing corporate profits from which dividends are paid) and by permitting a deduction of saving when calculating the base for the personal income tax. He proposed making up the lost revenue with a national sales tax.

<sup>7</sup>Feldstein (1983c) brings together a number of papers that I have written on the interaction of inflation and taxes.

percent effective tax rate and a 40 percent statutory rate into an 80 percent effective tax rate.

Inflation also distorts the taxation of capital gains since taxes are levied on the nominal rise in asset values. An investor who bought a representative portfolio of U.S. common stocks in 1970 and sold it a decade later would have paid tax on a 43 percent nominal increase in value even though the real value of the portfolio had declined.

Finally, inflation distorts the measurement of profits at the corporate level in a variety of ways. The deduction of nominal interest payments reduces the effective tax rate on real profits (because companies are not required to reflect in income the reduction in the real value of their debt). In practice, however, this is more than outweighed for most companies by the way in which inflation causes depreciation to be understated and inventory profits to be overstated. On balance, the high rates of inflation in the United States in the 1970s raised the effective tax rate on corporate income substantially (Feldstein and Summers, 1979).

A major benefit of the substantial decline in inflation that has occurred in most of the OECD countries during the past decade and a half has therefore been to reduce the effective tax rate on capital income. Reducing the inflation rate from six percent to three percent can have a substantial effect on the real after tax reward to savers and therefore on the rate of saving and investment.

The relevance of this analysis to the debate about the neutrality of money is very clear. The interaction between inflation and the tax system means that the rate of monetary expansion has very substantial real effects on the economy. Although the neutrality of money and of the rate of growth of the money stock might be defended as a theoretical proposition in an economy without taxes, there can be no doubt about the non-neutrality of changes in money growth rates



in any actual economy with capital income taxes.

### 1.1 The Welfare Loss of Capital Income Taxation

The gap between the pretax marginal product of capital and the net aftertax return that savers earn measures the difference between the rate at which the economy transforms current consumption into future consumption and the relative value that consumers place on current and future consumption. This difference between the marginal rate of transformation and the consumers' marginal rate of substitution measures the welfare loss on the marginal dollar of reduced capital accumulation.

I frequently hear the argument that this gap does not matter because private saving does not appear to respond to taxes or to the real net rate of return.<sup>8</sup> That argument is simply wrong. There can be a very substantial dead weight loss even if private saving is completely unchanged. What matters is not the distortion in savings, but the distortion in consumption. The rate of interest determines the price of future consumption in terms of present consumption. A tax on capital income causes a deadweight loss to the extent that a compensated change in that tax causes a change in the timing of consumption.

Saving is not an argument of the individual's utility function. Saving should be thought of as the current expenditure on future consumption, i.e., its the product of the price of future consumption and the volume of future consumption. A tax on capital income that does not

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<sup>8</sup>See, for example, the recent OECD study on taxation and household saving (OECD, 1994).

change current private saving at all has a very substantial effect on future consumption.

Consider for example a 50 percent tax rate that reduces the saver's return from 12 percent to 6 percent. For a saver with a 25 year planning horizon (e.g., saving at age 55 to spend between ages 75 and 85), the tax raises the price of a dollar of future consumption from about 6 cents of foregone current consumption to about 23 cents. If current saving is unchanged, future consumption with the tax is reduced to only about one fourth of what it would have been without the tax. The deadweight loss in this case is likely to be very substantial.

In practice, of course, what matters is a comparison of the deadweight loss of a capital income tax and of the tax that would replace it. That comparison depends on the magnitude of the households' responses to the alternative taxes. Since individuals' labor supply is affected by taxation, the net welfare effect of shifting to a consumption tax (that excludes saving from the tax base) or a labor income tax (that excludes investment income from the tax base) depends on the sensitivities of saving and of labor supply to tax rates.

Although there is substantial controversy about both elasticities -- and surprisingly little attention to the important cross-elasticity that measures the effect of the capital income tax on labor supply -- essentially all of the evidence is consistent with the conclusion that shifting to a consumption tax or a labor income tax would reduce the overall deadweight loss of taxation. In particular, even with the very pessimistic assumption that saving would not respond at all to a shift from an income tax to a consumption tax, shifting to a consumption tax would reduce the total deadweight loss for any plausible labor supply response. (Feldstein, 1978).

