

**Toward a General Theory  
of Consumerism:  
Reflections on Keynes's  
*Economic Possibilities for  
our Grandchildren***

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Keynes's *Economic Possibilities for our Grandchildren* is as fascinating for the hidden assumptions about the nature of man as it is for the predictions—clearly wrong—about the evolution of the economy. Keynes suggests that because of the huge improvements in technological possibilities and accumulation of capital, the *economic problem*—providing the necessities of life—will be solved, opening up a new world, in which each of us could devote our energies to higher callings. He suggests moreover that many of the conventions and institutions of society have arisen to solve the economic problem; shorn of those needs, a whole new set of institutions and social conventions may arise.

Keynes underestimated, by an order of magnitude, the pace of innovation as well as the rate at which capital could be accumulated—and invested well. The world had never seen anything like China, with its saving rate in excess of 40 percent and with growth rates averaging 9.7 percent for three decades. Even the more modest global growth rates of 3 to 4 percent that emerged in the years after World War II and persisted through the early 1970s, and which once again occurred, at least in the United States, beginning in the early 1990s, were unprecedented. Had Keynes been right about what such increases in output per capita portended, it is clear that the new world he envisioned would already be on the horizon.

The *possibility* of solving the economic problem (as he called it) is, of course, already on hand. If the more than \$48 trillion dollar global GDP<sup>1</sup> were divided equally among the earth's some six and a half billion inhabitants, each would have some \$7,000, more than enough to bring everyone out of poverty. (That number is even greater than America's poverty line for a family of 4.<sup>2</sup>) The key issue—to which Keynes repeatedly paid insufficient attention—is that of distribution.

While most of those in the advanced industrial countries have more than enough to meet their economic needs, some 50 percent of the world still lives on less than two dollars a day, some one billion still live on less than a dollar a day.<sup>3</sup> These individuals confront the economic problem of subsistence day in and day out; our society has failed to provide an answer for them.

How has the rest of the world confronted the challenge of the elimination of "the economic problem"? It is clear that the fundamental changes that Keynes seems to have predicted have not occurred. To be sure, institutions and practices have changed; for instance, Keynesian economics itself has led to a major shift in the conduct of macroeconomic policy. But the evolutionary changes that have occurred do not relate to the "solution" of the economic problem; rather, they have focused on how we can produce more goods more efficiently and how we can deliver them more efficiently. The underlying economic "model" has remained essentially unchanged.<sup>4</sup>

### What Is to Be Explained?

If individuals don't "need" the income that they earn to meet their basic economic needs, what will people do with their *potential* leisure? Keynes strikes a pessimistic note, as he refers to those who have been relieved of economic burdens, "the wives of the well-to-do classes, unfortunate women... who [have been] quite unable to find anything more amusing." He did not, of course, anticipate the advent of television, which manages to absorb a huge chunk of the waking hours of both those who are gainfully employed and those who are not.<sup>5</sup>

The puzzle suggested by Keynes's paper, though, is not so much what people have done with their leisure, but why they have chosen to enjoy so little leisure. Why do people work as hard and as long as they do? Why have increased wages and wealth translated mostly into increased goods, not into increased leisure? Keynes seems to have overestimated the desire for leisure, especially in the United States, where people appear to be working about the same number of hours as thirty years ago: average weekly hours worked by persons of working age in the United States went from 24 in 1970 to 25 in 2004.<sup>6</sup> A particular aspect of this puzzle is the growing differences in leisure within the advanced industrial countries (e.g., between the United States and Sweden). While it is hard to get fully comparable data, it appears that

Americans work far more hours than do comparable individuals in other countries at similar levels of development. Especially striking are the changes that have occurred over the last third of a century. In 1970, there was little difference between the United States and France or Germany or the United Kingdom; by 2000, Americans were working some 40 percent more than the French, Italians or Belgians.<sup>7</sup>

Not only do Europeans work less today than Americans, but they also vacation more. The French take an average of seven weeks of vacation a year (including holidays) while the Germans take close to eight. The average in the United States is four weeks.<sup>8</sup>

Is it possible that a society could go down a path of "excess consumerism"? Is it possible that, of two societies, initially similar, one ends up consuming more, the other less? In this chapter, I argue that at, best, the standard model of consumer behavior provides little insight into these fundamental questions; at worst, what it says about the efficiency of free market outcomes is misleading. I say *fundamental* because there are few issues of more import than how society responds to the opportunities that improvements of technology have afforded. America, as a whole, has responded in ways that seem to have made less of a difference to the lives of the vast majority of its citizens than Keynes suggested; solving the economic problem simply hasn't made that much of a difference. In some ways, as I suggest, individuals and families may even be worse off. Problems of epidemic levels of obesity and of individuals working so hard to get what they view as the basics of life for their families *that they have no time to spend with their families* suggests dysfunctional behavior. If Galbraith could write about excessive consumption in 1958 in *Affluent Society*,<sup>9</sup> what would he say about America today? As much as economists may be loath to form judgments—are people really consuming more and enjoying leisure less than they *should*?—it is hard not to entertain the possibility that something is wrong, that there is something here to be explained.

In some of the simpler models we explore here, there are clear market failures where government interventions—such as mandatory vacations—would lead to Pareto improvements.

But even more strongly, once we open up the possibility that preferences are endogenous, there is no presumption that private market solutions have any optimality properties. By the same token, while the kinds of policy prescriptions, calling for government interventions, that arise naturally from our analysis may not be as theoretically tight

as those that arise in the context of market failures with well defined preferences, at least in some instances the case for collective action is compelling.

Before turning to alternative explanations for the seeming anomalies in the patterns of enjoyment of leisure, I want to discuss the possibility that there is in fact nothing to be explained, that the seeming anomalies are either perfectly consistent with standard economic theory or a result of a failure to look at the data appropriately.

### **There Is Nothing to Be Explained**

Keynes anticipated that some energy would be devoted to helping those who are less fortunate, for whom the economic problem still remains. As he put it, "it will remain reasonable to be economically purposive for others after it has ceased to be reasonable for itself." Given the huge inequalities in global income, there is ample scope for such "charitable" drives. Such concerns have played out strongly in many parts of Europe—with some countries giving 1 percent or more of their income to the developing world. But in the United States and most other advanced industrial countries, these concerns about the poor do not provide much of an explanation for why individuals work as much as they do. For instance, in 2005, the United States gave 0.22 percent of its GDP for development assistance. But even these paltry amounts include money spent for debt forgiveness (forgiving debts that would not in any case have been repaid) and assistance to Iraq and Afghanistan—expenditures that are more appropriately viewed as part of the war on those countries than humanitarian assistance.

Keynes's seeming presumption in *Economic Possibilities for our Grandchildren* that leisure would increase as wages and wealth increase is based on the hypothesis that most consumption is directed at meeting our economic needs—food, clothing, and shelter. He seems to believe diminishing returns would rapidly set in in these basic needs—far more rapidly than the marginal value of leisure. Just as Keynes seems to have overestimated the magnitude of charitable urges, so too he seems to have overestimated the marginal value of leisure and underestimated the marginal value of goods.

Some of our increased expenditure does go for more luxurious ways of meeting the same desires (economic "needs") that Keynes thought would be fully satisfied—and much of this chapter is devoted to explaining why. Still, we should recognize that *some* expenditures

are directed at improving health and to goods that are *complements* to leisure (vacations). More money is being spent on education and "culture."

Two further factors complicate this analysis. The first is that household formation is endogenous. Some of the benefits of increased productivity have been "enjoyed" in the form of more households with only one working-age person. This change may be affected, however, by the drive for "excessive consumerism"; as both adults in the family work more and share less time together, family ties may weaken.

Second, one would expect to see the decision to enjoy more leisure reflected both in more leisure during working years and in fewer working years (entering the labor force at a later date, leaving it at an earlier date). Thus one would expect to see a decline in the fraction of those of working age in the labor force (offset, at least in part, by increased female labor force participation).

Standard economic models do not prejudge the relative rates at which the marginal utility of goods or leisure diminish. That is why standard economic theory makes no prediction as to whether increases in wages will lead to more or less work (leisure), and it eschews paternalistic judgments about the merits of how individuals spend their time and money. The fact that higher productivity individuals work as much as lower productivity individuals is simply the consequence of offsetting income and substitution effects.

Some of the increased expenditures are simply a move from home production to market production, motivated in part by changes in technology which have made market production more efficient. (See appendix A.) At the same time, the standard statistics underestimate the true level of leisure. Some studies of how people spend their time attempt to differentiate between true leisure and home production.<sup>10</sup> Time spent cleaning the house or washing dishes is typically not viewed to be pleasurable, and changes in technology have improved the efficiency with which these tasks can be done: dishwashers have reduced the time required for washing dishes, washing machines and dryers for washing clothes. As a result the amount of discretionary time available at home (or not at work) seems to have increased far more than the time spent not working on a job.

Further reflection makes it clear that the usual frame with which economists approach the problem of the allocation between work and leisure (even within the expanded framework that identifies separately home production and consumption) is fundamentally flawed, because

it does not recognize the enjoyment of work (whether in the market or at home). The standard model views work as a "cost," yet work gives meaning to life for many individuals. The distinction is at best blurred. For a farmer to toil in his fields is work, but for a middle-class American or European to toil in his garden is pleasure. Cooking may be toil, but for many individuals—and for almost all individuals on occasion—cooking is a pleasure. Similarly, commuting to work (which would presumably normally be added to market hours worked) may entail some elements of leisure (if individuals can read for pleasure), but the nature may change over time (as individuals conduct business over the cell phone or as crowded trains make commuting less pleasurable). As a result I have not attached much weight to the studies emphasizing that because the number of hours of home work has been reduced, true leisure has increased. (In addition this finding cannot explain the differences between the United States and Europe, since the same changes in the technologies of home production have occurred in both regions.)

Is writing this chapter toil or leisure? There is no direct financial return. I do it because thinking about these ideas gives me pleasure. Thinking about the puzzles—and trying to articulate the answers in ways that are clear to others—is hard work; yet doing so gives me enormous pleasure, which clearly exceeds the "work," for otherwise I would not be doing this.

Even in jobs that are themselves not very fulfilling, there can be considerable pleasure in the social interactions that occur at work. And even when individuals are sitting at their desks, they may be playing a game of solitaire on their computer, pleurably daydreaming, or talking with friends on the phone. Difficult to observe, and even more difficult to quantify, changes in the nature of these pleasurable aspects of work—and differences between these aspects of work in Europe and the United States—could partially account for observed patterns of hours spent at work.<sup>11</sup>

If jobs were easily divisible, this observation would have little consequence: individuals would work to the point where work turned from a marginal benefit to a marginal cost, and the usual calculus would apply. The fact that individuals enjoy work would mean, of course, that as wages increase, the amount of time spent working might not decrease, even if consumption itself was subject to rapidly diminishing marginal utility. Labor supply will not diminish below the critical level where the marginal disutility of work is zero, and as labor approaches

that critical level, changes in wages may have an increasingly small impact on leisure.

