Chapter 7
Designing Total Reward Programs for Tight Labor Markets

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Over the last several years, U.S. employers have had to scramble for workers of all sorts in unprecedented ways. After experiencing personnel shortfalls during the late 1990s, the Navy has pursued new recruiting approaches: in 2001, for instance, it sent almost every Harvard undergraduate an e-mail invitation to apply to become a commissioned officer in the U.S. Navy (Gizzle 2001). The furniture store, Ikea, also has sought new ways to attract job applicants, by posting want ads on the walls of restrooms (*Seattle Post-Intelligencer* 2000). A recent article in *HR Magazine* (Tyler 2001) told of recruiting of a mechanical engineer from Detroit to San Francisco. With two job offers in hand, he took the one that included an "employer-assisted housing" program. Manufacturing jobs continue to decline in the U.S. economy, but there are still many employers that need workers.

Some people believe that the recent economic slowdown, starting in 2000, may dampen employers' efforts to find creative new ways of recruiting staff. The reality is, that despite news of layoffs, unemployment rates in the United States remain low by historical standards. Even with the collapse of many dot.com firms, there are still technology jobs going unfilled. For example People3 Inc., a Gartner company that analyzes trends in information technology, predicts that demand for IT workers will outpace supply by at least 20 percent over the next four years. Dot.com workers thrown out of jobs at high-technology firms are often able to find technology jobs in more traditional firms, as the latter adopt their own e-business innovations (Goodridge 2001).

The U.S. economy has clearly been the most vibrant of all the major countries over the last decade. Now the question is whether that vibrancy can be maintained in the face of changing labor markets. In this chapter we suggest that tight labor markets of the last decade have generated a variety of unique approaches to finding, attracting, and retaining workers.

Furthermore, we argue these will persist over most of the coming decade, and we conclude that employers of the future may even confront greater challenges in staffing than they have in the past.

Economic Output and the Supply of and Demand for Labor

Economists have developed macroeconomic models to investigate the linkages between economic production levels and the supply of workers who generate it. In such models, three key factors contribute to production: human capital, physical capital, and technology. Workers and their inherent work-related capabilities comprise the human capital that can be used in the productive processes of an economy. Physical capital refers to the plants and equipment, as well as hardware and software, available for workers to use in the production of goods and services. Technology comprises the level of knowledge and know-how that is embedded in production processes.

One premise of such models is that more physical capital makes workers more productive, up to a point. For example, one worker with one air gun might drive as many nails in a day as three workers with regular hammers. In this simple example, one carpenter with an air gun can substitute for three carpenters with regular hammers. But substitution of capital for labor cannot go on forever: workers simply cannot fully utilize more tools without limit.

Economic models also posit that technology evolves over time and can enhance productivity of physical capital, human capital, or both. It can also change the way in which capital and labor can be substituted for each other. There are two important aspects to technology improvement in the U.S. economy. First, it evolves because of research and development activities, but once discovered, new inventions can generally be widely adapted (unless the creators limit distribution to other enterprises through patent or other law). In general though, discovery does not automatically translate into enhanced worker productivity; instead it must be adapted to become effective. Second, technology is adapted at uneven rates across economic sectors, so its overall effect on productivity is also uneven across sectors and over time.

The final central premise of economic production models is that human capital can be expanded along two dimensions if necessary. First, the number of workers can be increased or the hours worked by employees can be increased. Such an increase in labor supply is generally anticipated to lead to increased production. Second, any given pool of workers can also acquire new skills that make them more productive. Over time in the United States, the supply of human capital has grown and worker characteristics have changed in ways that have enhanced average productivity levels.

One way to measure the amount of human capital employed focuses on the number of workers employed. This is a crude measure since it does

not account for the variability in work hours, nor does it take account of employees' different characteristics. Nevertheless, it does provide a rough estimate of how worker productivity has changed in recent decades. Figure 1 illustrates the growth in the U.S. workforce since 1946, along with the increase in the inflation-adjusted gross domestic product (GDP) that these workers produced. Annual observations are given relative to the baselines for labor supply and output in 1946, so the results can be thought of as an indexed level of activity against those bases.

The data show that that U.S. civilian employment levels rose by 2.4 times between 1946 and 2000, and real gross domestic product rose 6.2 times. In other words, workers now produce about two-and-a-half times as much output as their forebears did in 1946. Part of this productivity increase is attributable to enhanced skills of modern workers as compared to those in 1946. But a substantial additional portion is due to these workers having more capital to work with, and to new technology making them more productive. The result of this growth in productivity over time is that the average U.S. standard of living today is far higher than in 1946. Inflation-adjusted GDP per capita rose about 3.2 times over the period,[1] with an annualized growth rate in per capita GDP over the last half of the twentieth century of an annualized decadal growth of between 1.73 and 2.87 percent.[2]

Whether this pattern of steadily rising output per capita will persist into the future is a key question. To some extent, it is a "chicken and egg" issue, since rising demand for goods and services is what pulls an economy

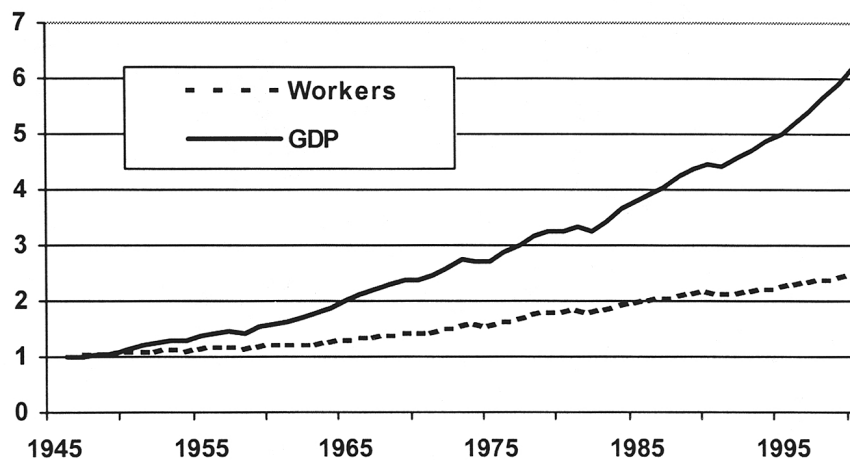**Index levels of GDP ($1996) and workers in the U.S. economy**

Figure 1. Civilian employment and real gross domestic production in the United States for selected years relative to 1946 baseline levels. Source: U.S. Department of Commerce (2000, 2001), Council of Economic Advisors (2001).

forward. During periods of high demand, economic growth tends to be high as producers organize their activities to meet consumers' appetites. Low unemployment, overtime, and other vestiges of a high-performance economy generally characterize such periods, and they combine to make workers earn relatively high pay that further stimulates the demand for goods and services. During booms, worker productivity increases, whereas labor productivity improvements slow or even fall during economic slow-downs. In recessions, surplus capacity develops as employers cut production; initially they may be reluctant to lay off surplus labor due to substantial investments in their know-how and experience. Since it may be cheaper to carry surplus labor than to have to find, hire, and train new workers when economic growth resumes, labor productivity improvements tend to slow or stall during such periods.