## 1.2 The Effect of Capital Income Taxes on National Saving

While there is little doubt that shifting from an ordinary income tax to a consumption tax or a labor income tax would reduce the deadweight loss of the tax system, the magnitude of the rise in personal saving that would result is surprisingly uncertain. Moreover, although a consumption tax and a labor income tax that produce the same present value of taxes from an individual taxpayer define exactly the same lifetime budget constraint for the individual, and therefore imply the same optimal consumption at each date, they would have very different implications for the time path of private saving.

A compensated shift from an income tax to a consumption tax (i.e., a shift that leaves the taxpayer's lifetime utility unchanged) might increase current saving, while a similar shift to a labor income tax might reduce saving. This paradox is easy to resolve.<sup>9</sup> Think for a moment about a two period life cycle model in which individuals work, consume and save in the first period and then retire, consume and dissave in the second period. A traditional income tax is a combination of a labor income tax that collects revenue during the first period when the individual is working and a capital income tax that collects revenue in the second period when the individual receives interest and dividends on previous saving. A shift to a labor income tax therefore shifts the entire tax collection to the first period of life. Such a change could cause the individual to save less during the first period as well as consuming less. National saving would unambiguously increase (because the individual consumes less) but personal saving would decline. Consumption in retirement would rise despite the earlier decline in saving because the net return on that saving is higher than under a traditional income tax and no tax is payable during retirement.

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<sup>9</sup>This discussion follows Feldstein (1983c, chapter 1).

In contrast, a compensated shift from an income tax to a consumption tax would increase the tax during the second period of life (since the principal as well as the interest would be subject to tax as it is consumed) and would reduce the tax during the first period of life (since savings are excluded from the tax base.) The individual would have to save more during the first period than under an income tax just to maintain the same level of consumption in retirement.

The actual response of personal saving would of course reflect the individual utility functions and the change in the net rate of return implied by the tax change. What is unambiguous is that national saving would rise by the same amount under either a consumption tax or a labor income tax with the same present value of revenue.

But the reduced consumer saving in response to a shift to a labor income tax is more than an interesting paradox. It is also a warning that the favorable change in national saving that could result from replacing the existing capital income tax would be achieved only if the government maintained government spending unchanged and allowed the additional tax revenue to be reflected in an increased budget surplus.

The two very different responses of personal saving that can be predicted for shifts from an income tax to two alternative taxes that imply exactly the same net return to saving is an example of the difficulty of trying to measure the way that saving responds to changes in tax rates and tax rules. There have in fact been a large number of studies using aggregate time series data that have tried to measure the effect of variations in the tax rate on aggregate savings

or consumption.<sup>10</sup> Most of these studies have found that a higher net return either raises the saving rate or has no effect at all. There is however little agreement about the magnitude of the response and even about whether there is any response at all. I believe that this ambiguity is inevitable.

There are too many problems with this type of aggregate analysis for it to yield convincing estimates. The key variable -- the real after-tax rate of return -- cannot be observed and is very difficult to estimate. How should expected inflation be measured? What assets should individuals be assumed to hold? How should the income and substitution effects of special tax incentives like Individual Retirement Accounts be reflected in the aggregate measures? How should borrowing be treated since the interest rates faced by borrowers are often substantially different from the interest rates faced by savers? More generally, can the funding decisions of employer pensions simply be aggregated with household saving decisions?<sup>11</sup> If not, how should they be modeled and how should that be integrated with the behavior of individuals?

The experience in the United States during the past dozen years shows some of the additional difficulties of time series analysis of saving behavior. Real net of tax interest rates rose substantially, increasing the incentive to save. But households and pension funds also enjoyed a dramatic rise in the stock market, encouraging many individuals to increase their

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<sup>10</sup>See for example Blinder (1975), Boskin (1978), Evans (1983), Hall (1987), Makin (1987), Mankiw (1987) and Wright (1969). Smith (1989) provides a useful summary of this and related literature.

<sup>11</sup>Employer contributions to pension funds are treated by the national income accounts as a form of personal (household) saving. The accumulation of interest and dividend income inside pension accounts is also classified in the same way.

consumption and making it unnecessary for many firms to make contributions to their pension funds. The very high rates of inflation in the late 1970s and early 1980s had the effect of eroding the real value of many mortgages, leaving households substantially richer than they had expected to be. The sharp fall in personal income tax rates in 1981 and 1986 also left many people feeling that they were permanently richer. Banks and other lenders expanded greatly the number of people to whom credit cards were offered and banks developed the home equity loan that allows individuals to borrow conveniently (and in a tax deductible way) against the collateral in their homes at interest rates that are substantially lower than had previously been available for consumer credit. It is difficult to imagine how all of this could be properly accounted for in a time series regression in order to estimate the net effect of the change in real after tax interest rates.

