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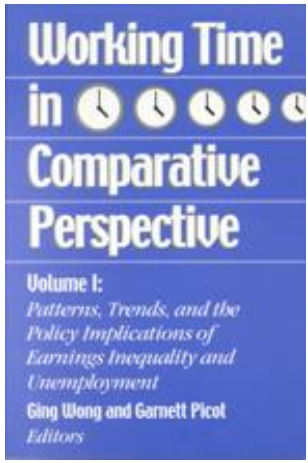
Working Hard



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There is considerable variation in the hours worked and in the reported devotion to work of persons among advanced Organisation for Economic Co-operation and Development (OECD) countries. Americans, the Japanese, Australians, and New Zealanders put in lots of hours on the job. Relatively many Americans and Canadians report that they want to work more hours than they do. By contrast, western Europeans enjoy long vacations and considerable leisure while employed, and in many European Union countries work sharing is encouraged as a method for dealing with unemployment. During the 1980s and 1990s the gap between time worked by employed Americans and Canadians and time worked by their western European comrades increased noticeably.

There is also considerable divergence in earnings inequality among advanced OECD countries, with inequality higher in the United States, Canada, and the United Kingdom than in most OECD-Europe countries. During the 1980s and 1990s, moreover, inequality also grew much more rapidly in the United States, the United Kingdom, and to a lesser extent Canada than in continental western European countries (Freeman and Katz 1994).

To what extent, if at all, are these two patterns related? Does high earnings inequality induce workers to work longer hours and work harder? Has increased inequality contributed to the rising gap in time worked between workers in the United States and Canada and those in Europe? How does the greater work time of Americans affect compar-

isons of economic performance between the United States and other OECD countries?

This chapter presents the basic facts about "working hard" in the United States and Canada relative to other advanced OECD countries. It sketches out the hypothesis that inequality in outcomes increases work activity and offers some preliminary evidence from the United States regarding this hypothesis. The empirical evidence reveals a positive relationship between the hours worked within detailed occupation, industry, and region cells, and the inequality in hourly wages in those cells is consistent with the hours-inequality hypothesis.

NORTH AMERICANS AS WORKAHOLICS

Hours Worked and Preferences

Table 1 presents estimates of annual hours worked and changes in annual hours worked in major advanced OECD countries. Column 1 records annual hours worked per employed person as reported by the OECD. The sample of employees includes part-time as well as full-time workers. Annual hours are higher in the United States than in the major European countries, although workers put in many hours in several other countries as well, most notably Japan, Australia, New Zealand, and Finland. Hours worked by employed Canadians are 3 percent lower than hours worked by employed Americans, but they are still above the hours worked in most advanced OECD-European countries. Annual hours per employed person does not, however, capture the full difference in working time among countries because there are also sizable differences in the ratio of employees to the adult population, due in part to labor force participation decisions and in part to differences in rates of unemployment across countries. In 1994, for example, the employment/population ratio for 16–64 year olds was 73.2 in the United States, 64.2 in Canada, and 58.2 in OECD-Europe (OECD 1995). Column 2 of Table 1 records employee/population ratios for the various countries for which we have annual hours data. Multiplying the annual hours per employed person by the employment/population ratios gives the annual hours worked per person of working

Table 1 Differences in Annual Hours Worked among Advanced OECD Countries, 1994

Country	Annual hours per employee, 1994	Employment population ratio (ages 15–64)	Annual hours per adult (ages 15–64)	Estimated change in annual hours per employee, 1970–1999[a]
United States	1,780	73.2	1,303	–121.5
Canada	1,719[b]	63.8	1,097	–148.5
United Kingdom	1,717[b]	66.5	1,142	–120.8
Norway	1,415	72.7	1,029	–346.0
Sweden	1,544	70.3	1,085	–65.9
Germany	1,578	62.6	988	–389.0
Finland	1,780	60.1	1,070	–204.0
France	1,631	59.0	962	–320.4
Netherlands	1,395	63.7	889	–361.3
Australia	1,882	67.0	1,261	—[c]
New Zealand	1,843	68.2	1,257	—
Japan	1,965[d]	74.2	1,458	–236.0[e]

SOURCE: Column 1, OECD (1995, Table C); column 2, OECD (1995, Table A); column 4, calculated from OECD (1996, Table 3).