Many groups seek to forecast future economic activity; Table 1 reports projections of GDP growth developed by the Congressional Budget Office (CBO), the Clinton administration, and an average of approximately fifty private-sector forecasts known as the "Blue Chip" series. The evidence indicates that there is a relatively narrow band around forecasters' economic growth projections over the coming decade. These economic projections are consistent with the historical experience of ever-improving U.S. standards of living (measured by increasing income). Using the CBO projections for real GDP growth from 2001 through 2010, we estimate that GDP in 2010 (in $1996) will be about $12.5 trillion, or over one-third larger than in 2000. Using Census Bureau projection of the population for 2010, we estimate that per capita output in 2010 will be approximately $41,850 (in $1996). This implies an annual GDP per capita growth rate of 2.14 percent over this decade, a rate of improvement consistent with historical patterns.[3]

TABLE 1. Change in Projections of Average Annual Growth of Real GDP, 1997–2001

Date projection published[a]	*Projection period*	*CBO*	*Blue chip*	*Clinton administration*
2001	2001–2010	3.0	3.3	3.1
2000[b]	2000–2009	2.8	2.7	2.8
1999[b]	1999–2008	2.3	2.4	2.3
1998	1998–2007	2.2	2.3	2.3
1997	1997–2006	2.1	2.3	2.3

Source: CBO (2001).
[a] Congressional Budget Office (CBO) and Clinton administration projections were published in January and completed in November or December of the previous year. Blue Chip, an average of over fifty private-sector forecasts, publishes long-term projections twice a year, in March and October; the projections shown here are those published in October of the previous year.
[b] About 0.3 percentage points of the change between these projections stemmed from a benchmark revision to gross domestic product during 1999 that, for the first time, included software in GDP.

There are only two ways that an economy can increase the supply of goods and services available to its population at rates in excess of population growth: to import more, or to produce more. Unless the U.S. economy is permitted to substantially increase its trade deficit (other nations must be are willing to provide the capital to do so), our ability to improve the standards of living in the United States are to a substantial degree capped by what can be produced here. The U.S. trade balance has been negative for many years, though last year the net import balance remained less than 3 percent of GDP.

Hence our next question is what employers may face in the labor market, as they are called on to deliver the growth in output required for consistency with these macroeconomic projections. Various scenarios are considered, including one that assumes the United States will realize productivity grown implicit in the CBO projection; another assumes productivity growth more in line with historical rates. As we show, if productivity growth slows to rates characteristic of the twenty-five years ending in 1995, then the United States will simply end up with less output. However, there will be some demand pressure in the output markets to increase production at higher rates. This is consistent with the view that society will want to continue improving its living standard at rates consistent with past expectations. In the past, when the economy has slowed for any substantial period of time, the public has responded by bringing pressure on policymakers to restore economic growth. Should there be demand pressure to increase output in the face of slowing worker productivity growth, employers could respond in a variety of ways, so as to attract more employees. Next we explore the extent to which additional workers might have to be attracted into the labor market, and the ways in which employers might do so.

Labor Market Prospects in the Coming Decade

At the end of the twentieth century, U.S. labor markets were very tight. Even as the economy slowed considerably over 2000 from its torrid pace of the late 1990s, the seasonally adjusted unemployment rate remained well below its historic trend. In fact, unemployment rates in the early 2000s remained roughly a full percentage point below the CBO's estimate of the nonaccelerating inflation rate of unemployment (NAIRU).[4] Figure 2 depicts growth in the U.S. civilian labor force along with Social Security actuarial projections over the next two decades. During the 1990s, these were lower than they had been over the prior three decades, which helps to explain why recruitment and retention was such a challenge.

As we look to the future, however, anticipated growth rates are expected to be significantly lower than those experienced over the past decade. The Social Security actuaries estimate that labor force growth over the coming decade will be only about three quarters of the 1990s level, and the growth

rate projected for 2010 will only be one-third that of the past decade. Unless there is a significant and prolonged softening of the economy, the United States may be in for a considerable period of tighter labor markets.

How many employees may be required will ultimately depend on two factors: (1) the level of aggregate output and (2) the efficiency with which workers are employed in producing that output. The first will be driven by the level of demand for goods and services in the economy (as well as government spending and imports). The second can be understood in terms of GDP produced per unit of labor input, for which good historical data is not widely available. The best source consists of series on total hours worked per year from 1950, from which average total product per hour of labor can be derived. Average GDP per labor hour grew at a rate of 2.66 percent per year during the 1950s and 1960s, slowed to 1.57 percent per year kin the 1970s, fell further to 1.43 percent per year during the 1980s, and recovered slightly to 1.69 percent per year in the 1990s (with a spurt to 2.27 percent per year during the last half of the 1990s). To project future productivity experts begin by estimating the demand for goods and services based on the size and composition of sectors of the economy.[5] Here we rely on ten-year macroeconomic projections developed by the CBO for federal budget and policy purposes; these estimates indicate that GDP will grow (in inflation-adjusted terms) by 2.4 percent in 2001, 3.4 percent in 2002, 3.3 percent in 2003 and 3.0 percent annually from 2003 to 2009, with 2010 coming in slightly higher at 3.1 percent. Using these assumptions and baseline 2000 GDP, we generate an estimate of GDP in 2010 (in $1996) of $12.5 trillion estimate.
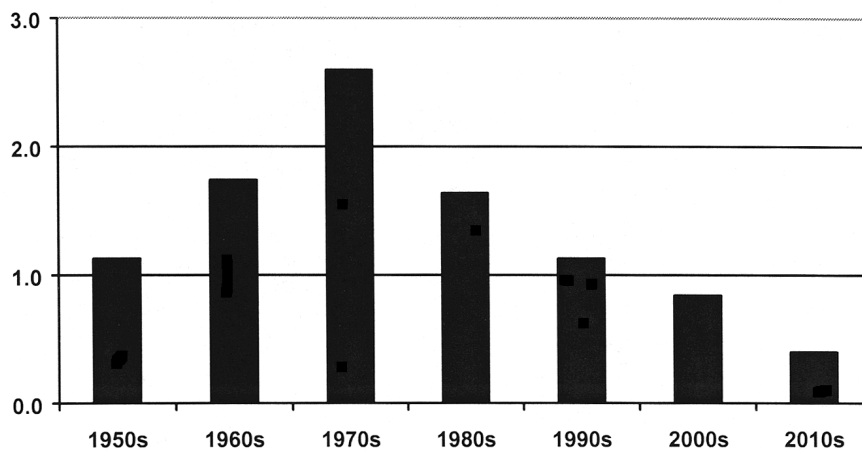
Compound annual growth rate for the period

Figure 2. U.S. civilian labor force growth rates for selected decades. Source: derived from Council of Advisors (2001), Social Security Administration (2001a).