Cross-section estimates based on microeconomic data do not seem any more promising. Since all households face the same menu of interest rates at each point in time, a cross-section saving regression would relate saving rates to individual tax rates. In fact, however, individuals in higher tax brackets invest their financial assets in very different forms than lower income individuals. (Feldstein, 1983c, chapter 10). As a result, the households with the highest marginal tax rates may also have the highest after tax real rates of return.

I believe that the most persuasive evidence on the link between tax rules and saving has been provided by the studies of individual retirement accounts and similar plans in the United States and Canada.<sup>12</sup> These various saving vehicles give consumption tax treatment to saving

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<sup>12</sup>These special accounts include the Individual Retirement Accounts and 401k plans in the United States and the Registered Retirement Accounts in Canada. The principal authors of these studies include Venti and Wise (see for example their 1990, 1991, 1992, and

placed in special accounts. The amount of saving eligible for this treatment at different income levels has varied over time, providing a source of variation that could be exploited for identification and estimation. The general finding with data from a variety of sources and time periods has been that these tax favored forms of saving do substantially increase household saving.

An increase in household saving does not necessarily mean an increase in national saving since the government loses tax revenue and, more fundamentally, since we are considering the experience with uncompensated tax changes. Despite this ambiguity in theory, the evidence indicates that individual retirement accounts cause a net reduction in consumption and therefore a net increase in national saving. The increase in personal saving more than offsets the decline in tax revenue. Moreover, this traditional analysis of the balance between revenue loss and increased personal saving understates the favorable effect of personal saving incentives on national saving because it fails to take into account the impact of the increased personal saving on corporate income and corporate taxes. When individual retirement accounts or other saving incentives induce individuals to save more, some of that saving increases the capital stock of the corporate sector. The future profits that flow from that increased corporate capital are subject to the corporate income tax (see Feldstein, 1992).

The evidence on the favorable effect of individual retirement accounts and similar saving incentives suggests that other tax reforms that raise the net return on saving might also increase

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1994), Feenberg and Skinner (1989), Summers and Carroll (1987), and Poterba, Venti and Wise (1992). There have of course been studies that disagree with these conclusions (e.g., Gale and Scholz (1994) and Engen, Gale and Scholz (1994)) but my reading of the evidence leaves little doubt about the conclusions that I summarize in the text.

the current saving rate. This presumption is reinforced by the fact that the majority of American households do essentially no saving and therefore have essentially no financial assets. (In 1988, the most recent year for which I have data, the median financial assets (excluding mortgage debt) of all American households headed by someone between 55 and 64 years old was only \$10,000 or the equivalent of about four months' income of a median income family.) This is important because, for households with no net assets or saving, a rise in the net rate of return has a positive substitution effect on saving but no offsetting income effect. A tax change that raises the net rate of return can either raise saving or leave it unchanged but cannot induce an increase in consumption and decline in saving (Feldstein and Tsiang, 1968). More generally, among net debtors and young individuals for whom the present value of future income exceeds current assets, the income and substitution effects are mutually reinforcing (Summers, 1981).

In short, a shift from the current income tax to a consumption tax or a labor income tax would increase national saving and reduce the deadweight loss of the overall tax system.<sup>13</sup>

## 2. Social Security Retirement Benefits

I turn now from the tax system to the other major aspect of fiscal policy that affects household saving and national capital accumulation: the government provision of social security retirement benefits.

In 1994, the United States will pay social security retirement benefits of about \$320 billion. In addition, government health care benefits to older Americans provided by the

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<sup>13</sup>For a detailed discussion of some of the practical issues in creating a national consumption tax, see U.S. Treasury (1977) and Bradford (1986).



Medicare and Medicaid programs will exceed \$210 billion. Together this amounts to 7.9 percent of GDP and about \$16,000 per person over age 65.

Social security wealth, i.e., the present actuarial value of the cash retirement benefits (i.e., excluding health benefits) for which current workers and retirees are eligible, is now about \$16 trillion or nearly two and a half times U.S. gross domestic product. It exceeds total private financial wealth and is equal to two-thirds of total private net worth in tangible and financial assets.

For an individual who has had average earnings over his working life and who retires with a dependent spouse at age 65, the social security retirement benefits replace approximately 63 percent of immediate preretirement income. Since most retirees do not have to pay income tax on these benefits, this is equivalent to replacing more than 80 percent of net pretax income for these average earners. Remarkably, the first year of benefits for the average retiree now exceeds the typical retiree's total financial assets at the time of retirement. After retirement, benefits are indexed to consumer prices to maintain their real value.