[a] Based on estimates of annual average change in hours from trough to trough over three time periods, as given in OECD Employment Outlook, 1996. Exact time periods by country as follows: 1) United States, 1970–71; 2) Canada, 1970–92; 3) United Kingdom, 1971–93; 4) Norway, 1970–92; 5) Sweden, 1972–93; 6) Germany, 1971–94; 7) Finland, 1971–93; 8) France, 1971–93; 9) Netherlands, 1972–93.

[b] 1993 data.

[c] A dash implies that data for these countries were not provided in the OECD table.

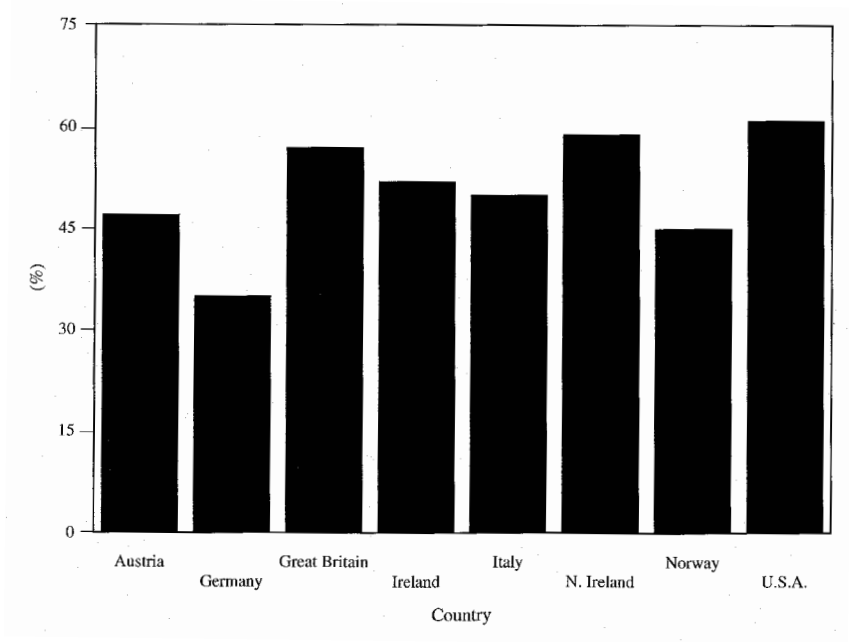
[d] 1992 data.

[e] Based on change in actual hours per employee (1973–93), as reported in OECD Labor Force Statistics.

age in column 3. The differences between the United States and western Europe in hours worked per adult are on the order of 30 percent, whereas those between Canada and western Europe are relatively modest. To the extent that hours worked per adult are a measure of "working hard," Americans work harder than Canadians and western Europeans.

There are two additional pieces of evidence that support the claim that Americans are more devoted to work than are western Europeans. In its 1989 World of Work module, the International Social Science Programme (ISSP) survey[1] of workers in different countries contained the following question: Which of the following statements best describes your feeling about your job? 1) I work only as hard as I have to, 2) I work hard but not so much that it interferes with the rest of my life, 3) I make a point of doing the best work I can, even if it interferes with the rest of my life. Figure 1 compares the proportion of workers who gave

Figure 1 Percentage of Workers Who Work Hard "Even if It Interferes with the Rest of Their Life"



SOURCE: Bell and Freeman (1995, Table 5.7).

the third response—working hard even if it interfered with their lives—among the advanced OECD countries covered by the 1989 survey. The figure shows that U.S. workers were the most likely to work hard at the expense of the quality of their lives, followed by persons in other English-speaking countries. Germans, Norwegians, and Austrians, on the other hand, were the least likely to sacrifice for their jobs.