To understand the challenge that employers face in generating the output levels required by these forecasts over the coming decade, it is helpful to investigate the link between the economy's potential labor supply and the likely demand for labor under alternative growth scenarios. First we project "baseline" labor supply to 2010 using current workforce patterns and expected population changes in the coming decade; labor supply patterns by age are assumed to persist into the future. For example, 45 percent of the population between the ages of 60 and 64 is in the labor force today, so the model assumes in the future, the same 45 percent of this age bracket will be in the labor force. In addition, workers by age are assumed to work the same number of hours per year as in recent times.[6]

Labor demand estimates use the CBO's GDP projections discussed above with a range of productivity improvement scenarios. The first projections factor in realized productivity increases already been reported for 2000. Hence the most conservative scenario posits that output per worker-hour grows at a rate of 1.5 percent per year, the average growth in output per hour over the past three decades. A second (third) scenario assumes that output per hour increases at a rate of 1.75 (2.0) percent per year; this bands worker productivity increases in the past decade. A final scenario boosts growth in output per hour to 2.23 percent per year, a rate exceeded in the 1950s and 1960s but matched since then only in the last five years.[7]

Our resultant labor supply and demand projections appear in Figure 3, depicted in terms of full-time equivalent (FTE) workers, which is obtained by dividing the total number of projected hours by a full-time employment level of 2000 hours per year. The most conservative scenario indicates that labor shortfalls might be substantial, on the order of 7.5 percent or 10.2 million FTEs short of the labor supplied in 2010. The other scenarios indicate a labor gap of between 3.1 and 6.6 million FTEs. Unless the United States sustains a high rate of growth in output per hour — something like 2.23 percent — over the coming decade, it will have a significant labor shortfall.

One alternative to the shortfall scenario might require that there will be a slowdown in the growth of standards of living. Another is that high levels of productivity improvement must be sustained in the coming decade. It is possible that labor supply could be boosted by enticing more people into the labor force, or by enticing current workers to consistently work longer hours than they do today. As long as productivity growth remains below 2.23 percent per year, there are three sources of additional labor supply that could be tapped to alleviate potential shortages including (1) participation increases across the board, (2) participation changes among women, and (3) participation changes among older persons (e.g., 55- to 64-year-old workers exhibit participation patterns like those 45–54 years old).[8]

Table 2 indicates what would have to hold to eliminate the projected labor supply shortages. The results are rather striking. In the scenario

TABLE 2. Labor Force Participation or Number of Hours/Year Changes Needed to Maintain Current Living Standards in 2010, Alternative Rates of Labor Productivity Growth

	Current	1.5% Productivity			1.75% Productivity			2.0% Productivity		
		All	Women	Elderly	All	Women	Elderly	All	Women	Elderly
Required changes in labor force participation rates										
Males										
Under 25	68.0	73.1	—	—	71.3	—	—	69.6	—	—
25–39	91.5	98.3	—	—	96.0	—	—	93.6	—	—
40–54	89.2	95.8	—	—	93.5	—	—	91.2	—	—
55–64	67.7	72.8	—	84.6	71.0	—	84.6	69.3	—	77.3
65–69	28.2	30.3	—	67.1	29.5	—	37.1	28.8	—	28.2
70+	11.2	12.0	—	26.6	11.7	—	14.7	11.4	—	11.2
Females										
Under 25	64.9	69.8	76.2	—	68.1	72.3	—	66.4	68.4	—
25–39	77.0	82.7	90.4	—	80.7	85.7	—	78.8	81.1	—
40–54	77.1	82.9	90.5	—	80.9	85.8	—	78.9	81.2	—
55–64	51.3	55.1	60.2	71.8	53.8	57.1	71.8	52.5	54.0	62.9
65–69	19.2	20.6	22.5	45.6	20.1	21.3	25.2	19.6	20.2	19.2
70+	4.9	5.3	5.8	11.7	5.2	5.5	6.5	5.0	5.2	4.9

Required changes in annual hours worked

Males									
Under 25	1467	1576	—	—	1538	—	—	1501	—
25–39	2126	2284	—	—	2229	—	—	2175	—
40–54	1993	2141	—	—	2089	—	—	2038	—
55–64	1803	1937	2254	2254	1890	2254	—	1844	2057
65–69	1518	1631	3613	—	1592	1996	—	1553	1518
70+	1428	1534	3397	—	1497	1877	—	1460	1428
Females									
Under 25	1327	1426	1558	—	1391	1476	—	1357	1397
25–39	1776	1909	2085	—	1863	1977	—	1817	1871
40–54	1717	1845	2016	—	1800	1911	—	1756	1809
55–64	1568	1685	1841	2196	1645	1745	2196	1605	1652
65–69	1151	1237	1352	2740	1207	1281	1514	1178	1213
70+	1325	1423	1555	3152	1389	1474	1742	1355	1325

Source: See Figure 4.
Participation rates and/or hours worked are held constant when—is used for the corresponding group(s).

where participation rises across the board, and given only 1.5 percent pro-ductivity growth, labor force participation or hours worked would need to increase roughly 7.5 percent from the projected labor supply levels to meet labor force demand in 2010. At the higher productivity scenarios, required participation changes are 4.9 percent for a growth rate of 1.75 percent and 2.3 percent for a 2.0 percent growth assumption.

Few ways are available to achieve such increases in labor supply. If the responses occurred across the board, and given a 1.5 percent productivity improvement scenario, men ages 25–39 would have to boost participation from 91.5 percent in 2000, to 98.3 percent by 2010; the rise among men ages 40–54 would be from 89.2 to 95.8 percent. These increases, along with the commensurate rates for women, seem almost impossible to achieve. Current workers could alternatively work more hours per week than they do now; men in their prime working ages would average nearly 42 hours weekly for 52 weeks per year, and virtually all women would have to move to full-time employment. More rapid improvements in worker productivity would alleviate there requirements, though even at a 2.0 percent productiv-ity growth rate, all men between the age of 25 and 54 would have to average 40 hours per week for 52 weeks per year.

One issue is whether extracting additional work from groups that already spend an average of 40 hours per week on the job will precipitate signifi-cant wage pressures. An alternate strategy might be for employers to entice people into the labor force who now have relatively low participation rates.