## 2.1 Social Security and Private Saving

These very generous social security benefits provide an important alternative to private saving for retirement. For any rational individual who would otherwise save for retirement, the simplest life cycle model suggests that an actuarially fair system of social security retirement benefits would displace an equal amount of private retirement accumulation. (The assumption that the social security system is actuarially fair is a reasonable approximation *at the level of the individual* because capital income taxes reduce the net return that individuals receive on private

savings to approximately the implicit rate of return that they earn on their social security tax contributions.) Moreover, in such an actuarially fair system, this is equivalent to saying that each dollar of social security taxes would reduce saving by a dollar.

This very simple analysis ignores the impact of social security on the expected age of retirement. Since the annual amount of social security benefits that an individual receives after age 65 in the United States is decreased if their earnings after 65 rise beyond a certain level,<sup>14</sup> the effect of social security is to induce earlier retirement than would otherwise occur. Individuals who are induced by social security to anticipate earlier retirement will want greater wealth at that retirement age than those who would not expect to retire until much later, if at all. The impact of the social security program on saving depends on the balance between this induced retirement effect leading to additional saving and the traditional wealth replacement effect (Feldstein, 1974). This induced retirement effect may well have been an important factor at an early stage in the history of social security but, now that fewer than 16 percent of men and 9 percent of women over age 65 are working, the wealth replacement effect is likely to dominate. Nevertheless, the existence of both effects means that the net impact of social security benefits on saving must be determined empirically.

For some economists, a second reason for doubting that households substitute social security benefits for private saving is the so-called Ricardian equivalence theory. If each couple plans to make a bequest to their children based on equating the marginal utility of their own

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<sup>14</sup>For individuals over age 65, earning above a certain threshold leads to a loss of 33 cents of benefits per additional dollar of earnings. When combined with regular federal and state income taxes, this implies an effective marginal tax rate over 65 percent so that less than one-third of marginal earnings are available for incremental spending.

consumption and the marginal utility to themselves of their children's consumption, retirees would use the social security benefits that they receive to compensate their children for the social security taxes that they must pay. If the benefits are used in this way, they would have no effect on saving (Barro, 1974).<sup>15</sup>

There is a large literature both defending and rejecting this ingenious theory. My own view is that the critical flaw in the Ricardian equivalence argument is the assumption that each couple has an operational bequest motive based on equating marginal utilities of consumption in both generations. This seems contrary not only to common observation, but also to economic logic. Since rising real incomes mean that most children will be better off than their parents, parents are likely to want to receive a transfer from their children rather than to make one. Experience shows, however, that it is easier to give than to receive. If children do not want to make a transfer to their parents, the parents' intergenerational utility maximization will end up with a corner solution in which there is no private intergenerational transfer. The social security program allows parents to achieve more of what they want in transferring assets from their children to themselves. There is no reason therefore for the parents to offset the transfer.

More important as a caveat on the strict one-for-one substitution of social security benefits for private saving than either induced retirement or desired bequests is the fact that not everyone is fully rational in making decisions about retirement saving. Some individuals might do no saving at all even in the absence of social security, expecting instead to depend on some combination of relatives, public welfare and luck to pay their bills if they have to stop working

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<sup>15</sup>This is not quite right if retirement behavior is affected. The combination of Ricardian equivalence "neutrality" and the effect on saving of induced retirement would be an increase in saving by each generation.

before they die. Indeed it is the existence of this short-sightedness that provides the basic rationale for social security retirement programs.

There is now a substantial body of econometric research attempting to estimate the magnitude of social security's impact on saving.<sup>16</sup> None of these studies is perfect. Like every subject in economics, there is a variety of different results. Some of the evidence is more persuasive than others, reflecting differences in the quality of the data, the behavioral specification of the estimated model, and the econometric method.

The studies that use cross-section data on individual households to relate private financial asset accumulation to anticipated social security benefits generally find that each dollar of social security wealth reduces private financial asset accumulation by a substantial amount although less than the one-for-one substitution that would be implied by the simplest life cycle model. Although there is a wide range of estimates, my reading of the evidence suggests that each dollar of social security wealth in the United States displaces about 50 cents of private wealth accumulation. Since aggregate social security wealth is somewhat larger than aggregate private financial wealth, a 50 percent displacement effect implies that social security wealth in the United States reduces private financial assets by more than one third of what it would otherwise be.