If, however, there are indivisibilities in work (increasing returns to scale)—it is difficult, for instance, for the job of CEO to be divided between two individuals—then, in competitive markets, individuals may, in effect, bid for jobs, and the winning bid may entail low levels of leisure. As productivity increases, the winning bids may, however, entail little changes in hours; indeed, if the costs of coordination increase as the complexity of the economy increases, the winning bid may actually involve more hours, with an offsetting increase in compensation.

This analysis helps explain why we might not expect *measured* leisure to increase, even as technologies improve, but it has a further import: it will be difficult to measure true leisure. Given the pleasures associated with work—both at home and in the “market”—the distinction between work and pleasure is not always well defined. Yet for many workers in our economy—those whose jobs are marked by drudgery or backbreaking physical exertion—it is not the enjoyment of work that drives them to work every day, and, for these, the puzzle is still there: Why are so many Americans working so long and so hard?

There is another explanation for why the demand for leisure may not have increased in the way that Keynes seems to have anticipated: wages, at least in the United States, *for most workers*, have not in fact increased. Median wages for American males in their thirties (a good predictor of lifetime incomes) were indeed lower in 2004 than they were in 1974.<sup>12</sup> Higher real wages might have led to more leisure; the problem, however, was that for most workers, real wages simply were not increasing. More generally, aggregate (average) levels of leisure depend on the distribution of income/wealth. Economic theory has no clear prediction on whether an increase in dispersion—such as the United States has experienced in the last third of a century—can lead to an increase or decrease in average (aggregate) leisure.<sup>13</sup>

Finally, demand for leisure may not have increased as Keynes predicted because labor force participation decisions are affected by social mores, and changes in social mores occur differently in different countries. One of the large differences (between the United States today and thirty years ago) is in female labor force participation.<sup>14</sup> It has become the norm for women to participate in the labor force, which is evidence of increased gender equality. Lowering of barriers to women

working would be expected to lead to more labor force participation. This may be true even more so if there is pleasure in work, at least up to some level. In this view, we should be celebrating the increase in hours worked by women. There is, however, one telling criticism of this euphoric interpretation: lowering of the barriers could be viewed as a further increase in household productivity, an outward movement in their opportunity set, one that would normally be expected to lead to more consumption of leisure by the household, not less consumption. (In any case, differences in female labor force participation do not explain differences between the United States and Europe.<sup>15</sup>)

### There Is Something to Be Explained

The arguments in the preceding paragraphs have explained why it is possible to reconcile the failure for leisure to increase as much as Keynes's analysis would have suggested with standard economic theory. As is so often the case, standard theory seems to suggest that *anything is possible*. In that sense it has little predictive power. Keynes can be thought of as putting forth particular hypotheses concerning the shapes of preference functions; what is clear is that the observed behavior seems inconsistent with these hypotheses. We have, evidently, *not* solved the economic problem. Human desire for material goods is clearly insatiable. To be sure, one can only eat so many calories but can consume calories that are more expensive (e.g., meat vs. vegetables), and may get increased enjoyment out of these more expensive calories than out of the less expensive calories.

There is, however, still something to be explained. Increased wages might lead individuals to work a little more (or, as Keynes suggested, much less), but it does not seem plausible that it would lead them to work so much more that the quality of their life suffers. Yet leisure has diminished to the point that we are developing a "harried working class," with both parents working so hard—supposedly to enhance the quality of life with their families—that they have no time to share with their families.<sup>16</sup> While data on "happiness" remain controversial, studies suggest that the increased productivity in America's economy has not resulted in greater happiness.<sup>17</sup>

Equally troubling are the seeming trade-offs that Americans are making: they often seem to work hard for goods of which the value is hard to ascertain. Like perhaps other parts of Americans' needs—such



as the need of even city dwellers to have SUV vehicles, four-wheel-drive cars designed for off-road traveling—these are just made-up needs, to compensate for the disappearance of real economic needs, part of America's approach to dealing with "solving the economic problem."

The statistics suggesting very high real incomes may indeed themselves be somewhat misleading. I wrote earlier about the great strides in efficiency—efficiency in production. But efficiency in production need not correspond to *systemic* efficiency, nor efficiency in consumption. Building superhighways that encourage individuals to travel long distances to work, in turn emitting high levels of pollution, may not represent a "systemically" efficient system of residential location cum production. Solving efficiently these systemic problems is enormously difficult. When we do not solve them efficiently—and markets typically do not—then increases in measured GDP per capita may grossly overstate increases in standards of living.

One aspect of America's pattern of living that may be associated with less efficient production of true consumption goods may be related to the deterioration in communal life.<sup>18</sup> Mothers used to play a more active role in their children's schools, enhancing the quality of these and other *public* or *communal* goods. As women have increasingly joined the labor force, such participation has declined, with a resulting decline in the quality of public schools.<sup>19</sup> Parents as a result compensate by spending more on private education (as a substitute or complement of public schools), but this increases their demand for income. A vicious circle is created—there may be multiple equilibria, one with high communal participation and lower labor force participation and one with lower communal participation and higher labor force participation. The level of well-being may be higher in the former, though the *measured* GDP would be higher in the latter.

A considerable part of America's high GDP is spent, of course, in ways that do not contribute to a higher standard of living, and in that sense (as in so many other ways) GDP is a misleading measure of well-being. America's expenditures on arms may make the world safer, but arguably, much of this money is wasted. But even if well-spent, it is an investment to maintain the country's standard of living in the future, not part of today's current consumption.

At home, America has been spending huge amounts on prisons. From 1980 to the present day the proportion of state spending on corrections has risen relative to state spending on higher education, with

Massachusetts spending more on prisons than on higher education in 2004.<sup>20</sup> These investments are again included in GDP, but they are symptoms of a dysfunctional society.

Consuming inefficiently (in the broad sense just discussed) is one way to respond to the challenges posed by ever increasing production efficiency. There are clearly better ways.

In the remainder of this essay, I will assume, however, that Americans' real consumption is higher and real leisure is lower than Keynes's analysis would have predicted. I ask, how can we reconcile this American "consumerism" with models of rational behavior?

### *Conventional and Unconventional Interpretations of the US–EU Comparison*

Just as, with some work, one might be able to reconcile the failure of leisure to increase to the extent predicted by Keynes in the United States with the standard model, so too can one attempt to use standard models to explain the lower levels of consumption of leisure in the United States relative to Europe. In US–EU comparison the anomaly is not just that America's seemingly higher wages have not resulted in substantially more leisure but actually in less leisure.

One explanation that critics of the European economic model often raise is that taxes discourage work. But the puzzle is that individuals at similar (*after-tax*) wages seem to work less in Europe, enjoying, for instance, far longer vacations.

Again, with some work, one might be able partially to reconcile these results with conventional theory. For instance, there could be wealth effects, but by most accounts the average American is wealthier than the average European. However, the provision of social services (like health care) may be higher for the average European, and this should have the opposite effect. Countering this argument is the fact that most Americans receive health care benefits from their employer, and these benefits do not depend on the hours worked. The fact that one must work to get these benefits might explain higher labor force participation but not higher hours of those in the labor force.<sup>21</sup>

Some European countries (most notably Sweden) provide assistance to women participating in the labor force, for instance, with generous family leave policies and public support for day care. One would have expected that the provision of these public goods, which are complements to work, would have resulted in *higher* labor force participation

**Table 3.1**  
Controls

	GDP per person		GDP per hour		Hours per person	
	1970	2000	1970	2000	1970	2000
United States	100	100	100	100	100	100
EU-15	69	70	65	91	101	77
France	73	71	73	105	99	67

Source: Blanchard, Olivier, 2004, The economic future of Europe. NBER working paper 10310.

in Europe. While it is true that Sweden, which has been most generous with these benefits, does have a higher labor force participation rate than that of other European countries, female labor force participation for Europe as a whole is less than that of the United States.

But the more telling reason that the standard theory is unpersuasive is seen from table 3.1. The differences in levels and changes over time between Europe in general, and France in particular, and the US standard cross-sectional labor supply studies<sup>22</sup> (as well as other countries) suggest low labor supply elasticities, with income and substitution effects basically offsetting each other. If this is correct, *and* if there were no differences in preferences between Europeans and Americans, then one should expect to see little difference in levels of leisure either across time or between countries.

In 1970, there was little difference in work between European and American workers, even though productivity was markedly lower in Europe. If taxes were then higher in Europe than in the United States, the discrepancy in wages was even greater. The small difference in labor supply is consistent with the standard cross-sectional results on low labor supply elasticities.

It is what has happened since then that presents a puzzle. Relative productivity in Europe has increased (with total taxes on labor that have remained largely unchanged since the early 1970s).<sup>23</sup> It is clearly difficult to reconcile this result with the hypothesis of a low labor supply elasticity. Why have Europeans responded to rising incomes with a much larger increase in leisure than Americans? By the same token, one cannot explain current differences in work by differences in after-tax wages.<sup>24</sup> Indeed the general argument put forward by Alesina et al. and Prescott<sup>25</sup> that taxes, unions, and regulation explain the lower supply of labor is inconsistent with the observation, noted by Nickell, that

hours worked in Scandinavia are higher than in much of the rest of the OECD, even though taxes are higher, unions stronger, and regulations more pervasive. As he concludes, there is something to be explained.

There is a parallel puzzle in the difference between cross-sectional and time series data for the United States. In 1965, males with less or greater than twelve years of education worked almost the same number of hours. By 2003, the more educated Americans were working some 15 percent more than the less educated,<sup>26</sup> consistent with a strong positive elasticity of labor supply, a result hard to reconcile with the vast majority of empirical studies which show a low, or negative, labor supply elasticity.<sup>27</sup> (This result is even harder to explain given the progressive nature of the income tax, which results in an implied positive income in the budget constraint; this in turn should mean a *higher* enjoyment of leisure.<sup>28</sup>)

### *Alternative Hypotheses*

In the discussion below, I explore several alternative hypotheses for why rising wages might not lead to more leisure—and might not even lead to increased well-being—why different societies, with similar preferences, might make different choices, and why different societies, initially similar, might evolve in different directions, with one society ending up with a strong preference for leisure and another for consuming material goods.

Hypothesis 1 concerns what happens if individuals' sense of well-being depends not so much on their actual level of consumption, but on their consumption relative to others. In this Veblenesque world it is predictable that increases in wages do not lead to increased leisure.<sup>29</sup> A focus on *relative* consumption gives rise to a rat race, and changing wages changes the terms of the rat race: everybody simply works the same, enjoying neither more nor less leisure. They get more goods, but the increased consumption of goods bring no greater sense of happiness or well-being, for as their consumption increases, so does everyone's consumption around them.