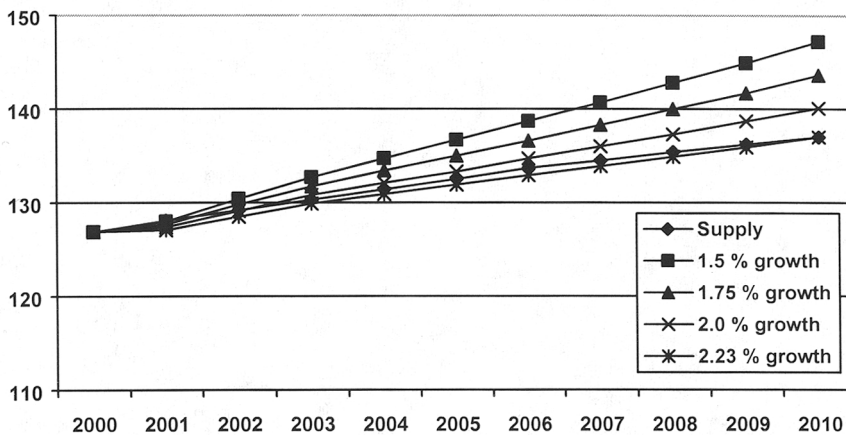**Full-Time Equivalent (FTE) Workers (in millions)**

Figure 3. Projected U.S. labor supply versus demand under alternative productivity growth scenarios for 2000–2010. Source: derived from Social Security Administra-tion (2001b), U.S. Department of Commerce (2002), Unicon (2000), U.S. Bureau of the Census (2000), Council of Economic Advisors (2001).

Women's labor force participation has been rising over time but it is still 15 percentage points below men's. In one set of scenarios, we estimated how much higher women's participation rates would have to grow to achieve output growth similar to experiences since World War II. The results from the 1.5 percent productivity scenario appear in Figure 4. By 2010, women's required participation rates would have to rise to the equivalent of men's rates in 2000, under this scenario. It seems unlikely that than many additional women could be enticed into paid work (Nyce and Schieber 2001; Smith and Bachu 1999).

Enticing older people to participate at greater rates might help, though the results indicate that if men ages 55–64 maintained workforce attachment similar to that of present-day men ages 45–54, they would need to increase their labor force by 25 percent over the coming decade (see Figure 5). And participation of men ages 55–64 would need to increase to 85 percent by 2010. If workers 65 years and over were tapped to make up the shortfall, their labor force participation rates would need to increase nearly 140 percent over current levels, to roughly 39 percent for men and slightly over 20 percent for women. These projections seem incredibly high, as compared to recent trends.

Meeting the Productivity Challenge

The baby boomer generation has influenced the U.S. economic in number of ways. Its sheer size depressed earnings, at least during the early portion

Figure 4. Labor force participation rates of men and women at various ages in 2000 with required increases in women's participation to meet labor force demands, assuming 1.5 percent productivity growth. Source: derived from Social Security Administration (2001b), U.S. Department of Commerce (2002), Unicon (2000), U.S. Bureau of the Census (2000), Council of Economic Advisors (2001).

of the boomers' careers, which likely increased women's labor force partic-
ipation rates (Macunovich 2001). Baby boomer working women were more
educated than their predecessors and many of them pursued more diversi-
fied careers than prior generations of women. Career opportunities became
important issues as they progressed through their careers, and the record
number of new workers between the late 1960s and the mid-1980s pushed
older workers out of the way and into retirement. Though many employers
sponsored retirement plans, early retirement incentives began encouraging
workers to retire as early as their mid-50s largely in response to the low-
cost labor.

Now, the front edge of the baby boom generation is beginning to cross
the early retirement threshold that it helped create. In the labor market, the
phenomenon of baby boomers rushing for retirement may have the opposite
effect of the one created as boomers entered the workforce. Waves of retire-
ment may produce a "worker void" leaving firms scrambling to find enough
people to meet production needs. These facts, combined with low fertility
rates, suggests that labor force growth rates over the coming decade will only
be about three-fourths of those already low growth rates seen in the 1990s;
growth rates in the 2010s will likely be half those of the current decade.

Figure 5. Labor force participation rates of men and women at various ages in 2000
with required increases in older workers' participation to meet labor force
demands. Calculations assume 1.5 percent productivity growth; labor force partici-
pation rates for men and women aged 55–64 increase along current trends by 25
percent and 40 percent respectively; rates for men and women aged 65+ increase at
138 percent of their current levels. Source: derived from Social Security Adminis-
tration (2001b), U.S. Department of Commerce (2002), Unicon (2000), U.S. Bureau
of the Census (2000), Council of Economic Advisors (2001).

As a result of these trends, some human resource managers are already emphasizing "attracting and retaining" employees, in the process restructuring aspects of their human resources operations to pull in new streams of workers. Others are scrambling to restructure pay and benefit programs to ensure stability in their existing workforces. Nevertheless, employers are limited in their ability to deal with the existing phenomenon of tight labor markets, much less the increasingly daunting situation we will face going forward.

Only four practical possibilities are available: diminish turnover, attract new types of workers, retain existing workers longer, or extract higher levels of productivity from existing workers. Every one of these options poses a challenge, and no single one may be a solution to the labor market problems faced in the U.S. environment.

Reducing Turnover

Turnover raises the cost of recruiting and hiring workers, and disrupts the workplace. It also imposes training costs and the time required to advancing a new hire to the productivity level of an experienced worker. And in many cases, workers develop ongoing relationships with customers that are a significant reason for repurchase decisions. In developing Watson Wyatt's *Human Capital Index*™, we recently surveyed 405 publicly traded U.S. firms asking about annual personnel turnover rates. We then classified these relative to average industry turnover rates in that industry, and related these to shareholder surplus value and shareholder returns. The analysis shows that low-turnover firms had average Tobin's Q of 2.55 while the high turnover firms had a score of only 1.67; Tobin's Q captures the value of a firm's intangible assets and is measured by the ratio of the firm' market value to its asset replacement costs. In addition, the three-year total shareholder return in low-turnover firms was 79 percent, while in high turnover firms it was 33 percent. The five-year total return to shareholders was 133 percent and 57 percent, for low and high turnover firms, respectively (Luss and Kay 1999).

This does not imply that optimal turnover rates should be zero, of course. In Europe, for example, some companies may promote excessive job security, leading to complacency or under-motivated workers. Indeed our research indicates that too much job security is associated with reduced surplus value levels; these employers having the lowest turnover rates relied more on tenure-based benefits and recognition programs, and more rigid career paths. These companies were also more likely to tolerate poor performance and lacked performance-based reward programs (Watson Wyatt Worldwide 2000).