A time series analysis of the effect of social security wealth on aggregate consumption suggests that each dollar of social security wealth raises personal consumption spending (and therefore depresses personal saving) by about 2.5 cents. The \$16 trillion of social security

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<sup>16</sup>This research includes Feldstein (1974 and 1983), Feldstein and Pellechio (1979), Kotlikoff (1979), Barro and MacDondald (1979), Blinder, Gordon and Wise (1983), Diamond and Hausman (1984), and Samwick (1994).

wealth would therefore reduce personal saving in 1994 by about \$400 billion. Comparing this to the actual level of private saving (about \$300 billion in 1994) implies that social security wealth cuts private saving to less than 50 percent of what it would otherwise be.

These estimates of the saving displacement can be compared to the \$380 billion of taxes collected by the social security payroll tax. An additional \$160 billion of payroll taxes was collected for the Medicare program of health care for the aged. The estimated saving displacement is thus approximately equal to the taxes collected to finance the retirement program and to about 75 percent of the total payroll taxes collected for the retirement and health programs of the aged.

These calculations support the conclusion that the primary reason that most Americans accumulate little or no financial wealth is that they confidently anticipate receiving social security benefits that will allow them to maintain their preretirement level of consumption after they stop working. In effect, they act as if the taxes that they and their employers pay are a substitute for saving.

Given the magnitude of the social security benefits and the corresponding replacement rates, I find nothing surprising about this conclusion. The surprising thing to me is that Europeans continue to save despite the generosity of social security retirement programs in Europe.

One possible explanation of this difference, suggested to me some years ago by a European economist, is that members of the European public have less confidence than their American counterparts in the long-term financial promises of governments. The common experience of many generations in Europe before the current one was that inflation or war or

both destroyed the value of government bonds. The governments themselves were destroyed in the major countries of Europe and social programs had to be created anew by the new governments. Private saving retained its value if it was invested in real estate, family businesses or equities. Since those Europeans who are now in their fifties or older experienced the destruction and financial chaos of the Second World War, it would not be surprising if they instinctively preferred to be cautious about providing for their own old age. It would also not be surprising if that caution also got transferred from older parents who had experienced the consequences of war and of government collapse to their children, thus affecting the saving behavior of those who are now too young to have experienced the effects of World War II directly.

Nothing similar has happened in the United States. Indeed, the promise of social security benefits has become more secure in recent years. In the 1940s and 1950s it was not uncommon for some conservative politicians to attack social security and for the popular press to predict that it would not meet its long-term obligations. Both experience and political rhetoric have changed since then. Benefits were indexed in the early 1970s and the promise to provide indexed benefits was kept during the rapid inflation period of the late seventies and early eighties when the growth of social security benefits far outstripped the rise in wages. An actuarial projection that the social security program might lack the funds to meet its benefits in the future led to a bipartisan legislative agreement in 1982 that raised taxes enough to accumulate a fund that will keep growing into the next century. That the most conservative American president in at least 50 years supported a tax increase to protect future social security benefits could hardly have gone unnoticed by the American public. These events in the late 1970s and early 1980s

may well have contributed to the decline in the U.S. saving rate by increasing the public's confidence in the real value of future social security benefits.

## 2.2 The Welfare Loss of Unfunded Social Security Benefits

It was Paul Samuelson (1958) who first taught us that an unfunded social security program provides a positive rate of return equal to the rate of growth of its tax base. Because there are more workers in the current generation than there were in the previous generation and because the current workers earn higher wage rates than the workers of the previous generation, an unchanged social security payroll tax rate produces greater benefits per retiree than those retirees paid in taxes when they were working. That difference between the taxes paid by the workers and the benefits that they receive as retirees defines an implicit rate of return on those tax contributions.

Samuelson referred to this as a biological rate of return because he considered an economy with no technical change in which all of the return came from the increase in the population. In a brilliant but mischievous article, he showed that an unfunded social security program could raise welfare. I say mischievous because the economy that Samuelson considered had no capital stock and indeed no nonperishable goods. A social security system, or a system of fiat money, was therefore the only way in which individuals could provide for their old age.

In an actual economy, as I have emphasized, the unfunded social security program displaces private saving and real capital accumulation. The implication of the Samuelson analysis for such an economy is that using the tax revenues to provide unfunded pay-as-you-go benefits is equivalent to earning a rate of return equal to the rate of growth of the wage base.

Over the past several decades, the real growth of aggregate wages in the United States averaged about 3 percent per year. In contrast, the real pretax rate of return on investment in plant and equipment has been approximately 12 percent (Feldstein, Poterba, and Dicks-Mireaux, 1983.)