Americans have come to take as necessities what those elsewhere (and their own parents) might have taken as luxuries. They do not want to see their children deprived of \$150 Nike shoes—not because life with a \$30 pair of shoes is so terrible but because their children will feel deprived if all their classmates have \$150 shoes, and they do not.

Hypothesis 2 shifts the focus from consumption to leisure: the full enjoyment of leisure requires sharing that leisure with other members of one's family/community, which gives rise to a coordination problem. The failure to solve this coordination problem effectively can lead to an equilibrium with lower levels of leisure—and lower levels of well-being.

Hypothesis 3 presents the third, and perhaps most radical, view: preferences are, in one sense or another, endogenous. Our experiences shape our preferences. We can learn how to consume better, or we can learn how to enjoy leisure better. But our preferences are also affected by education and advertising. There are biases in market forces: there are stronger incentives to "distort" preferences in certain directions, and these market forces have played a relatively larger role in America than elsewhere.

The analysis of this chapter explains why two societies that are initially similar might diverge, and it describes the dynamics of divergence. In some cases historical circumstances help explain the initial divergence. (One of the important conclusions of the analysis is that history matters, not just in the short run but in the long run.)<sup>30</sup> But in other cases no adequate explanation is possible for the seeming differences, such as why should one society be more sensitive to relative consumption than others. Then, again, why did one society manage to solve the leisure coordination problem better than others? While the analysis of the dynamics of divergence goes a little beyond the boundaries of standard economics (which focuses on individuals with fixed individualistic preferences), providing fuller answers to these questions takes us still further afield.

### **The Relative Consumption Hypothesis**

The American model<sup>31</sup> works particularly well in a world in which people are especially attuned to differences in income. If one gets one's satisfaction out of having a larger house than one's neighbors, there is no limit to the size of housing that one can desire.

Indeed, in appendix B, I show that under the extreme relative consumption hypothesis (where well-being depends *only* on relative consumption), changes in wages have no effect on leisure; individuals work just as hard as before (and this is true regardless of the strength of ordinary income and substitution effects). Higher wages are always simply reflected in higher consumption, but because (by definition) relative consumption is unchanged, welfare is unchanged.

One might have thought that a focus on relative consumption might lead individuals to consume more today, but if they are rational and anticipate that their well-being will be affected by relative consumption tomorrow, then the relative consumption hypothesis does not necessarily lead to lower savings. The remarkable result, shown in the appendix, is that the savings rate, as well as the labor supply, is independent of wages. Thus, if an individual's preferences can be represented by a utility function that is, in some sense, a weighted average of "individualistic preferences" and "relative consumption preferences," then concern for relative consumption will drive those who would have saved a lot to save less, but it will also drive those who would have saved a little to save more. By the same token, those who would have worked little work more, and those who would have worked a lot, work less. If Americans are *more* focused on relative consumption, it would help explain why Americans respond less to changes in wages by increasing leisure.

None of this explains why Americans should be more focused on relative consumption, or whether such differences in preferences are of recent vintage. A focus on *relative* consumption may be a correlate of a focus on consumption itself. If, in particular, consumption has exceeded the levels required to meet basic needs, then at least part of the enjoyment may be derived from consuming *more* than one's neighbors. The theory of endogenous preferences developed from hypothesis 3 might explain how societies can evolve in different ways.

It is possible that America's growing inequality too may contribute to "consumerism" and to corresponding lower levels of leisure. Those who, because of lower productivity, inevitably consume less, still strive to reduce the *observed* gap between their consumption and that of their richer neighbors. It is the rich that define the aspirations of the rest of society.<sup>32</sup> At the same time, those at the top struggle to separate themselves from those below. It is only by working hard and conspicuously consuming the fruits of that work that they can demonstrate their superiority. There is, in effect, an arms race, a race to consume more and more, working harder and harder, in which no one is the winner.<sup>33</sup>

### **The Coordination Failure Hypothesis**

Second among the alternative hypotheses explored here is one that arises out of "coordination failure." In models where coordination failures occur naturally, there may be multiple equilibria, one of which may Pareto-dominate others.

The idea is simple: the value to a husband of a vacation depends on whether his wife can take a vacation at the same time. If not, beyond a brief respite from work, each party would prefer the additional income to staying at home alone, or going on a trip alone. The problem is that the market does not provide a good mechanism for coordinating vacations.

Many European countries have solved the coordination failure problem by having everyone go on vacation at the same time. There are costs associated with this system: capital is idle. But, arguably, the benefits exceed the costs.

There may be some interaction between the magnitude of the coordination failure and the overall demand for leisure. Assume, for instance, that everyone were to take some time off during the month of August. If each person takes one day off, and there is no coordination, then the probability that the two spouses will have the same day off will be very small. (Assume 21 working days, so there is a  $1/21$  chance of two persons coordinating their vacation.) If each person takes a full month off, then there is no coordination problem.

There is a parallel argument for the enjoyment of certain other leisure activities. Prior to the television, much of leisure activity was spent in communal activities (e.g., churches). The decrease in time available for these communal activities led to lower participation levels and a decrease in their availability. But this in turn has led to lower enjoyment and a lower demand for communal activities—and a higher demand for goods.<sup>34</sup>

### Endogenous Preferences

*Failure of Culture as the Solution to the "Resolution" of the Economic Problem* While economists traditionally focus on "economic needs," psychologists emphasize the importance of other basic human needs and pleasures—to solve problems, to feel needed, to experience the pleasure that one gets from seeing a beautiful painting or hearing a musical composition; while our physical needs may be limited (a point especially poignant today, with increasing problems of obesity), our mental and emotional needs are insatiable. It is not even clear that they are subject to the usual laws of diminishing returns. The demand for culture, broadly defined, may be unlimited. In the past, for instance, only a small fraction of our society could enjoy the arts, and, correspondingly, only a small fraction of our population was engaged

in the production of the arts. The solution of the "economic" problem means that these pleasures can and should be available more broadly. It was, perhaps, Keynes's hope that this would occur, but it has not, or at least not to the extent that he might have hoped.<sup>35</sup>

The reason can be stated a couple of different ways. We can think of preferences as being endogenous—shaped by a variety of forces that can be studied systematically; or we can think of individuals as learning how to "consume." The two perspectives come to much the same conclusion, though the latter formulation is closer to the standard theory of consumer behavior.

Economists typically assume a fixed set of preferences, but advertising and marketing help shape preferences—and firms have been as inventive in creating new demands as they have been in creating new products. Even food has taken on new dimensions, as consumers seek out exotic foods.<sup>36</sup>

The forces that shape demand in different countries can differ, and thus societies can evolve in different directions. Preferences are, at least in part, socially determined: we are influenced by those around us. In Europe, for instance, there is a growing *slow food movement*, which says that the point of eating is not efficiency, providing the largest number of calories per dollar or in the shortest span of time. The movement sees eating as a pleasure in itself; it is an intellectual activity, combining sensory perceptions with an analysis of the nature of the pleasures to which the senses give rise. It sees cooking as a creative activity and not just a question of how "outsourcing" food preparation to a frozen food company can reduce the time and resources required to transform raw food into food on the table. This movement has far fewer adherents in America.

In the discussion below, I will put forward, in somewhat stark form, the hypothesis that one society can evolve, with endogenous preferences, toward "consumerism," and the other toward a higher preference for leisure.

In each of these two sets of preferences—the one with high preferences for goods, which we refer to as the American model, or the model of consumerism, and the high preference for leisure, which we refer to as the European model—there will be differences in the consequences of improvements in productivity. Going forward, in the American model, one can foresee smaller changes in the levels of work (even possibly increases), but ever increasing levels of consumption. Television screens can become larger and can be put in every room



and in both the front and the back of automobiles, and square footage of housing can become ever larger.

As we have noted, the American model works particularly well in a world in which people are especially attuned to differences in income (the kinds of models discussed under hypothesis 1). In such a society the return to targeted advertising can be especially high. If one induces "consumer leaders" to buy SUVs, other consumers will follow.

*Learning* In this and the next subsection, I attempt to model endogenous preferences, to formalize the notion that societies can evolve in quite different directions. As I suggested earlier, there are several ways of approaching the problem. In this section, I explore the *learning* hypothesis.

Individuals learn about consuming by consuming (like learning by doing<sup>37</sup>). We learn how to consume from others (at school, from our parents, from our peers), and we are "taught" to consume by others, especially by firms. We can, as a result of this learning, improve the efficiency of consumption, and this can increase the marginal return to consuming.<sup>38</sup>

The enjoyment of cultural and other pleasures of the mind, in particular, does not come easily. A person must be trained. It is work, though not of the physical sort—the toil that used to be required to bring food to the table and to provide basic shelter. Our society has failed to provide the requisite education, which is why so many people get their enjoyment from the modern version of Roman circuses, our television programs and sports.

Markets (monopolistic firms) have an incentive to expand demand (e.g., through advertising) in products in which they have market power. It is, accordingly, not surprising that the multi-million dollar budgets for advertising of movies often equals or exceeds that for the production of the movie itself. For a variety of reasons—not least of which is that much of culture, our heritage of music and art, is in the public domain—there is less market power in "culture," and thus less incentive for *private* firms to provide the "learning."

*Learning by Consuming* Even without firms attempting to distort consumption patterns, individuals can learn—they learn how to consume by consuming, they learn how to enjoy leisure by enjoying leisure. This means that *history matters*. Figure 3.1 shows the budget constraint and indifference curve in period 1. But because the individual has

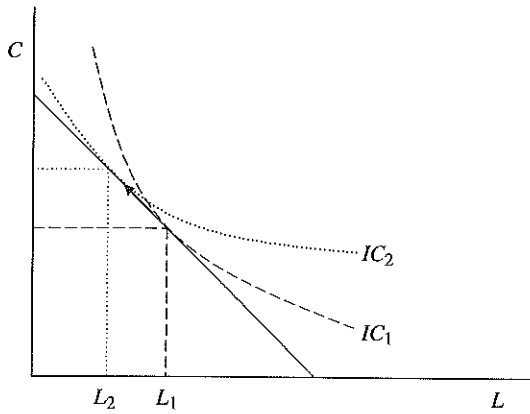


Figure 3.1  
Learning by consuming

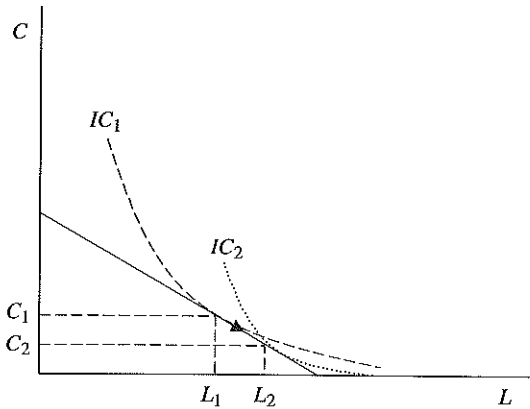
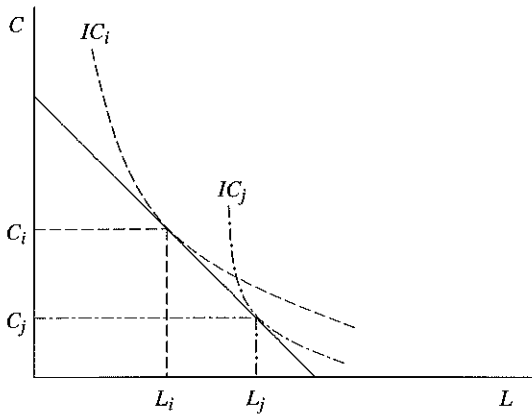


Figure 3.2  
Learning by consuming

consumed a lot in this period, and enjoyed little leisure, he is even better at consuming goods in the next period—and less good at enjoying leisure. His indifference curves have tilted so that if his budget constraint were to have remained unchanged, he would have changed his choices, to consume more goods and enjoy less leisure. Over time, even with no changes in wages, consumption increases and leisure decreases.