If too much turnover and too little turnover curtail value creation, it suggests an underlying model of productivity along the lines depicted in Figure

6. The optimal level of turnover will likely vary from industry to industry and even from firm to firm. In the United States, substantial differences can be detected between low and high turnover firms with regard to their human capital management practices. Compared to high-turnover firms, those with low turnover tend to have a reputation among new applicants as a more desirable place to work, and they have an easier time finding qualified applicants. Low-turnover firms also fill a higher percentage of their professional positions through internal promotions, and have a more collegial and flexible work environment. For example, they are less likely to require titles to designate authority, they permit rank and file employees to use senior mangers' first names, and they encourage teamwork and cooperation. They also emphasize employment security; share business plans and goals with employees; give employees greater input into hiring decisions and how work is done; and report higher levels of employee satisfaction. In selecting their leaders, these low-turnover companies place greater emphasis on "people skills."

While individual employers can curtail individual worker mobility, reducing job hopping of this sort is a zero sum game from the economy's perspective. Very tight labor markets can lead to "poaching" and other tactics that would have been considered abnormal in the past. Some firms have already resorted to guerrilla tactics to find workers in market areas with low unemployment rates. For instance, a network hardware firm in Durham, North Carolina, posted signs along the commuting routes of engineers working at Nortel and Cisco (Cannon 2000). A high-technology firm in Texas sent recruiters on in-line skates to distribute job-opening leaflets to competitors' employees as they were arriving at work (police were called to dispatch the rolling recruiters; Koenig 2000). All is not good-humored fun; Alcatel
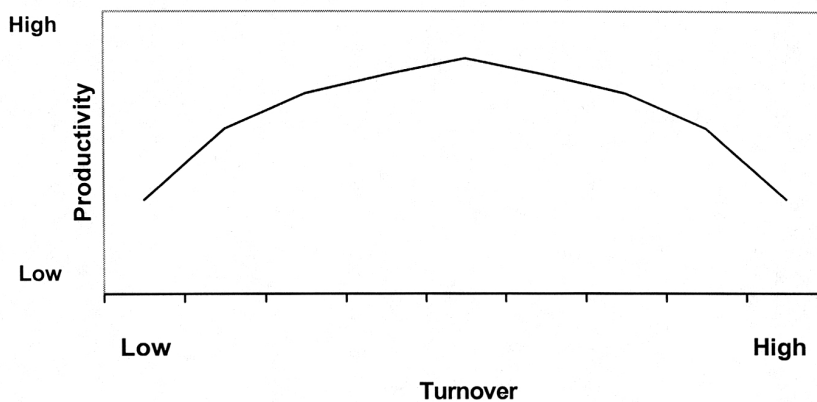

Figure 6. A model of the relationship between turnover and productivity. Source: developed by the authors.

recently sued Cisco Systems claiming that the other firm had hired away a group of Alcatel engineers in order to learn trade secrets (Koenig 2000).

Competition among employers to retain their most talented employees and the phenomenal growth in the U.S. stock market in the last two decades of the twentieth century produced a surge in stock-based incentive compensation, especially stock options. The average "overhang" level for a firm in the S&P 1500, defined as stock options granted plus those remaining to be granted as a percentage of the total shares outstanding, grew from 5.4 percent to 13 percent (Luss and Kay 2000). On the other hand, the downturn in the stock market of late has left many firms scrambling to keep employee stock options afloat. Although economic theory would contend otherwise, many employers have been forced to reprice their underwater options to prevent employees from walking down the street to achieve essentially identical compensation packages. It seems clear that as labor markets tighten, there will be a proliferation of noncompete arrangements, employment contracts, and even lawsuits aimed at inhibiting the free flow of workers across companies. However, as some employers figure out how to reduce turnover within their own workforces, this simply adds to other firm's shortages.

Bidding New Workers into the Workforce

One alternative to ease the pressures of tighter labor markets is to expand the supply of labor. Women's participation rates are about 15 percentage points below those of their male counterparts, so it might be possible to attract this last residual pool of women, many of whom are physically able to work outside the home. But to do so the job offer will have to become more attractive. Offering more flexibility regarding work-life patterns may help, to the extent that employers can provide workers with the change to manage their individual circumstances. For working mothers, it may be important to leave work in time to meet the school bus; women who care for elderly parents may need to leave work in an emergency or for an extended period of time.

A recent survey of large employers and employees designated as "top-performers" asked how effective certain practices were in helping attract and retain highly productive workers. Employer responses, as well as those of the female employees who responded to the questions, are reported in Figure 7. Respondent women were divided into two groups: those with children and those without. It is interesting that both groups of women have similar answers, on the one hand, while there are significant discrepancies between employee and employer responses on three of the four measures. Clearly alternative work arrangements are important to women, especially flexible work schedules and job requirements. It is possible that the Internet and company intranets will allow new ways for employees and managers to communicate, making work from home a more realistic alternative.

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This survey also indicates that employers could reconsider their policies toward the organization of work and the demands placed on women workers. A key challenge in this regard will be to make part-time work more efficient. Today's labor market indicates a remarkable discrepancy in the productivity of part-time versus full-time workers: Lettau (1994, p. 15) found that in firms that used both types of workers, "compensation in part-time jobs is significantly lower than in full-time jobs when jobs from the same establishment and occupation are compared." Regarding benefits he found that "it is often true that the full-time job receives the benefit while the part-time job does not." On the other hand, "[i]t is virtually never true that the part-time job receives the benefit while the full-time job does not." (p. 16)

Explanations for the part-time/full-time pay difference include the possibility that part-time workers might work in less productive firms, though Lettau's data suggest this theory is only partially correct, if at all, since information is collected from the same firms. A second theory is that workers who choose to work part time are simply not as productive as those who choose to work full time, and sorting is reflected in compensation differentials. There is little empirical grounding for this view, though Ippolito (1997) contends that employers seek "signals" indicating which employees are reliable, for example, in terms of job attendance. He ties reliability to the use of sick leave among a group of federal workers, their accumulated sick leave balances (that they can carry over indefinitely), their use of unpaid leave, and voluntary termination behavior. In that analysis he reported a negative and statistically significant relationship between the use of these
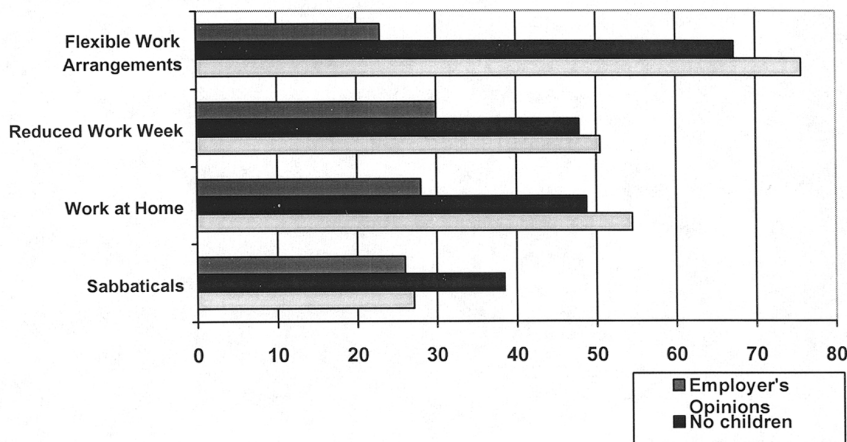