The second piece of evidence comes from surveys that ask individuals to choose between working more or fewer hours than they currently do. These questions are a bit tricky, because by specifying the hypothetical differently, one can readily induce different but valid responses. We focus on questions that ask people about the desire to work fewer or more hours at the same rate of pay, as opposed to questions that ask about the desire to work more hours at an overtime rate or about preferences between increases in pay for the same hours of work versus the same pay for reductions in hours worked.[2]

For the United States, data on preferences come from the May 1985 Current Population Survey (CPS) Supplement. The specific question analyzed is: If you had a choice would you prefer to work: 1) the same number of hours and earn the same money, 2) fewer hours at the same rate of pay and earn less money, or 3) more hours at the same rate of pay and earn more money? For Canada, the June 1985 Canadian Labour Force Survey asked a more detailed and complicated question that also specified that the employees would be paid the same rate, while at the same time indicating that all other conditions of work remained the same (see Kahn and Lang 1988). For European countries, the March 1991 *European Economy* reports results from a European Economic Community (1991) survey that asked the question this way: Assuming that your present hourly rate remained unchanged, would you like to work less, as long, or longer? For Japan, the 1992 Employment Status Survey (*Shugyo Kozo Kihon Chosa*) asked a question comparable to the May 1985 CPS question.

Table 2 summarizes the results from these diverse surveys. It shows a striking difference in preferences for more or less work between Americans and Canadians and western Europeans, and between Americans and Canadians and the Japanese as well. While in all countries the majority of people are satisfied with their current hours at work, the proportion wanting to work more hours than they currently do is higher for Canadians and Americans than for Europeans

Table 2 Preferences for More or Fewer Hours of Work

Country	Prefer more hours and more earnings	Prefer same hours and same earnings	Prefer fewer hours and less earnings	Differences between columns 1 and 3
Canada (1985)	35	50	15	20
United States (1985)	27	65	8	19
Japan (1992)	3	68	30	–27
Germany (1989)	4	55	38	–34
United Kingdom (1989)	4	65	30	–26
Europe	9	51	37	–28

SOURCE: Canada—tabulated from data in Kahn and Lang (1988).
United States–May 1985 Current Population Survey, as reported in Bell and Freeman (1995).
Germany– European Economic Community (1991, Table 2).
United Kingdom–British Social Attitudes Survey.
Europe–European Economic Community (1991, Table 22). Data include Belgium, Denmark, Italy, Netherlands, Portugal, and the United Kingdom. In the E.U. study, U.K. figures are 12 percent for more hours/earnings, 50 percent for the same, and 12 percent for less, giving a difference of –21.

or Japanese, and the proportion who want to work fewer hours is lower for Americans and Canadians than for Europeans and Japanese. The differences in preferences among countries are well-summarized by the final column of Table 2, which shows the differences among countries between the proportions of individuals wanting more and less work. The fact that North Americans work more hours than Europeans and at the same time have a greater preference for additional hours worked than Europeans is particularly noteworthy. By contrast, the Japanese, who also work many hours, want to work fewer hours than they currently do and, in preferences if not actual hours worked, more closely resemble the Europeans.[3]

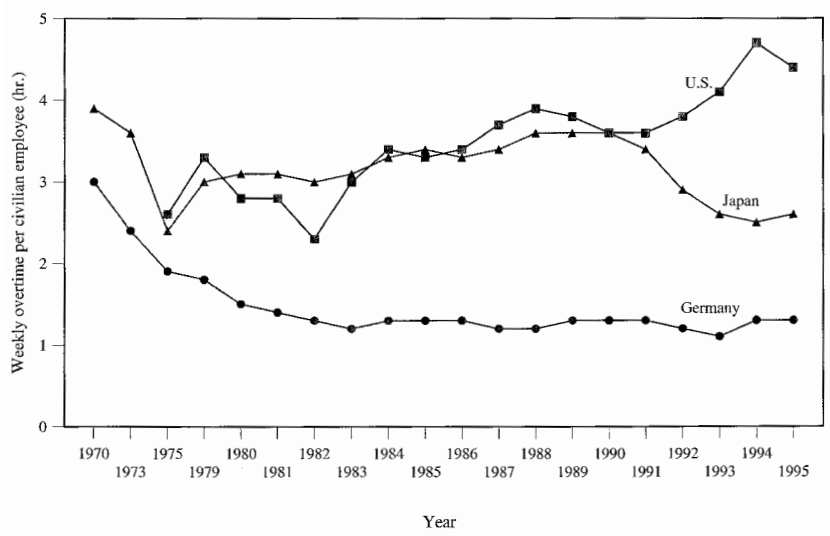
In sum, on the basis of all three statistics—hours worked, willingness to sacrifice for work, and desire to work more—Americans appear to be working harder than Europeans. As in many other statistics, Canada falls somewhere between the United States and Europe, showing high preferences for additional hours of work in surveys of preferences but not actually working all that much more than Europeans.