By contrast, the individual depicted in figure 3.2 has initially the same preferences, but with a lower initial wage, he consumes less.



**Figure 3.3**  
Learning by consuming

However, this means that he learns to enjoy leisure more and goods less. Over time, the initial differences in consumption/leisure choices are reinforced.

If, after many periods, the second individual is now confronted with the same wage as the first, his preferences have so changed that markedly different choices are made. Because the second individual is better at enjoying leisure than the first, he enjoys more leisure. (See figure 3.3).<sup>39</sup>

There may be more than one steady state. Figure 3.4 shows a case where, if consumption lies along the rays OA, OB, or OC, marginal rates of transformation remain unchanged with experience. But over time, if individuals consume anywhere between OA and OB, they increasingly come to prefer (at the margin) goods, while between OB and OC, they increasingly come to prefer (at the margin) leisure. This means that once the economy deviates toward more consumption than OB, it increasingly does, eventually converging to some point along the ray OA.

Appendix D formalizes a set of possible dynamics, where consuming more leads to increases in the efficiency of consumption, while enjoying leisure leads to increases in the marginal return to leisure. Whether an increase in the "productivity" of consumption goods leads to an increase or decrease in the marginal utility of consumption depends on whether the elasticity of marginal utility ( $\eta$ ) is greater or less than unity. If the elasticities of the marginal utility of goods and leisure

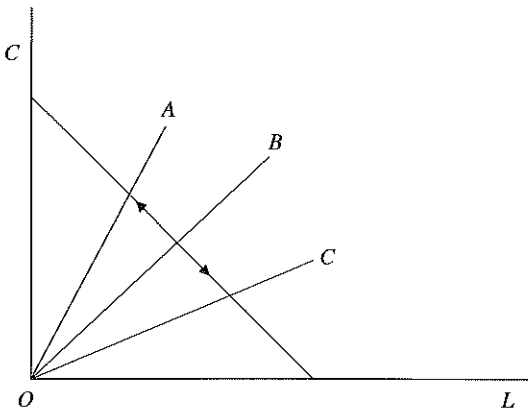


Figure 3.4  
Multiple steady states

are both large and if individuals then consume a lot, they demand more consumer goods, and if they enjoy more leisure, the demand for leisure increases: there is a strong centrifugal force.

The dynamics described in the appendix exhibit some interesting properties. The steady state level of labor depends on the rate of increase in wages: it is the adaptation of preferences that drive everything. Again, the steady state may not be stable; it is possible that if the economy deviates from the steady state, it either converges to an equilibrium of extreme consumption or extreme leisure.

*Addiction and Myopia* An extreme case of preference formation (or deformation) is illustrated by addiction: having tasted an addictive drug, the individual's trade-offs between that drug and other commodities is changed; often individuals do not know, at the time they first take the addictive drug, what its effects on future preferences will be.

There is now ample evidence that the cigarette companies took advantage of addictive behavior (and even of consumers' lack of knowledge of the addictive characteristics of the products they were being sold). They designed cigarettes to make them *more* addictive, thus increasing their profits—at the expense of individuals' life expectancies, and imposing high medical costs both on those who consumed their products and on the rest of society. The fact that as individuals have become more aware of the addictive properties and health consequences they have changed consumption patterns suggests that indi-

viduals preferred not to have their preferences deformed in this way. The unfettered market led to behaviors that not only ex post were regretted but ex ante would have been different from what individuals would have done had they been more fully informed.

While cigarettes may be an extreme example, it has elements in common with other markets. Individuals respond to stimuli: the rush of sugar in a donut gives them pleasure, and they therefore will buy more donuts and other fast food if they have more sugar. Many consumers may not see clearly the relationship between weight gain and sugar consumption, but even those that do may find it difficult to stop themselves. The pleasure of the now is more present than the future cost of obesity.

Firms may not know why consumers buy more of their products with higher sugar content; they too, in a sense, are simply responding to short-run stimuli: higher sugar brings higher profits. The market competes on addiction—the most addictive products win out. With research, they, like the cigarette companies, may find out which of their ingredients is most effective in increasing sales/addiction.

The response of many of the fast-food companies to attempts to stop legislation that would limit the opportunities to promote their products among school children suggests that while they may have come upon addictive design by accident, having found out what causes sales to increase, through “addictive” changes in preferences, they are loath to give up these profit opportunities, no matter the costs to society.

*Optimality* There is no theory to suggest that the evolution of preferences—especially as they are shaped by market forces—has any optimality properties. It is indeed not even clear how to formulate such questions properly; the standard models evaluate how well economic systems do in fulfilling individuals' *given* preferences. But how are we to judge whether consumerism is good or bad? Should we condemn the attempts of cigarette companies and fast-food firms to alter preferences in ways that increase their profits? What we can say is that there is no presumption that markets lead to socially desirable outcomes (as there is in the idealized conditions under which Adam Smith's invisible hand theorem is true). Furthermore there is a broad consensus that something is wrong with the attempt by cigarette and fast-food firms to change preferences in the way they have—even if it results in higher profits. These are difficult questions, and they are beyond the scope of this brief essay.

## Concluding Comments

I have contrasted what I have casually called American consumerism with consumption/leisure patterns in Europe. Which has a higher standard of living? To the extent that each society has made its choices in an informed rational way, each may be seen to have chosen the way that best reflects its own preferences and values. But that answer, perhaps natural to an economist, is too glib. For I have suggested that the response to the solution of the *economic problem* has involved changes in preferences—to oversimplify, the development of never-ending demands for consumer goods in the one case, the demand for leisure and culture in the other.<sup>40</sup>

In writing this essay, I recognize that I have trespassed the boundaries of conventional economics, which simply takes preferences as given. It makes no judgments on those preferences or their consequences. Rather, it proceeds on a single hypothesis, that of *rationality*, and by rationality, it simply means *consistency*: Do individuals repeatedly make the same choices? There is a simple test of inconsistency (transitivity): if, at one point, individuals could have chosen A but instead chose B, and then later could have chosen B but instead chose C, when confronted with the choice of A and C, these individuals should consistently choose C.<sup>41</sup> There is a broader sense of rationality: Do individuals pursue actions that are “rationally” connected with their expressed desires? Individuals say they care about their families, that the most important thing to them is their family. They work hard for their family. But, as I have suggested, there is some evidence that Americans work so hard (seemingly for their families) that family life is destroyed. The means destroy the ends that they seek.

Today there is an even more present problem: obesity. Obesity is reaching epidemic proportions. It is a disease that is spreading throughout the population, but it is not being spread by a virus. It is clearly a *cultural* phenomenon, the result of forces shaping individuals' choices in ways that most individuals would agree is adverse to their long-term interests. This chapter has tried to highlight some of the forces that may be contributing to such extremes of consumerism. They are, at least in part, economic forces, and they should accordingly lie within the domain of enquiry of economists.

Keynes concluded his essay *Economic Possibilities for our Grandchildren* by urging us not to “overestimate the importance of the economic problem, or sacrifice to its supposed necessities other matters of greater

and more permanent significance. . . ." In one sense, he was and still is right, but in another sense he was fundamentally wrong. At least in some countries, and those widely judged to be among the most successful, the economic system has created an insatiable set of wants, which ensures that the *perceived* economic "problem" will never be solved so that "matters of greater and more permanent significance" have been, and will continue to be, sacrificed on its altar.

### Appendix A: Theory of Home versus Market Production

To extend the standard model of time allocation, we write

$$\max U(C, C_H, L, L_H) = U(wL, C_H(L_H), L, L_H),$$

where  $\{C, L\}$  refer to market consumption and labor;  $\{C_H, L_H\}$  to home production of goods and labor, and for  $C = wL$ , the  $w$  is the (real) wage rate. The first-order conditions are

$$U_1 w + U_3 = 0,$$

$$U_2 C_H + U_4 = 0.$$

Adopting separability between leisure and goods, and additivity between home and market production obtains

$$U = u(C + C_H) - v(L + L_H) = u(wL + \gamma b(L_H)) - v(L + L_H),$$

where  $\gamma$  is a measure of the productivity of home labor, implies

$$w = \gamma b'(L_H), \tag{A.1}$$

$$u'w = v'. \tag{A.2}$$

The immediate implication in (A.1) is that *home labor increases or decreases, depending on whether home productivity increases or decreases faster than market productivity*. If  $w/\gamma$  increases over time, then home labor will decrease over time.

Let  $L^*$  and  $C^*$  denote total labor and total consumption. Then (A.2) implies that

$$\eta \frac{d \ln C^*}{dt} + \mu \frac{d \ln L^*}{dt} = \frac{d \ln w}{dt}, \tag{A.3}$$

where  $\eta = -d \ln u' / d \ln C^*$ , and  $\mu = d \ln v' / d \ln L^*$ .

## Appendix B: Implications of Preferences Based on *Relative Consumption*

### *Model B.1*

Utility depends *only* on relative consumption

$$U = U\left(\frac{c_1}{c_2}, L\right).$$

All individuals have the same wage  $w$ .

Individual  $i$  maximizes  $U$  *given* the level of consumption of individual  $j$ :

$$\max_{\{L\}} U\left(\frac{wL_1}{c_2}, L_1\right).$$

This implies that

$$\frac{U_c w}{c_2} = -U_L.$$

Or, in the symmetric equilibrium, where  $c_1 = c_2$ , we have

$$U_c(1, L) = -LU_L.$$

**PROPOSITION B.1** The equilibrium level of leisure does not depend on the wage rate.

An immediate corollary of this proposition is that changes in the wage rate leave equilibrium welfare unchanged, even though consumption levels change.