The 9 percent difference between these two rates of return is an indication of the annual welfare loss of using resources in this way. If the social security program reduces private saving by \$400 billion (about six percent of GDP), the 9 percent difference between the marginal product of capital and the implied yield on the pay-as-you-go transfer program represents an annual dead-weight loss of \$36 billion on this incremental decline of the capital stock.

Although the stream of annual welfare losses must be balanced against the gain to the initial generation of retirees who received a transfer without having to pay into the program at all,<sup>17</sup> for realistic parameter values the initial transfer is relatively unimportant in assessing the present value of the welfare loss of the unfunded social security program. The present value of the annual welfare losses far outweighs the gain to those who receive a transfer without having to contribute.

To see this, note that the annual welfare losses grow from the initial level at the rate of growth of the wage base. If the appropriate rate for discounting future losses is the marginal product of capital, the present value of those losses equals the value of the initial transfer and there is no net present value welfare loss.<sup>18</sup> But if the appropriate discount rate is less than the

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<sup>17</sup> In practice, such a "one time" gain occurs every time the program is expanded by raising the tax rate.

<sup>18</sup> Consider an unfunded social security program that begins with an initial tax of  $T$  dollars that is transferred to the then current retirees. If the marginal product of capital is  $r$  and the real growth rate of aggregate wages is  $g$  (the sum of the growth rates of the labor force and of productivity per worker), the annual welfare loss in year  $t$  is  $(r-g)T e^{gt}$  and the present value of this stream of welfare losses is  $\int_0^{\infty} (r-g)T e^{gt} e^{-dt} dt = (r-g)T / (d - g)$  where  $d$  is the appropriate discount rate. If  $r = d$ , the present



marginal product of capital, the present value of the annual losses exceeds the value of the initial transfer, implying a present value deadweight loss.

The appropriate discount rate for calculating the present value of the annual welfare losses should reflect households' marginal rate of substitution between current and future consumption. In an economy in which taxes do not put a wedge between the marginal product of capital and the net return to savers, the appropriate discount rate would be the marginal product of capital. In such an economy, there would be no first-order present-value deadweight loss from the savings distortion caused by an unfunded social security program.<sup>19</sup>

In the actual economy, however, capital income taxes put a substantial wedge between the marginal product of capital and the net return to which households equate their common marginal rate of substitution between present and future consumption. The distortion caused by capital income taxes implies that an unfunded social security program has a first-order welfare loss. The reason for this is clear. The capital income tax creates a wedge that makes an incremental dollar of investment worth more than an incremental dollar of consumption.

It might be argued that although individuals' marginal rates of substitution may be appropriate for aggregating welfare losses and other changes in consumption within a generation, they are not appropriate for comparisons across generations. If so, an ethically appropriate "social time preference" discount rate must be derived directly from consideration of the rate of growth of per capita consumption and the elasticity of the marginal utility function (Feldstein, 1977). With real per capita consumption growing at less than two percent a year, even a

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value of the losses equals the initial transfer and there is no net welfare loss.

<sup>19</sup>There would be a second-order loss to the extent that reducing the aggregate rate of investment increased the marginal product of capital .

relatively high marginal utility function elasticity of two would imply a social time preference rate of less than four percent. (Feldstein, 1964 and 1965).

Regardless of which way one obtains the appropriate discount rate, it is clear that the discount rate is very much less than the marginal product of capital. Since the annual welfare loss is proportional to the difference between the capital productivity and the wage growth rate, and this annual loss grows over time at the wage growth rate, the present value of the deadweight loss per initial dollar of tax is the ratio of the difference between the capital productivity and the wage growth rate to the difference between the discount rate and the wage growth rate.<sup>20</sup> To put rough numbers on these, a capital productivity of 12 percent, an aggregate wage growth rate of 3 percent and a discount rate of 4 percent would imply a present value deadweight loss of nine dollars per dollar of initial year transfer. After subtracting the value of the transfer itself, the net dead weight loss is therefore eight times the initial year transfer.<sup>21</sup> It follows also that, in any subsequent year, the present value of the net dead weight loss is also eight times the value of that year's transfer. For the U.S. economy, the net dead weight loss caused by the social security displacement of current and future private saving is, as of 1994, about \$3 trillion.

### 2.3 The Optimal Structure of Social Security Retirement Benefits

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<sup>20</sup>This is derived explicitly in footnote 18 above. Note that if the discount rate is less than the rate of growth of aggregate wages, the present value of future losses increases with time and the discounted present value sum of these future losses does not exist.