Figure 7. Attitudes of top-performing female employees and their employers toward flexible work arrangements. Source: authors' calculations from Watson Wyatt Worldwide (2000).

benefits and earnings. Women willing to work only part time because of family obligations may be interpreted as signaling a lesser commitment, which in turn explains their lower compensation. A final explanation for lower pay for part-timers is that there are economies of scale or technology that demand a minimum period of work per day, to achieve optimal productivity. While there has been a steady decline in average hours worked in manufacturing jobs from around sixty hours per week in the United States in 1890 to about forty-two hours per week in 1930, average hours worked per week have not changed much even though real earnings have risen (McGill et al. 1996).[9]

Looking ahead to a period of lower labor force growth, it is possible that employers will need to find ways to entice women into the workforce, and it may be that few of these will be willing to commit to full-time jobs particularly during child-raising years. As a result, employers will either have to enhance productivity during relatively short work periods, or facilitate their working longer than they might be naturally inclined to do. Along with more flexible work arrangements, benefits that appeal to parents could also prove successful with women who are not currently full-time employees. For example, childcare costs have become a very significant part of two-earner couples' budgets. Women's decisions to return to work after childbirth is highly correlated with employer policies; job flexibility and part-time work prove to increase the probability of a mother returning to work after childbirth, along with unpaid leave, pretax savings accounts, and child care in the workplace (Hofferth 1996; Glass and Riley 1998). Some commentators emphasize job guarantees, formal pay policies, and phase-back programs for new parents are also important criteria for working mothers as they assess their employment situation. Employers hoping to tap these potential sources of labor supply in the future may find they need to do more in providing such enabling benefits.

Keeping Older Workers

A different approach would be to entice older workers to extend their careers. In the coming decade, as Riche (this volume) notes, the relative share in the 45+ age group will rise substantially, with the largest growth among workers ages 55–64. While today this is a common age for retirement, many such workers are still highly productive. Facing a shortage of talent, some employers will likely find a better use for their most experienced employees than putting them out to a premature retirement. Recent changes in retirement policies have already begun boosting incentives for older individuals to work longer, including the repeal of the earnings test under Social Security for beneficiaries 65+. This could induce older workers to postpone retirement and attract them back into the workforce and/or increase their incentive to work longer hours.

Employers have also repositioned benefit programs, particularly by offering hybrid pension plans as an alternative to traditional defined benefit (DB) pensions. Under the traditional DB plan, the benefit formula would accrue benefit values slowly during the early part of the worker's career, and it would rapidly accelerate near retirement. Most traditional DB plans also had early retirement subsidies that promoted early exits. By contrast, hybrid or cash-balance plans largely eliminate early retirement subsidies (Clark et al. 2001). Moreover, these are more conducive to the transient state of today's workforce by permitting employees to take their account balances with them on changing jobs.

On the whole, however, employers have not yet fully committed to mechanisms that appeal to retaining older workers. In surveying 400 company HR executives, only 18 percent of firms had implemented benefits packages targeted towards older employees (AARP 2000); one-third of employers have implemented part-time work arrangements for older employees.

On the positive side, formal "phased retirement" programs are now being developed, where employment practices and pension accruals are altered to retain older workers either on a part-time or part-year basis. A survey of large employers found that 16 percent offered some form of phased retirement program in 1999, up from 8 percent in 1997.[10] Employers are also hiring "un-retirees" for part-time and temporary employment, as well as consultants. Furthermore some 60 percent of the employers surveyed featured reduced workdays and/or workweeks, while nearly one-quarter of employers permitted extended leaves of absence for workers nearing retirement.

The future of phased retirement is likely to be a permanent development, since it is mutually beneficial to both employers and employees. Only one in four working Americans believes he will have enough money to live comfortably in retirement (EBRI 1999); 68 percent of men and 65 percent of women surveyed in 2000 thought they will work for pay in retirement, up from 65 percent for men and 57 percent for women in 1998. Interestingly, most people report that the main reason to extend the work life is a desire to stay involved and having a satisfying way to spend time. Of course young workers may report that they intend to work beyond normal retirement age, but they may feel quite differently in their mid-60s.

In any event, there appears to be growing interest in helping workers move gradually from full-time work to complete retirement. But several regulatory hurdles make it difficult to implement phased retirement arrangements including restriction on in-service distributions of retirement benefits. Nevertheless, substantial fractions of Watson Wyatt surveys indicate a moderate-to-high level of interest in implementing phased retirement arrangements over the next two to three years, and nearly half report they hope to retain skilled workers by implementing such plans. Employers seeking to leverage their attractiveness to older employees in the future must likely commit to such programs.

Boosting Current Workers' Productivity

If it proves difficult to entice more people into the labor market, perhaps more production can be generated by current workers. In other words, it may be possible to get by with slower labor force growth if employers can find a way to utilize existing human capital more efficiently. The goal of achieving higher productivity as a society will ultimately have to be delivered at the employer level.

Borrowing from Stewart (1997), we propose that an organization's ability to create economic value is the direct result of how effectively it uses its financial, customer, and human capital resources. Financial capital includes all of the fixed and current operating assets of the organization. In commercial and nonprofit enterprises, customer capital is the value that accrues to an organization because of the client goodwill that makes them repeat customers. In public sector endeavors, customer capital is embodied in the political support that makes some jurisdictions preferred places for commercial enterprises and families to locate. Total organizational effectiveness is achieved through the linkage of the various forms of capital through what Stewart calls "structural capital." Structural capital is the set of programs, processes, and practices that allow an organization to leverage its human capital in a way that it can maximize its effectiveness. In part, employers accomplish this by the effective utilization of financial and customer capital assets, in combination with human capital. But structural capital can also work as an accelerator on human capital resources to accentuate an organization's ability to create value. The task employers face is figuring out how to develop and use this structural capital to fully exploit the human capital and sustain its productive use. By identifying why some employers are more effective at stimulating highly productive work environments than others, it is possible to teach those with low productivity levels how to improve, resulting in higher productivity growth.