### *Model B.2 (Two-Period Model)*

We assume that individuals only compare themselves with members of their own generation:

$$U = U\left(\frac{c_{1,t}}{c_{2,t}}, \frac{c_{1,t+1}}{c_{2,t+1}}, L\right).$$

Individuals now must choose both a savings rate,  $s$ , and a labor supply.



$$\max_{\{L,s\}} U\left(\frac{w(1-s)L}{c_{2,t}}, \frac{wLs(1+r)}{c_{2,t+1}}, L\right).$$

This implies

$$\frac{U_2(1+r)w}{c_{2,t+1}} = \frac{U_1w}{c_{2,t}},$$

$$\frac{U_1w(1-s)}{c_{2,t}} + \frac{U_2ws(1+r)}{c_{2,t+1}} + U_3 = 0,$$

or

$$\frac{U_2(1, 1, L^*)}{(1-s^*)} = \frac{U_1(1, 1, L^*)}{s^*},$$

$$U_1(1, 1, L^*) + U_2(1, 1, L^*) + U_3(1, 1, L^*)L^* = 0.$$

Neither labor supply nor savings depends on the wage rate.

As a slight generalization of this model, welfare can be represented as a weighted average of a traditional utility function (not dependent on relative consumption) and the relative consumption utility function. Then concern about relative consumption will lead an individual with high leisure-low consumption to work more, and it will lead an individual with low leisure-high consumption to work less.

## Appendix C: Implications of Coordination Failures in Leisure

### Model C.1

The value of leisure of individual 1 depends on how much leisure individual 2 (spouse) consumes:

$$U = U(C_i, L_i, L_j).$$

If each individual chooses his own leisure (work) independent of others, then

$$\max U(w_i L_i, L_i, L_j).$$

So

$$U_1 w = -U_2, \tag{C.1}$$

or, in the symmetric equilibrium

$$U_1(wL, L, L)w = -U_2(wL, L, L). \quad (\text{C.2})$$

For simplicity, assume that there are only two groups, 1 and 2. Then (C.1) defines  $L_1$  as a function of  $L_2$  and a symmetric equation defines  $L_2$  as a function of  $L_1$ :

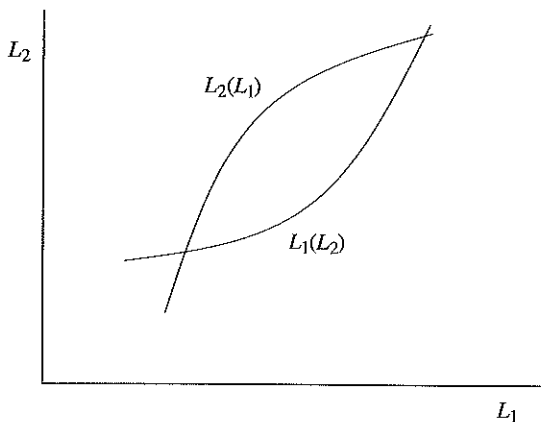
$$\frac{dL_1}{dL_2} = -\frac{U_{13}w + U_{23}}{U_{11}w^2 + U_{12}w + U_{21}w + U_{22}}.$$

It is clear that if consumption and leisure are substitutes, but the leisure of the two individuals are complements: the amount worked by individual 1 is an increasing function of that of individual 2, and conversely. Figure 3.5 shows the case where there are multiple equilibria.

In general, there will be underconsumption of leisure. A socially coordinated equilibrium is defined by the solution to

$$U_1w = -(U_2 + U_3),$$

meaning that even the Nash equilibrium with the most leisure can be improved upon by an increase in leisure. Each individual fails to take into account the effect of the increase of his leisure on the well-being of others.



**Figure 3.5**  
Multiple equilibria in leisure

*Model C.1a*

If we assume that leisures of individual 1 and 2 are perfect complements, and separability between consumption and leisure, we have

$$U = u(c) - v[\max(L_1, L_2)].$$

Any  $L^* \geq L^{**}$ , where

$$u'(wL^{**})w = v'(L^{**}),$$

is an equilibrium, since

$$u'w > 0 \quad \text{for } L < L^*,$$

$$u'w - v' < 0 \quad \text{for } L > L^*.$$

The equilibrium with the minimum work (maximum leisure) Pareto-dominates, meaning Pareto optimality requires that  $L = L^{**}$ .

*Model C.2*

The value of leisure of individual 1 depends on coordinated leisure.

In the previous model it was simply the number of hours worked that mattered, not when individuals took their leisure time. But timing is critical. Assume, for instance, that there are two time periods (vacations in June and July); well-being depends on the coordination of vacations:

$$U = U(c, L_1^1, L_1^2, L_2^1, L_2^2).$$

Assume that there are two social arrangements. In one, everyone takes their vacation in the same month and works full time in the other months—the coordinated equilibrium. In the other, the timing of vacations is random.

Assume symmetry. Now it makes no difference whether individuals coordinate on the first or second period. For concreteness, we assume that the utility function takes on the form of

$$u(c) + Ev^1[\min L^* - L_1, L^* - L_2] + Ev^2[\min L^* - L_1, L^* - L_2],$$

where each individual assumes that the event that his spouse will have a vacation in the same month will occur with probability 0.5.

The coordinated equilibrium is the solution to

$$wU_c = v',$$

whereas in the uncoordinated equilibrium, half the time there is no (marginal) value to vacation time. So

$$wU_c = 0.5v'$$

It is clear that given the lower (expected) marginal utility of leisure, there will be shorter vacations. Notice that welfare is higher in the coordinated equilibrium.

#### Appendix D: Learning by Consuming

Assume that individuals learn how to consume by consuming, and how to enjoy leisure by enjoying leisure ( $L^* - L$ ), but act myopically:

$$U = u(ac) + v[b(L^* - L)].$$

So

$$au'w = v'b. \tag{D.1}$$

Then

$$\alpha + h - \eta[\alpha + h + g] = \beta - \varkappa[\beta - gm], \tag{D.2}$$

where

$$\alpha \equiv \frac{d \ln a}{dt} = \alpha(c), \quad \alpha' > 0, \alpha = 0, \text{ for } c \geq c^{**}, \tag{D.3}$$

$$\beta \equiv \frac{d \ln b}{dt} = \beta(L^* - L), \quad \beta' > 0, \tag{D.4}$$

$$\eta \equiv -\frac{d \ln u'}{d \ln c} > 0, \tag{D.5}$$

$$\varkappa \equiv -\frac{d \ln v'}{d \ln [L^* - L]} > 0, \tag{D.6}$$

$$m = \frac{L}{L^* - L} > 0, \tag{D.7}$$

$$g = \frac{d \ln L}{dt}, \quad (\text{D.8})$$

$$h = \frac{d \ln w}{dt}. \quad (\text{D.9})$$

As a result

$$g = \frac{(\alpha + h)(1 - \eta) - \beta(1 - \kappa)}{\kappa m + \eta} = 0 \quad (\text{D.10})$$

whenever

$$\beta(L^* - L_e)(1 - \kappa) = (\alpha(wL_e) + h)(1 - \eta) \quad (\text{D.11})$$

or

$$h = \left[ \frac{\beta(1 - \kappa)}{1 - \eta} \right] - \alpha. \quad (\text{D.12})$$

Likewise

$$\frac{dL_e}{dh} = - \frac{1 - \eta}{\beta'(1 - \kappa) + \alpha'w(1 - \eta)} \quad (\text{D.13})$$

and

$$\frac{dg}{dL|_{g=0}} = \frac{\alpha'w(1 - \eta) + \beta'(1 - \kappa)}{\kappa m + \eta} > \text{ or } < 0 \quad (\text{D.14})$$

as

$$Z = \alpha'w(1 - \eta) + \beta'(1 - \kappa) > \text{ or } < 0.$$

Define  $\zeta = d \ln \alpha / d \ln c$ , and  $\lambda = d \ln \beta' / d \ln(L - L_e)$ . Then

$$Z > \text{ or } < 0 \text{ as } \zeta(1 - \eta) + \frac{\lambda(1 - \kappa)}{m} > \text{ or } < 0.$$

It should be clear that standard economic theory puts no restrictions on the sign of  $Z$ . For instance, if the utility function is logarithmic in both leisure and consumption, then  $Z = 0$  (the borderline case). If  $\alpha' = 0$ , then  $\text{sign} = \text{sign}(1 - \kappa)$ .

Thus we have three immediate implications.

**PROPOSITION 1** In the long run, if there is an equilibrium level of leisure ( $g = 0$ ), the equilibrium depends on the rate of wages, not on the level of wages.

In the long run, preferences adjust so that, for countries with the same level of growth of wages, the same level of leisure is chosen.

**PROPOSITION 2** Faster rates of growth of wages are associated with higher (lower) levels of leisure depending on whether  $(1 - \eta)/Z >$  or  $< 0$ .

**PROPOSITION 3** The steady state level of leisure is (locally) stable if (and only if)  $Z < 0$ .

Otherwise, if  $L$  exceeds  $L_e^*$ ,  $g$  becomes positive, increasing further (by expression D.14). As  $L$  approaches  $L^*$ ,  $m$  approaches infinity, and  $g$  approaches zero. Hence (assuming  $Z$  does not change sign), if  $Z$  is negative, there are two equilibria, one at  $L = L^*$ , and one at  $L = L_e$ , and only  $L = L_e$  is stable. If  $Z$  is positive, then there is an unstable equilibrium at  $L = L_e$ . For  $L > L_e$ , the economy converges to  $L = L^*$ , and for  $L < L_e$ , the economy converges to  $L = 0$ .

### Appendix E: Toward a Theory of Addictive Consumerism in the Case of Obesity

Individuals respond to stimuli. They quickly learn that an injection of calories provides pleasure. It is much harder to come to understand the long-term consequences, in terms of weight gain, shortened life span, and so forth. Their behavior is, in that sense, myopic but not easily controllable. The result is that individuals end up heavier than they "should"—and even heavier than they themselves would like, given the way eating has distorted their preferences.

We assume individuals' preferences for calories ( $c$ ), increase with weight:

$$U = u(ct(w)) - c,$$

where  $w$  stands for weight and where the second term represents the opportunity cost of purchasing calories.

Because they act myopically, taking their weight as given,

$$u'(ct(w))t(w) = 1 \tag{E.1}$$

or

$$c = \frac{u'^{-1}(1/t)}{t} = \psi(w). \quad (\text{E.2})$$

So

$$\frac{d \ln c}{d \ln w} = -\frac{t'wu'[1-\eta]}{u''t^2c} = \frac{\xi[1-\eta]}{\eta}, \quad (\text{E.3})$$

where  $\xi = d \ln t / d \ln w$  and  $\eta = -d \ln u' / d \ln c$  with  $d \ln c / d \ln w > 0$  so long as  $\eta < 1$ , which we will assume.