Changes in Hours over Time

Has the hours difference between North Americans and western Europeans always existed, or is this a relatively recent phenomenon? The evidence in column 4 of Table 1 shows that the greater work activity by North Americans developed in the 1970s–1980s. According to the OECD estimates, in 1970 (adding column 4 to column 1), North Americans worked fewer hours than Europeans. This finding is not unique to the OECD data; it is found in other statistics as well. Data gathered by Maddison (1995) for instance, show a similar pattern in hours worked per capita from 1950 to 1992. In 1950, Americans worked 24 percent fewer hours per capita than Germans, 18 percent fewer per capita than the French, 15 percent fewer than the British, and 8 percent fewer than Italians. By 1973 these differences narrowed greatly, as Europeans took much of their increased prosperity in leisure. By 1992, Americans worked 6 percent more hours than Germans, 22 percent more than the French, and approximately 12 percent more than the British or Italians. Between 1950 and 1992, hours worked per person in the United States was roughly constant, while hours worked per person in Europe fell by 17 percent (Italy) to 33 percent (France). Data from Japan provided annually by the Japan Productivity Center also show a drop in hours worked per employee of 4 percent from 1980 to 1991 compared to an increase in hours worked per employee in the United States of 11 percent. The Japan Institute of Labor (1994–1995) reports a fall in hours actually worked, including overtime, from 203 hours per month in 1960 to 159 per month in 1993—a 22 percent fall. While most hours series still show that the Japanese work more hours than Americans, the once-immense hours gap has diminished greatly. In Japan, the decline in hours is presumably linked in part to changes in national legislation intended to reduce hours to a 40-hour workweek by 1997 (OECD 1996), and for this reason it will likely continue.

Evidence on the amount of overtime hours worked—for which covered U.S. workers receive time-and-a-half overtime pay and for which workers in other countries often receive less premium—also shows a trend upward in U.S. overtime hours versus Germans and the Japanese (Figure 2). Whereas in 1994 overtime hours in the United States were at a post–World War II peak, overtime hours in Germany

Figure 2 Trends in Overtime Hours



SOURCE: OECD (1996, Table 3.7).

were much below those in the early 1970s. Overtime hours in Japan were also considerably lower than in the 1970s, with the most significant overtime hour declines in the last several years. The OECD data in Figure 2 show Americans with the highest amount of overtime of the three countries. While data from the Japanese Institute of Labor show that Japanese workers still put in more overtime than Americans, it also confirms that the difference in overtime hours has diminished greatly with the trend downward in overtime hours in Japan.

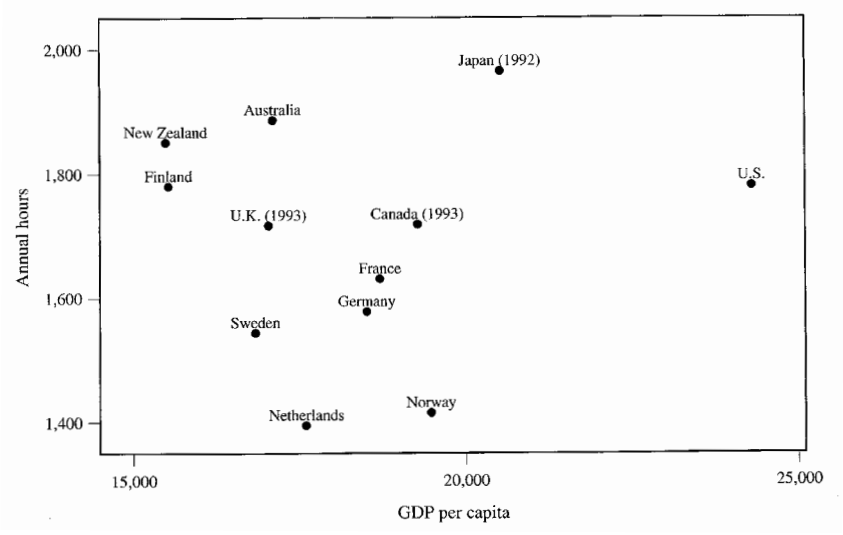
The fact that North Americans worked more hours than western Europeans in the 1990s and worked fewer hours than Europeans in the 1970s makes it difficult to explain cross-country differences in work time in terms of diverse culture or national psychology. The fact that the increased preferences of North Americans for greater work relative to Europeans seems to be a recent phenomenon (Bell and Freeman 1995) supports this as well. Instead of focusing on cultural differences, we direct our attention to differences and changes across countries in the economic incentives that induce workers to work many hours.