Linking human resource management practices to organizational effectiveness is an elaboration of economics production function:

$$P = K^a \, L^{1-a} \ ,$$

where P represents product or output, K represents capital inputs, L equals labor inputs, and a and $1-a$ represent the marginal product of K and L respectively. This model suggests that enhancing human capital results in the firm being generally more productive.

Economists have found that there is a structural relationship between worker productivity, pay, and age. Pay levels tend to be positively sloped during the initial phases of working careers, peak somewhere around mid-career or later, and then decline beyond a certain age. Improvements in pay and productivity early in the career are related to on-the-job training (Mincer 1974; Maranto and Rodgers 1984; Brown 1989). The leveling-out

of the age/earnings profile beyond a certain age is seen as related to the slowdown in the accumulation of skills, and ultimately to the depreciation of knowledge acquired early in a worker's career. In some cases, individual workers themselves lose the appetite to continue to acquire new skills. Employers may also lose interest in investing in workers at some point, because the expected remaining period over which the investment in that training can be amortized becomes so short that the returns on the invest-ment become negative. As a consequence, older workers may end up with more fixed acquired skills as compared to younger counterparts, whose capabilities are continuing to be enhanced because of personal and em-ployer investment in them. Without continuous renewal of the skills being brought to the labor market, individual worker's human capital depreciates just like the physical capital.

When asked what effect increasing age had on worker productivity, 74 percent of the senior executives surveyed by Watson Wyatt indicated that productivity decreases with age at some point (23 percent concluded that age was unrelated to productivity, and 3 percent indicated that productivity increased with age indefinitely). Executives asked to indicate the approxi-mate age at which productivity begins to decline indicated around age 55 (Watson Wyatt 2000). A similar finding was reported by Carliner (1982), who found that earnings of men in their 50s and 60s declined relative to those of younger men.

The potential problem employers face in keeping on older workers is sketched out in Figure 8. Some companies maintain traditional hierarchi-cal structures that depend on relatively inexperienced workers at the bottom having relatively little human capital, and then fewer workers fill the suc-cessively narrower ranks as competency and human capital levels rise. The traditional job structure is characterized by the solid triangle in Figure 8. But as baby boomers move into their most productive years, the workforce may look more like the inverted triangle in Figure 8, characterized by an abundance of highly experienced and skilled individuals. Unless employers restructure to take advantage of boomers' experiences and skills, workers with high-level capabilities will end up doing lower-level jobs below their
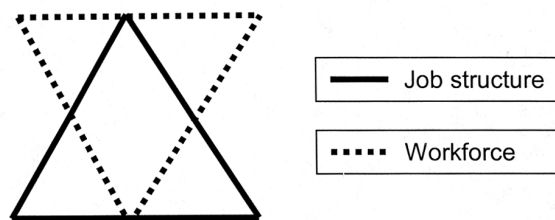

Figure 8. Hypothetical job structures and the evolution of the workforce in the United States, 2000–2010. Source: developed by the authors.

capabilities. Some of these will become frustrated and leave the labor market prematurely, reducing rather than enhancing productivity, contrary to what we argue the economy needs.

An alternative way to consider these challenges relies on the perspective of sociological or behavioral/psychological models. Here human resource management is viewed in relation to measures of internal and external environmental factors such as technology, organizational structure, stage of life cycle, business strategies, organizational structures, and the like. Rather than focusing as economists do on the marginal contribution that human capital makes to organizations, these other approaches stress how "structural capital" can leverage human capital for value creation purposes. Stewart (1997) points to the different evolutionary paths of Wal-Mart and Sears as an example of two companies operating in virtually identical markets with very different results. The personnel these two companies brought to their respective marketplaces were initially similar. Sam Walton may have had a domineering character and a formula for retail marketing success, but Sears could have found strong and bright managers and could have copied Walton's ways. Yet Wal-Mart succeeded relative to Sears and its other competitors. In other industries this has also happened: Canon moved from ground zero in the office copier market, where Xerox held a near monopoly position, to a position of equality and then dominance (Hamel and Prahalad 1994). Collins and Porras (1994) look at a series of paired companies that operated for long periods to study why some companies are more successful than others.

Based on this and similar research, Jackson and Schuler (1995) have developed a research taxonomy sorting organized human resource management practices into five areas. These are used to assess their impact on achieving fundamental business goals, and they include (1) planning, (2) staffing, (3) appraising, (4) compensating, and (5) training and development. Each of these has to do with the acquisition, development, or reward of human capital within an organization. A body of research analyzes the effectiveness of the various elements of this model; for example, Hansen and Werenfelt (1989) test both economic and organizational models, and then integrate elements of the two. An interpretation of their findings is that not only does the quality of the human capital in an organization matter, but also how that human capital is organized and marshaled for the task at hand.

The human capital drivers that appear to have a marked effect on firm performance include (Luss and Kay 1999): recruiting excellence, collegial and flexible work environments, communications integrity, and clear rewards and accountability. That research also concluded that several human resource policies are associated with value creation within the organizations studied. As illustrated in Figure 9, the link between effective human capital management and higher shareholder returns works via employee and customer
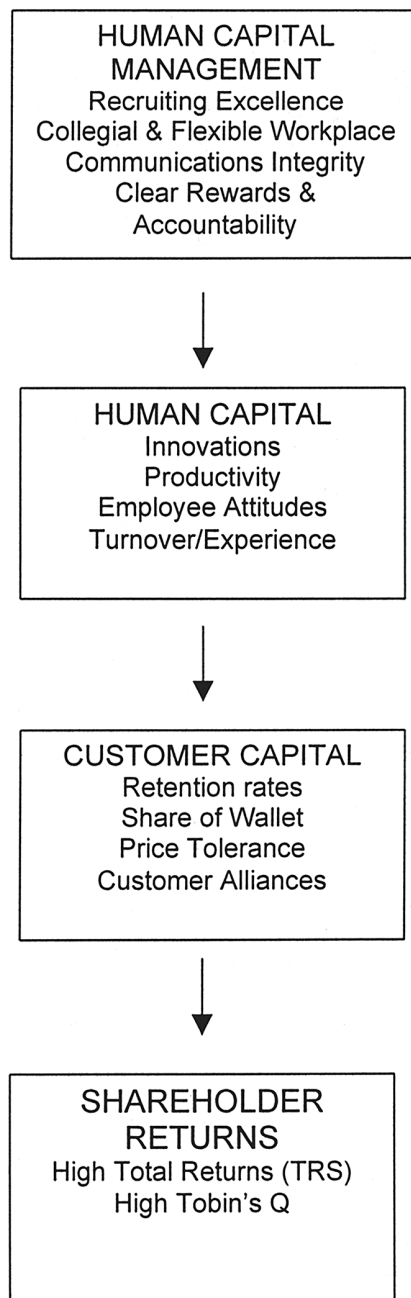
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┌─────────────────────────────────┐
│       HUMAN CAPITAL             │
│        MANAGEMENT               │
│     Recruiting Excellence       │
│  Collegial & Flexible Workplace │
│    Communications Integrity     │
│        Clear Rewards &          │
│         Accountability          │
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┌─────────────────────────────────┐
│       HUMAN CAPITAL             │
│         Innovations             │
│         Productivity            │
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│        SHAREHOLDER              │
│          RETURNS                │
│    High Total Returns (TRS)     │
│        High Tobin's Q           │
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Figure 9. Human capital management creates shareholder returns. Source: Luss and Kay (1999).

satisfaction. Firms cannot manage their shareholder returns directly. Instead, managers choose their product, service, financing, and human capital strategies to try to achieve superior firm performance. In the human capital area, there are specific firm actions and behaviors that can cause measurably higher levels of employee satisfaction and productivity with lower levels of employee turnover. In turn, these improvements will result in higher customer loyalty and satisfaction leading to the creation of surplus value within organizations.