We define weight gain by the differential equation

$$\frac{dw}{dt} = -\mu w + c = -\mu w + \psi(w). \quad (\text{E.4})$$

From (E.3),

$$\psi' = \frac{\psi \xi [1-\eta]}{\eta w}. \quad (\text{E.5})$$

If we assume that  $\xi$  and  $\eta$  are constant,

$$\psi'' = \psi \frac{\xi[1-\eta]}{\eta w^2} \left[ \frac{\xi[1-\eta]}{\eta} - 1 \right], \quad (\text{E.6})$$

meaning  $\psi$  can be concave or convex. Thus there can be more than one equilibrium weight, where

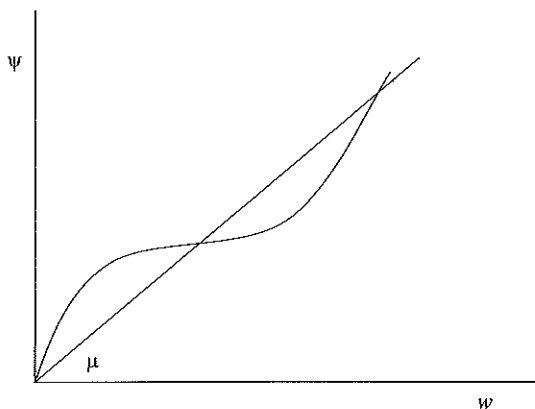
$$\frac{\psi}{w} = \mu.$$

(See figure 3.6.)

We focus for the moment on the case of a unique equilibrium, denoted by  $w^*$ . While individuals' short-run behavior is driven by stimulus response, long-run well-being is heavily dependent on weight. Assume that an individual's well-being is given by

$$\Lambda = u(ct(w)) - V(w) - c;$$

that is, being heavy has a high cost but individuals do not understand (or take into account) the relationship between consumption and weight. (In a *behavioral* sense, they may not be able to restrain themselves from eating.) Despite the increased pleasure that being heavier garners from the act of eating (captured in the dependence of the marginal utility of consumption of calories on weight), individuals are clearly better off eating less.



**Figure 3.6**  
Multiple weight equilibria

For simplicity, we focus now on steady states, where

$$\mu w = c. \quad (\text{E.7})$$

Then, substituting, we have

$$\max u(t(w)\mu w) - \mu w - V(w).$$

The utility-maximizing level of weight is given by

$$u' t \mu [\xi + \mu] - \mu - V' = 0. \quad (\text{E.8})$$

*If the marginal cost of obesity is large enough, then myopic consumption leads to excess consumption.*

### **An Example**

Assume  $u' = (ct)^{-0.5}$ . Then

$$u' t = t^{0.5} c^{-0.5} = 1 \quad (\text{E.9})$$

implies that

$$c = t(w). \quad (\text{E.10})$$

Let

$$t = w^2. \quad (\text{E.11})$$



Then the steady state weight is

$$w^* = \mu. \quad (\text{E.12})$$

On the other hand, the optimal steady state weight is the solution to

$$(\mu + 2)(ct)^{-0.5}t\mu = \mu + V',$$

or

$$(\mu + 2)\psi^{0.5}w^{0.5} = \mu + V'.$$

Consider the value at  $w^*$  of the derivative of steady state utility with respect to  $w$ :

$$(\mu + 2)w - [\mu + V'].$$

So a sufficient condition for the optimal weight being less than  $w^*$  is simply that

$$V'(\mu) > \mu^2 + \mu.$$

## Appendix F: Limitations of Standard Analyses

The question why Europeans on average enjoy more leisure than Americans has attracted the attention of several scholars.<sup>42</sup> Using standard neoclassical models, they have attempted, for instance, to ascertain whether differences can be explained by differences in tax rates or unionization and regulation. Most of the "standard analyses" use special parameterizations and ignore essential features of labor markets. While they may provide "rigorous" proofs of labor market responses to, say, increases in taxes or unionization, the analyses are of only limited relevance to understanding actual labor market behavior. This appendix calls attention to some of the critical limitations of these analyses. In many cases, introducing these elements of realism introduces ambiguity into even the qualitative predictions.

### *Uncertainty*

The standard model pays no attention to uncertainty and differences in risk in different countries, such as differences in the strength of the social safety net. Long-standing theories of household behavior under

uncertainty are used to explain why the response to uncertainty may be large but may be of uncertain sign. On the one hand, individuals may work more (if they are very consumption risk averse). Moreover there may be an increase in labor force participation if households want to be sure that at least one member of the household always is employed. On the other hand, wage uncertainty may reduce the attractiveness of participating in the labor force (e.g., in choosing between working in the market or nonmarket sector, since an increase in the risk of market labor reduces the attractiveness of market labor relative to nonmarket labor).

America's weaker social safety net may explain some of the greater labor force participation (a greater need for precautionary saving and a greater need to be sure that at least one member of the household is engaged in the labor market<sup>43</sup>).

### *Unionization*

Some analyses within the standard model argue that stronger unions in Europe have driven up wages and thereby lowered employment. Because of their monopoly power they have, in effect, created the problem of unemployment and low labor force participation. There are several crucial errors in the standard analysis.<sup>44</sup>

### **Local Bargaining**

First, the standard analysis assumes that in the absence of unions, there would be perfectly competitive labor markets, with perfect information and complete risk markets, and the other attributes of the perfect markets paradigm so that, in particular, in the absence of unions, labor markets would clear. One of the major developments in the analysis of labor markets in the last several decades is an understanding that many workers face small-scale bargaining problems with their employers. The labor market is thus better described as characterized by bilateral monopoly and/or monopoly/monopsonistic competition than by models of perfect competition. There may be large search costs associated with finding another job, uncertainty about the myriad of important nonpecuniary characteristics, and uncertainty about the myriad of relevant skills possessed by the employee. Hiring and training costs can be significant. Insider/outsider theory has explained why insiders may be reluctant to train outsiders. Most of the relevant risks

are uninsurable, and not surprising, given all of these limitations, the market equilibrium is not in general Pareto efficient.<sup>45</sup>

Moreover, once hired, the worker's pay is only partially related to his labor supply (effort). Typically a worker's pay depends on a host of other factors, including the performance of others.<sup>46</sup> This means, in particular, that returns to labor supply are risky, with the ambiguous effects noted earlier.

Unions may play an important role in *correcting* (or at least offsetting) these market failures, for instance, in attempting to get contractual arrangements with better risk sharing between employees and employers. As a result it is not obvious that, *in theory*, unionization would necessarily lead to less work.

### Flawed Theory of Monopoly Power

Much of the standard analysis is, in particular, based on the old fashioned theory of monopoly, where in order to receive a higher price, supply is restricted. But more than three decades ago, it became clear that there were serious flaws in this theory.<sup>47</sup> In particular, a perfectly discriminating monopolist would not introduce any distortions in resource allocation; the only distortions arise from limitations in the ability to discriminate—limitations, for instance, that arise from imperfections of information. Unions, in particular, are able to (and in fact do) sign complicated, non-linear contracts with firms.<sup>48</sup> These contracts may or may not result in reduced labor supply<sup>49</sup> (by reducing risk, they may indeed, as noted earlier, increase workers' labor supply); in any case, the argument that they reduce labor supply should be based on a more sophisticated analysis of monopoly power.<sup>50</sup>

For instance, while unions may have worked to ensure that workers face less risk (so that firms bear more of the risk than they otherwise would have), it is not obvious that when they succeed in doing so (with appropriately designed contracts), labor supply is less than it would otherwise have been.<sup>51</sup>

By the same token, most observers believe that unions have been a force for equalitarianism, compressing the wage structure from what it otherwise would have been. The effect of wage compression on aggregate labor supply, in turn, depends on the concavity or convexity of labor supply functions.

In short, even if unions succeed in obtaining more rents for their workers, the distortions in the labor supply may be limited. If, however, unions do succeed in getting for their workers a larger share

of the rents associated with corporations, then one would expect a decrease in labor supply by union members but an offsetting increase in labor supply by others. Since at least a fraction of wealth is owned by retirees who have no labor supply response, the net effect would be a decline in labor supply. The quantitative significance of this effect, however, is not apparent.

### Two-Sector Economies with Competitive Labor Markets

Even if employment in unionized industries is reduced, not all sectors of the economy are unionized—and even when there are unions, in some sectors they may have little or no bargaining power. Thus, at the very least, a one-sector model needs to be replaced by a two-sector model; reductions in labor input in the unionized sector are offset by increases in labor input in the competitive labor market.

Non-unionized workers face lower wages (as a result of the increase in labor supply in their sector). With the negative elasticity of (uncompensated) labor supply elasticity estimated by most cross-sectional regressions, this would imply an increase in their labor supply. The aggregate reduction in labor supply will be smaller than the reduction in employment in the unionized sector; the magnitude depends on the elasticities of labor demand and supply in the non-unionized sector.

### Efficiency Wages

The long-run effects of unions may be smaller than the differences in wages between union and non-union sectors would suggest. Higher wages may, for instance, induce firms in the union sector to search for higher ability workers. And the higher wages may allow the firms in the union sector to pick whomever they want.

This is an example of *productivity depending on wages*.<sup>52</sup> Even without unions, firms may realize that productivity depends on wages, and accordingly pay workers more than they have to. There can be unemployment, even in a competitive labor market. Higher wages lead to greater effort (either as a result of better morale or better discipline—the threat of being fired has greater consequences) or greater profitability either as a result of lower labor turnover<sup>53</sup> or higher quality employees. Hence, even if unions succeeded in increasing wages greater than they otherwise would be, the net effects on employment may be much smaller than they would have been without these productivity-enhancing effects.

European social policy could lead to higher unemployment; in, for instance, the Shapiro-Stiglitz efficiency wage model, higher unemploy-

ment benefits lead to higher levels of unemployment, because of the lower discipline exerted by the threat of being fired.<sup>54</sup> Of course, if individuals are risk averse, even if unemployment is higher, welfare may also be higher. (Higher job protection in Europe, however, may be related to lower or higher unemployment rates; *some* job protection is likely to be welfare enhancing,<sup>55</sup> just as unemployment insurance is welfare enhancing, even if it leads to more unemployment.)

But differences in unemployment rates may also be related to differences in capital markets or firm behavior. If American firms are more focused on short-run profits (the oft-noted problem of short-termism, or myopic behavior), then they may pay lower (real) wages *even without unions*.<sup>56</sup> The benefits from savings from lower wages are immediate; the benefits from a more stable labor force are felt over the long run.

In short, while unions may lead to lower levels of employment (labor supply), there are a number of other factors *within the labor market* that may differ between the United States and Europe, and which may have changed over time, which may play an important role in determining labor supply differences.

### *Impact of Public Expenditures*

In the standard model, increases in tax rates (with no changes in benefits) increase or decrease labor supply depending on whether labor supply elasticities are negative or positive. But the revenues raised by taxation are, of course, spent somehow, and how they are spent may have an effect on labor supply. Theoretical models trying to ascertain the effects of differences in tax rates across countries have to specify what happens to the revenues.