<sup>21</sup> The value of the initial transfer to those who pay no tax is relatively unimportant in assessing the welfare loss of the unfunded social security program because the appropriate discount rate is very close to the rate at which the annual dead weight loss grows.

There are many alternatives to a U.S.-style mandatory universal unfunded program of social security retirement benefits that could reduce this large deadweight loss. These options include systems that are mandatory but funded, including both government funded systems like that of Singapore and mandatory private participation systems like that of Chile. Closely related is the possibility of allowing individuals to avoid the mandatory tax if they participate in an approved private retirement program. A final possibility is to provide means tested benefits only to those who do not provide adequately for their old age.

Although these alternatives exist, the U.S. government and most other OECD governments still use a mandatory unfunded program for most if not all individuals in the labor force. It is worthwhile therefore to ask what the optimal level of benefits and taxes should be in such an unfunded program.

The justification for any mandatory social security retirement program is that some or all individuals do not have the foresight to provide adequately for their own retirement. The universal provision of benefits protects these short-sighted individuals but also forces the nation to accept a lower rate of return than would have been earned on the saving that the other more far-sighted individuals would otherwise have done.<sup>22</sup> The optimal level of benefits balances the protection to the short-sighted against the loss of national return caused by the depressed level of capital accumulation. Alternatively, if the labor force cannot be divided into the short-sighted and the rational but instead each of us is a bit short-sighted, the optimal level of social security benefits balances the gain from providing a higher level of retirement consumption

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<sup>22</sup>The individual savers would only have received the after-tax rate of return but the nation as a whole would have received the pretax rate of return. It is this pretax rate of return that is relevant for designing the optimal level of social security benefits.

against the loss from the reduction in capital accumulation.

I have explored this question with the help of a simple formal model (Feldstein, 1985) and concluded that the deadweight loss caused by reduced saving makes the optimal level of benefits very much less than the existing level. For example, if everyone suffers an equal degree of short-sightedness (in the sense that everyone discounts future utility by some common factor merely because of its futurity) and therefore saves less for retirement than would be optimal, it takes very considerable short-sightedness to justify any mandatory unfunded social security program at all.

The inefficiency of the traditional unfunded social security program implies that alternative methods of financing retirement consumption could achieve the current degree of protection with far less deadweight loss.

### 3. International Capital Flows

My comments until now have implicitly assumed that all of the saving that occurs in a country is invested in that same country. Many of my conclusions would remain qualitatively correct even if this assumption is not correct and savings flow across national borders with the same ease that they flow within each country. But the results would be quantitatively different to the extent that there are capital income taxes that are levied on investments (corporate taxes and property taxes) and not just on savers.

For the United States, the assumption that all saving remains at home and that additional investment in plant and equipment can only be financed by domestic saving is much closer to the truth than the alternative assumption of a borderless global capital market. The United States

has the lowest saving rate in the OECD and also has had the lowest rate of domestic investment. During the 1980s, the decline in private saving and the rise in the budget deficit did lead to a temporary rise in the capital inflow from the rest of the world. At its peak, this inflow reached 3.5 percent of GDP. But despite the persistence of the low domestic saving rate, the capital inflow from the rest of the world has been shrinking and is now down to about 1.5 percent of GDP.

The U.S. experience is quite consistent with the general relation between domestic savings and domestic investment that Charles Horioka and I found more than 15 years ago and that has been verified in a large number of studies for different time periods and countries since then.<sup>23</sup> That research indicates that about 85 percent of each incremental dollar of a sustained increase in domestic saving remains in the country of origin and only about 15 percent is invested abroad.

These statistical studies are also consistent with what we know about investors' portfolios. In the United States and in Japan more than 90 percent of the institutional portfolios are invested in domestic securities (French and Poterba, 1991). Much of the apparent gross capital flows that we observe in daily markets are actually part of offsetting transactions or are hedged in such a way that no cross-border capital flows actually occur.

In my judgement, these high savings retention coefficients no longer reflect legal restrictions on international capital mobility. Although some such restrictions remain, the primary reason why capital tends to remain in the country of origin is the preferences of the

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<sup>23</sup> Mussa and Goldstein (1993) and Obstfeldt (1993) contain very useful recent analytic surveys of that research.

owners of that capital and, at least as important in practice, of their agents who are responsible for managing institutional pools of capital. The combination of risk aversion, ignorance and prudence causes capital to remain where the initial saving occurs.<sup>24</sup>

The tendency of capital to remain in the country in which saving occurs may change in the future. Although there is no clear evidence that the savings retention coefficient was lower in the past decade than in earlier years, the growing sophistication of institutional investors may over time lead to much more crossborder portfolio investing. Such an evolution would have implications not only for the welfare analysis that I have presented but also for the incentives that countries have to encourage domestic saving.