Effective human capital management is a combination of four human resource functions. Recruiting excellence allows a firm to acquire employees who either already possess the general human capital necessary to do the jobs required, or who can be trained. The next step is to establish a collegial and flexible workplace so employees are encouraged to work well together. Within this workplace, the firm must promote communications integrity. This involves trusting employees enough to share information with them and to allow them to communicate outside of hierarchical boundaries. Effective communication is crucial for leveraging human capital into outstanding customer service. Finally, there needs to be an effective performance management system with clear rewards and accountability to establish the relationship between performance and rewards.

Luss and Kay (1999) derive weights for these four human capital drivers by studying the relative effect of that variable on firm performance. The authors found that a twenty-five-point increase in their index score was associated with a 15 percent increase in Tobin's Q, equivalent to an 18 percent increase in market value for the median firm studied. Another interesting result was that the firms that scored highly at one time continued to be relatively high performers two and three years later. This research supports the claim that companies can use human capital management to have a measurable effect on firm value. Human capital management can be used to increase employee satisfaction, leading to higher customer loyalty and to better firm performance.

Conclusions

As the United States braces for an era of much slower growth in labor supply than experienced in the past, employers must begin to reconsider their workforce practices if they wish to sustain their viability into the future. We suggest that this will require programs to attract and retain the best and the brightest. For these programs to be successful, employers must do more to proactively recognize the needs of their workforces. If employers wish to attract more women into the workplace, they must address issues that have kept substantial numbers of them from participating. This means implementing more suitable work-life solutions for women, such as on-site childcare and more flexible work schedules. If employers wish to delay the

retirement of their most valued employees, they must rethink their retire-
ment policies and provide access to phased retirement.

Although employers may be successful at bidding new workers into the
workplace and/or retaining their current staff, we still worry that employ-
ers may not be able to hire enough workers to meet production needs. To
survive, they will have to restructure and recreate a more conducive work
environment, one that can entice more production out of existing employ-
ees. It is the firms that are the most successful at managing their human
capital through effective communication programs, offering a collegial
work atmosphere, and establishing a performance management system with
clear rewards and accountability, that will be most effective. Ultimately,
these same firms will likely be the most successful at enhancing shareholder
value and who will survive to be the leaders of tomorrow.

Notes

1. GDP is not a perfect measure of improved standards of living across this
period, in part because of the changing labor force behavior of women. In 1946,
fewer than half of working-age women in the United States were employed outside
the home, whereas nearly 80 percent were during 2000. As women have increasingly
entered the workforce, many tasks that were previously done by housewives and not
measured in the government's calculation of GDP have been commercialized and
are now included in measures of national output.

2. Over the last three decades the annualized growth in GDP per capita was fairly
stable at 2.12, 2.25 and 2.33 percent for the 1970s, 1980s and 1990s, respectively.

3. The CBO projections are slightly more conservative than the Clinton adminis-
tration's or the Blue Chip estimates. This is because projected economic growth
rates developed by the CBO and other prognosticators are solutions to a set of
simultaneous equations tracking activity across various economic sectors. CBO pro-
jections do not model cyclical variations in the demand for goods and services;
beyond the immediate short term. Underlying assumptions about capital growth
and technology drive projected labor productivity; as long as projected output is
consistent with prior patterns of production, most macro models assume markets
for goods and services will clear. It seems reasonable to assume that consumers can
keep up with increased productive capacity in the future.

4. The nonaccelerating inflation rate of unemployment is more generally re-
ferred to as the natural rate of unemployment. This is the rate of unemployment
that is implied by the present structure of the economy that accounts for the struc-
tural and frictional forces in the economy that cannot be reduced by raising GDP.

5. We have not developed our own macroeconomic projection model; there are a
number of them around that are widely used in government and business planning.
We have no reason to believe that the macroeconomic projections from a model we
might build would generate significantly different results than others given certain
underlying assumptions that are important in these types of projections.

6. By applying constant labor force participation rates in 2000 to population
shares over the coming decade, our baseline labor force is projected to be 156.7

million in 2010. The Bureau of Labor Statistics and the actuaries at the Social Security Administration have made similar labor force projections. However, the BLS has published projections only for the 16 and over civilian labor force through 2008. The BLS projects the 2008 labor force to be 154.6 million, the Social Security Administration projects 151.3 million, while our baseline labor force is projected to be 153.8 million (SSA 2001a; Fullerton 1999).

7. An unpublished hours series from the Social Security Administration combined with the most recent estimates of GDP suggests that from 1995 to 2000, worker productivity increased by 2.27 percent. While some argue for a "new" paradigm in productivity growth, not all agree (Gordon 1999). For planning purposes, prudence suggests that it is necessary to recognize three decades of historical data.

8. For all practical purposes, this assumption is the equivalent of assuming the end of early retirement in the United States. In this case, the need for workers 65 years and older depends on whether excess demand for labor persists in the labor market after the higher participation rates of people between 55 and 64 years old have been factored into the analysis. For completeness, we estimate labor force participation rates and hours per worker assuming all workers 55 and over are equally likely to increase workforce participation. Under the most conservative assumption of productivity growth, labor force participation rates and hours per worker will increase over 48 percent from their 2000 levels. For men ages 55–64, labor force participation rates would need to rise from 68 percent in 2000 to 100 percent by 2010, while women in the same age grouping would need to increase from 51 percent to over 76 percent. This seemed an improbable scenario.

9. One explanation for the persistence of the forty-hour week is the rising importance of team production in the work place. Often times, for teamwork to be effective, it requires that all members be together at once.

10. Graig and Paganelli (2000) define phased retirement as arrangements that allow employees approaching normal retirement age to reduce their work hours or job responsibilities or both for the purpose of gradually easing into full retirement.

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