Some models<sup>57</sup> postulate that public expenditures are perfect substitutes for private expenditures (i.e., that the utility function is of the form  $U(c + g, L)$ , where  $c$  is private consumption and  $g$  is public consumption). But, of course, if that were the case, there would be little reason to have a public sector, since raising money through taxation introduces a distortion.

Some forms of public expenditure may lead to higher labor supply, such as the provision of public support for day care and family leave policies, which facilitates female labor force participation. These expenditures are presumably part of the reason that countries like Sweden have higher labor force participation than other European countries with comparable standards of living.

As I note in the text, some forms of public expenditure (like retirement benefits) are closely linked with contributions; presumably the shift from the private to the public sector has little effect on labor supply. To the extent that individuals are "forced" to save more than they otherwise would like, there may be some effect on labor supply, but the effect is of ambiguous sign. To the extent that public programs are more efficient than private programs, the effect of the shift is to increase real wages, with the effect on labor supply depending on the elasticity of labor supply with respect to wages.

Similarly, to the extent that expenditures on public investment goods increase labor productivity (i.e.,  $w = w(g)$ , where  $g$  is the level of public expenditure), then the effect of increased public expenditures depends again on the labor supply elasticity.<sup>58</sup> To the extent that the utility of public goods expenditures are separable from leisure, then these expenditures may have little effect on labor supply, and the standard analyses (ignoring expenditure effects) apply directly.

Finally, to the extent that public revenue is spent to redistribute income,<sup>59</sup> the effects are complex. Individual payments (benefits) that depend on before-tax incomes give rise to complicated patterns of effective marginal tax rates, for instance, with negative marginal tax rates on very low-income individuals (with the earned income tax credit) and very high marginal tax rates on low-income individuals. At the same time, income effects lead to less labor supply (than otherwise would have been the case) among low-income individuals (the beneficiaries of the redistributions) and higher labor supplies among high-income individuals partially offset each other.

### *Progressive Taxation*

Generally, progressive taxation, with marginal tax rates exceeding average tax rates, imply that the adverse effect of taxes is greater than it otherwise would be because the substitution effect is larger. One way of thinking about the consequences is to consider a simple linear income tax with a surtax. Then those in the surtax range have a linear budget constraint,

$$C = a + bw(1 - t)L,$$

with an intercept ( $a$ ) for higher income individuals that is higher than that for lower income individuals, so that the implied income effect on upper income individuals partially leads to lower levels of labor supply.

### Aggregation

Precise aggregation (consistent with using a representative agent model, e.g., with labor supply depending only on average wages) requires labor supply functions that are linear in wages and income. This is only true for highly restrictive conditions. For instance, in the log log formulation of employment, individuals maximize

$$\ln(wL + I) + a \ln(L^* - L).$$

So

$$\frac{w}{wL + I} = \frac{a}{L^* - L},$$

or

$$wL^* - wL = awL + aI,$$

or

$$L = \frac{wL^* - aI}{(1 + a)w}.$$

While labor supply is linear in  $I$ , it is not linear in  $w$ . (It is linear in  $1/w$ ). Indeed

$$EL = \frac{L^*}{1 + a} - \frac{aI}{1 + a} E \frac{1}{w}$$

Because labor supply is a concave function of  $w$ , the greater the wage dispersion, the lower is the labor supply. Differences in wage dispersions across countries or changes over time can affect aggregate labor supply.

### Notes

I am deeply indebted to Stephan Litschig, Gustavo Piga, and Lorenzo Pecchi for helpful comments.

1. In current income, world GDP in 2006 was \$48 trillion; in purchasing power parity, some \$67 trillion. See *World Development Indicators 2007*, World Bank: Washington, DC.

2. The poverty line for a family of four in America in 2008 was \$21,200. *Federal Register* 73(15), January 23, 2008, pp. 3971–72.

3. *Global Economic Prospects 2007*, World Bank: Washington, DC, p. xiii.
4. This is, of course, beyond the changes that one would have expected from moving from a manufacturing economy to a service-sector "knowledge" economy (akin to the structural changes that confronted the economy as it moved from agriculture to industry).
5. The average number of hours spent watching television per year for individuals aged 18 and over in the United States in 2003 is estimated at 1,745 hours and projected to rise to 1,931 hours by 2008. That is equivalent to approximately 35 (38) hours per week—roughly as much as individuals spend in the labor force. US Census Bureau, *Statistical Abstract of the United States*, 2006, tab. 1116.
6. See G. Faggio and S. Nickell, 2006, Patterns of work across the OECD, CEP discussion paper 730, tabs. 3 and 4. This is consistent with Aguiar and Hurst who find "market" work to have increased slightly from 28 hours a week to 29 hours in the United States. See M. Aguiar and E. Hurst, 2006, Measuring trends in leisure: The allocation of time over 5 decades, Federal Reserve Bank of Boston working paper 06-2. It seems to make the most sense to look at average hours worked per person of working age, as opposed to average hours worked per person employed (which has decreased in both the United States and Europe). One reason is that the decision to enjoy more leisure may be reflected in more leisure during working years or fewer working years (entering the labor force at a later date, leaving it at an earlier date), and the latter would not be captured by hours worked by people in employment. Similarly, while the employed may work less, more people of working age may actually be working.
- From 1970 to 2000, hours worked per person did not decrease, but increased by 26 percent. The difference between the two statistics is related to changes in demography. O. Blanchard, 2004, The economic future of Europe. NBER working paper 10310.
7. G. Faggio and S. Nickell, 2006, Patterns of work across the OECD, CEP discussion paper 730.
8. A. F. Alesina, E. L. Glaeser, and B. Sacerdote, 2005, Work and leisure in the US and Europe: Why so different? CEPR discussion paper 5140.
9. J. K. Galbraith, 1958, *The Affluent Society*, London, Hamish Hamilton.
10. Aguiar and Hurst, note 6.
11. For instance, there may be differences in norms concerning workplace socialization. Moreover patterns of socialization outside the workplace may affect the value of socialization in the workplace. For a discussion of the marked changes in patterns of communal activities in the United States, see R. Putnam, 2000, *Bowling Alone: The Collapse and Revival of American Community*, New York, Simon and Schuster. The absence of comparable studies for Europe makes it difficult to assess the importance of such explanations.
12. J. E. Morton and I. V. Sawhill, 2007, *Economic Mobility: Is the American Dream Alive and Well?* Washington, DC, Economic Mobility Project, Pew Charitable Trusts.
13. It depends on the concavity (convexity) of the demand for leisure as a function of wages and "full" income (wealth). Alesina et al., note 8, present data showing that an increase in the Gini coefficient is associated with an increase in average hours worked. See also appendix F.
14. Faggio and Nickell, note 7, tab. 3.



15. Among OECD countries in 2004, the United States is only average in terms of female labor force participation, Faggio and Nickell, note 7, tab. 3.

16. Putnam, note 11, documents these marked changes in patterns of life. A household survey of adolescents in Minneapolis showed that in the course of a week, one out of seven never ate with their families, and one out of three ate with their families twice or less a week. D. Neumark-Sztainer, P. J. Nahhan, M. Story, J. Croll, and C. Perry, 2003, Family meal patterns: Associations with sociodemographic characteristics and improved dietary intake among adolescents, *Journal of the American Dietetic Association* 103: 317–22.

17. See Alesina et al., note 8; P. R. G. Layard, 2005, *Happiness, Lessons from a New Science*, New York, Penguin Press; R. Frank, 1999, *Luxury Fever: Money and Happiness in an Era of Excess*, New York, Free Press.

18. See Putnam, note 11.

19. To be sure, however, there are other factors that have contributed.

20. Massachusetts spent \$1,030 million on corrections in 2005 and \$987 million on higher education. National Association of State Budget Officers, 2006, *State Expenditure Report, Fiscal Year 2005*.

21. Also, since what matters is the availability of family group health insurance, all that is required is that one member of the household be in the labor force. Hence America's health care system can explain greater labor force participation only to the extent that the primary earner does not have health insurance with his employer and/or to the extent that there are more households with only one potential earner. In both Europe and the United States, the elderly receive health benefits whether they work or not.

Higher social security benefits, by the same token, provide an explanation only to the extent that the benefits are unrelated to contributions. Both in the United States and Europe there is a close linkage between the two, and the strength of the linkage has increased more in Europe in recent years than in the United States; this, according to the standard theory, should have resulted in a relative increase in European labor supply.

The close linkage between benefits and contributions means, of course, that it is inappropriate to view the social security contribution as a tax. So long as the requisite savings are less than what individuals would have done on their own account, there is no effect on labor supply. When the implied compulsory savings exceeds that which individuals would have done on their own account, the effects on labor supply are ambiguous, because of the implied conflicting substitution and income effects (the forced saving reduces the marginal return to work). See J. E. Stiglitz, Taxation, public policy and the dynamics of unemployment, *International Tax and Public Finance* 6: 239–62 (paper presented to the Institute of International Finance, Cordoba, Argentina, August 24, 1998).

There are other effects not taken into account in most of the standard models trying to explain patterns of leisure (e.g., Alesina et al., note 8): for instance, differences in risk and in the strength of safety nets will have potentially significant effects both on labor force participation when labor supply is a household decision (see K. Basu, G. Genicot, and J. E. Stiglitz, 2002, Minimum wage laws and unemployment benefits, in K. Basu, P. Nayak, and R. B. Ray, eds., *Markets and Governments*, New York, Oxford University Press, ch. 3) and on hours worked (see M. Rothschild and J. E. Stiglitz, 1971, Increasing risk: II. Its economic consequences, *Journal of Economic Theory* 5(1): 66–84). Theoretically the effects are complicated and ambiguous. The absence of safety nets has been thought to lead Americans to work more in order to have a larger precautionary savings buffer, but in fact most lower income Americans have little savings (other than the net worth of their house).