When domestic saving is invested abroad in a way that expands the foreign capital stock, foreign governments collect corporate income taxes that would otherwise have been collected by the domestic government.<sup>25</sup> If the funds that are saved domestically become part of the global investment pool where they earn a return net of foreign corporate taxes, the domestic government has less reason to encourage domestic saving. Moreover, the level of domestic investment and therefore the domestic marginal product of labor would be independent of the domestic saving rate if funds flow in freely from the rest of the world. This gives the domestic government an incentive to compete for foreign funds on which the nation earns the full pretax rate of return.

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<sup>24</sup> See Feldstein (1994c) for a discussion of why capital is mobile but does not move and of some of the implications of the de facto domestic stickiness of national saving for tax policy.

<sup>25</sup> For a discussion of the impact of foreign direct investment on domestic investment and of the implications of foreign leverage for domestic national income, see Feldstein (1994a, 1994b).

The combination of these incentives might lead to higher taxes on domestic savers and to increased fiscal incentives for inbound foreign direct investment. Of course, as each country raises taxes on its domestic savers, the global saving rate would be depressed.

#### 4. Looking Ahead

The capital market within Europe is already more effectively integrated than the global capital market. Even for the 1980s, the saving retention coefficient estimated for just the European members of the OECD was smaller than the coefficient for the OECD as a whole (Feldstein and Bacchetta, 1991).<sup>26</sup> The relative stability in more recent years of the exchange rates among France, Germany, Belgium, the Netherlands and Austria may have increased the degree of capital market integration among these countries.

If the future brings greater currency stability within Europe (or among a broader subset of countries) and even lower barriers to cross border portfolio investments (e.g., reduced restrictions on mutual funds and pensions), there may well be a greater volume of cross border portfolio investments that are not hedged and that lead to actual net cross border capital flows. European governments may accommodate this by shifting taxation from direct taxes at the level of the individual to taxation of all domestic portfolio income at source, regardless of the country of the owner of the capital. Alternatively, the European governments may coordinate tax policy and financial reporting to reduce tax-motivated cross border investments in order to raise the

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<sup>26</sup> The widely observed movement of individual portfolio investments across European borders to evade tax should not however be interpreted as true cross border capital movements. Much of the tax-motivated investment flows are hedged by the receiving institutions in a way that offsets the initial cross border flows (Feldstein, 1994c).

effective tax rate on the savings of their own citizens. The former strategy would probably lead to a higher overall saving rate for Europe while the latter would exacerbate the last decade's decline in saving.

The coming decade may also see a very different attitude of the European public to social security retirement benefits and to national debt. As more years pass with the governments meeting their financial obligations, the uncertainty of future social security payments and of future debt servicing will diminish. Confidence would also be increased if countries do take steps to lower their deficit and debt levels in line with the convergence conditions specified in the Maastricht treaty. Although such improved performance would clearly be welcome, the resulting increase in the public's confidence in government fiscal promises might be reflected in further declines in the European private saving rates.

I may of course exaggerate the risk that saving will continue to decline in Europe and that it will not recover from the recent low level in the United States. But there is no denying the dramatic declines in the saving rates that have taken place on both sides of the Atlantic during the past decade and a half. There is no indication that that decline is reversing itself.

A continued low rate of saving in Europe and the United States would mean low investment, a substantial deadweight loss and a lower rate of growth for a sustained period of time. There is also a danger that a lack of private capital and the resulting decreased rate of economic growth would lead to a weakening of capitalism itself. With less private saving, there could be a demand for greater infusions of government funds into private industry. In the United States, we have seen that a decade of slow growth has increased protectionist tendencies in international trade and has led to a new interest in so-called industrial policies that expand the



role of the government in guiding the direction of technology and of private investment. In these ways, the Schumpeterian vision of a shift from private capitalism to a government dominated economy might become more likely.

If people fear a continued low rate of income growth, they may look more and more to governments for solutions. Instead of correcting the tax and transfer problems that have contributed to the low rate of capital formation and growth, the natural tendency of the political process may be to emphasize policies that appear to have favorable short-term effects but that ignore the longer term consequences. It is of course just such political myopia that has created the anti-saving policies that I have discussed today.

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