22. See Alesina et al., note 8, for an overview of this literature. While there are larger labor supply elasticities for secondary earners, typically this reflects marked shifts from home production to market production with the entry of women into the labor force.
23. S. Nickell, 2004, Employment and taxes, CEP discussion paper 634.
24. This is the general result of several studies that have looked at this issue. See, for example, Faggio and Nickell, note 7. The studies do not make clear whether they have netted out that part of social security contributions that are directly linked with benefits. This would presumably lower tax rates in Europe, markedly increasing the magnitude of the puzzle.
25. E. C. Prescott, 2004, Why do Americans work so much more than Europeans? *Federal Reserve Bank of Minneapolis Quarterly Review* 28(1): 2–13.
26. See Aguiar and Hurst, note 6.
27. As always, matters are more complicated. Since wages at the bottom have declined and those elsewhere have increased, these patterns suggest a positive supply elasticity at the bottom, and a negative supply elasticity at the top. This is, of course, consistent with the standard backward bending labor supply curve.
28. Empirical studies trying to take into account effective marginal tax rates face several complexities. As noted elsewhere, old age contributions are related to benefits, and it is only the difference that should be viewed as a tax. In the United States married low-wage earners with children receive a large earned income tax credit, which means they face a large *negative* tax rate, while those with slightly higher incomes face a very large positive marginal tax rate, higher than even high-income Americans.
29. See E. F. P. Luttmer, 2005, Neighbors as negatives: Relative earnings and well-being, *Quarterly Journal of Economics* 120(3): 963–1002.
30. While such a conclusion may seem obvious to most, much of modern standard economic theory has argued to the contrary: it has explored models (e.g., representative agent models with fixed preferences and technology) in which there is a unique long-run equilibrium, to which the economy converges, regardless of initial conditions (history).
31. For simplicity, I refer to the “high-consumption” patterns of behavior as the “American model.”
32. This particular hypothesis would presumably suggest that lower income Americans should work particularly more than their European counterparts, but the anomalous patterns are particularly marked among higher income Americans. But it may be that those at the bottom have dropped out of the race; the effects of the race appear only among the more educated Americans. (For an explanation why those at the bottom may drop out of the race, see B. Nalebuff and J. E. Stiglitz, 1983, Prizes and incentives: Toward a general theory of compensation and competition, *Bell Journal* 14(1): 21–43.
33. The parallel between this “excess consumption” and signaling/screening equilibrium (where individuals may spend more on education or work harder than they otherwise would) should be clear. See, in particular, J. E. Stiglitz, 2002, Information and the change in the paradigm in economics (abbreviated version of Nobel lecture), *American Economic Review* 92(3): 460–501, and G. Akerlof, 1976, The economics of caste and of the rat race and other woeful tales, *Quarterly Journal of Economics* 90(4): 599–617.
- Some economists have suggested that Europeans intrinsically may have been just as focused on consumption (on *relative* consumption) as Americans, but having fallen behind,

they have now abandoned the contest. This explanation, however, is unpersuasive: to the extent that individuals do pay attention to relative consumption, it is the consumption of those that they encounter on a regular basis. I think that there are alternative and more persuasive explanations, based on the recognition that the cost of winning this game—both to the individuals involved and to society more generally—is too high. This again raises the question of why Europeans would be more cognizant of these costs—and given that the disparity in the consumption of leisure is of more recent vintage, why differences in perceptions should have developed in recent decades. The theory presented as hypothesis 3 forms a part of the explanation.

34. See Putnam, note 11.

35. Earlier I noted that a substantial fraction of incremental consumption has been for education, travel, and other complements to leisure. This is, of course, not inconsistent with the view that markets have encouraged activities with which there are associated profits; those forms of leisure, such as classical music, where profit opportunities are more limited, have not increased commensurately.

Some economists have suggested that the demand for certain types of “culture” may be a signaling device by which the rich and well-educated can enable their children to be identified, since those who do not get trained to appreciate, say, classical music, in their youth face far higher costs in learning to enjoy such music later in life. In that sense, part of the demand for culture may be a reflection of utility dependent on relative status.

36. Some think of advertising as providing information which alters choices; others as trying to change preferences directly.

37. K. J. Arrow, 1962, The economic implications of learning by doing, *Review of Economic Studies* 29(3): 155–73.

38. As always, matters are more complex. If our utility of goods is represented by  $U(aC)$ , where  $a$  is a measure of the “efficiency” of consumption, then the marginal utility of consumption is  $aU'(aC)$ , and an increase in  $a$  (which always increases the utility of consumption) decreases or increases the marginal utility of consumption as  $-d \ln U' / d \ln C > 0$  or  $< 1$  (since if  $U$  is concave then  $U'' < 0$  and  $d \ln U' / d \ln C < 0$ ).

39. Atkinson and Stiglitz formulated the concept of localized technological progress: firms learn how to produce better at the technologies at which they are producing, but knowledge about other technologies may be relatively unchanged. So here too we can think of localized preference deformation: individuals may change their marginal rate of substitution of leisure for goods at their current (and neighboring) levels of well-being (indifference curves), but preferences at other levels of well-being may be relatively unchanged. By contrast, in the models explored here, preference changes are global in nature. See A. B. Atkinson and J. E. Stiglitz, 1969, A new view of technological change, *Economic Journal* 79(315): 573–78.

40. Some economists have tried to use data from “happiness” surveys to ascertain whether those who work less (taking into account the reduced income that lower work results in) are happier. Alesina et al. (note 8) conclude, for instance, that “this evidence at least suggests that Europeans seem to be happy to work less and less.” See also Layard, note 17, and Frank, note 17. These studies also confirm the direct positive impact on happiness of employment and the negative impact of job insecurity.

41. Much of the testing of “rationality” is exploring a much weaker hypothesis: Are individuals sensitive (in the predicted way) to changes in prices? As I have argued elsewhere, individuals could exhibit price sensitivity without being fully rational. See, for example,

- J. E. Stiglitz, 1989, Rational peasants, efficient institutions and the theory of rural organization: Methodological remarks for development economics, in P. Bardhan, ed., *The Economic Theory of Agrarian Institutions*, Oxford, Clarendon Press, pp. 18–29.
42. See, for instance, Alesina et al., note 8, or Prescott, note 25.
43. However, the lower unemployment rate in the United States will mitigate against the need for "precautionary" labor force participation.
44. The differences in hours per worker between Europe and the United States are greater than can be explained by differences in unemployment rates.
45. See, for instance, R. Arnott and J. E. Stiglitz, 1985, Labor turnover, wage structure and moral hazard: The inefficiency of competitive markets, *Journal of Labor Economics* 3(4): 434–62; B. Greenwald and J. E. Stiglitz, 1988, Pareto inefficiency of market economies: Search and efficiency wage models, *American Economic Review* 78(2): 351–55.
46. See J. E. Stiglitz, 1975, Incentives, risk and information: Notes toward a theory of hierarchy, *Bell Journal of Economics* 6(2): 552–79.
47. See J. E. Stiglitz, 1977, Monopoly, non-linear pricing and imperfect information: The insurance market, *Review of Economic Studies* 44(3): 407–30.
48. See, for instance, J. E. Stiglitz, 1987, Design of labor contracts: Economics of incentives and risk-sharing, in H. Nalbantian, ed., *Incentives, Cooperation and Risk Sharing*, Totowa, NJ, Rowman and Allanheld, pp. 47–68.
49. The argument is analogous to that put forward by Cheung, on why sharecropping may not affect labor supply, even though the fact that the landlord gets 50 percent (or in some cases, two-thirds) of the *marginal* output would, in the standard models, have suggested a large reduction in labor supply. See S. Cheung, 1968, Private property rights and share-cropping, *Journal of Political Economy* 76(6): 1107–22; and S. Cheung, 1969, *The Theory of Share Tenancy*, Chicago, University of Chicago Press.
50. By the same token, David Card and Alan Krueger have argued that minimum wages have not led to a reduction in the level of employment. See D. Card and A. Krueger, 1994, Minimum wages and employment: A case study of the fast-food industry in New Jersey and Pennsylvania, *American Economic Review* 84(4): 772–93. See also D. Card and A. B. Krueger, 1995, *Myth and Measurement*, Princeton, Princeton University Press.
51. Of course, even if labor supply is reduced, well-being may be increased, such as because of the solution to the coordination problems discussed in relation to hypothesis 3 or because of the reduction in uncertainty. Countervailing the monopoly power of unions (which itself would have led to lower output than otherwise) may also lead to welfare gains.
52. See J. E. Stiglitz, 1987, The causes and consequences of the dependence of quality on prices, *Journal of Economic Literature* 25: 1–48.
53. For an overview of efficiency wage models, and the relationship between these models and standard economic theory, see Stiglitz, The causes and consequences of the dependence of quality on prices, note 52, and J. E. Stiglitz, 1986, Theories of wage rigidities, in J. L. Butkiewicz et al., eds., *Keynes' Economic Legacy: Contemporary Economic Theories*, New York, Praeger, pp. 153–206. Earlier studies of efficiency wage models include J. E. Stiglitz, 1974, Alternative theories of wage determination and unemployment in L.D.C.'s: The labor turnover model, *Quarterly Journal of Economics* 88(2): 194–227; J. E. Stiglitz,

1976, The efficiency wage hypothesis, surplus labor and the distribution of income in L.D.C.'s, *Oxford Economic Papers* 28(2): 185–207; J. E. Stiglitz, 1982, Alternative theories of wage determination and unemployment: The efficiency wage model, in M. Gersovitz et al., eds., *The Theory and Experience of Economic Development: Essays in Honor of Sir Arthur W. Lewis*, London, Allen and Unwin, pp. 78–106; J. E. Stiglitz, 1987, The wage-productivity hypothesis: Its economic consequences and policy implications, In M. J. Boskin, ed., *Modern Developments in Public Finance*, Oxford, Blackwell, pp. 130–65; B. Nalebuff, A. Rodriguez, and J. E. Stiglitz, 1993, Equilibrium unemployment as a worker screening device, NBER working paper 4357; and C. Shapiro and J. E. Stiglitz, 1984, Equilibrium unemployment as a worker discipline device, *American Economic Review* 74(3): 433–44.

54. As noted several times earlier, higher unemployment rates in Europe explain only a fraction of the differences in aggregate labor supply. Europeans also enjoy, for instance, longer vacations and shorter average work weeks. These job attributes may be an efficient way of increasing the net rents associated with employment, thereby reducing the risk of shirking. As I note below, the more myopic behavior of American firms (higher implicit discount rates, greater focus on the current bottom line; see J. E. Stiglitz, 2003, *Roaring Nineties*, New York, Norton) can lead to lower real wages and higher turnover costs.

55. See P. Rey and J. E. Stiglitz, 1993, Moral hazard and unemployment in competitive equilibrium, unpublished manuscript, University of Toulouse (revised July 1996).

56. See, for example, B. Greenwald and J. E. Stiglitz, 2003, Macroeconomic fluctuations in an economy of Phelps-Winter markets, in P. Aghion, R. Frydman, J. Stiglitz, and M. Woodford, eds., *Knowledge, Information, and Expectations in Modern Macroeconomics: In Honor of Edmund S. Phelps*, Princeton, Princeton University Press, pp. 123–36.

57. See, for example, Prescott, note 25.

58. That is, assume that  $g = twL = th(g)L(w^*)$ , where after-tax wage  $w^* = (1 - t)h(g)$ , so  $g = th(g)(L((1 - t)h(g)))$ . Hence  $dg/dt = \{hL - th^2L'\}/\{1 - th'[L + hL'(1 - t)]\}$ , and  $dw^*/dt = -h + (1 - t)h'dg/dt$ . The standard analysis only focuses on the first term and ignores the second term. Analyses that assume that tax revenues are spent on goods that are perfect substitutes for private goods imply that there is an adverse income effect.

59. Representative agent models, of course, simply assume away these effects.