Hours Worked and GDP Per Capita

How does working hard relate to national income per capita? From a production function perspective, one might expect additional employment per adult (more properly, employment per capita) to be associated with higher GDP per capita—more input means more output. From a labor demand perspective, one might also expect a positive GDP per capita/labor input association: if higher GDP per capita reflects higher capital per capita, this would produce greater demand for labor and thus greater employment per capita. But a labor supply perspective suggests the opposite: falling time worked with higher income due to the income effect. Indeed, the labor supply–driven story is the usual one given for the long-term downward trend in hours worked, and would seem to fit the drop in hours in western Europe post–World War II.

Figure 3 rejects the notion that either production/demand or supply side forces dominate the relation between hours worked by employees

Figure 3 Annual Hours Worked per Employee vs. GDP Per Capita, by Country



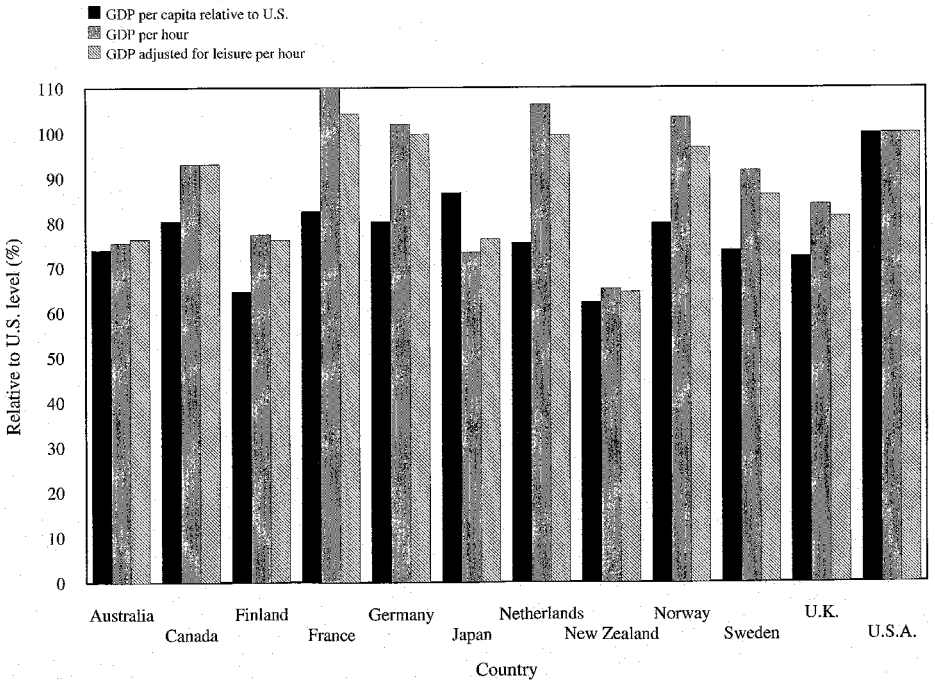
SOURCE: Annual hours, OECD (1995, Table C). GDP per capita from U.S. Bureau of the Census, Statistical Abstract 1995, Table 1374.

and income per capita (measured in purchasing power parity) among countries. There are high per capita income countries where employees put in lots of hours, such as the United States and Japan, and low per capita income countries where employees also work many hours, such as New Zealand. While Canadians and Norwegians have similar per capita incomes, they have very different annual hours worked, and although Germans have a relatively high income per capita, they work relatively few hours. Indeed the message from Figure 3, if any, is that an English heritage (save for Japan), not national income per capita, determines worktime across countries.

The lack of any clear relation between hours worked and GDP per capita notwithstanding, the wide variation in annual hours worked per adult among advanced OECD countries (Table 1, column 2) suggests that GDP per capita, unadjusted for differences in work time among countries, may be a seriously misleading indicator of national productivity and well-being in cross-country comparisons. On the productivity side, GDP per capita will understate the productivity of labor in countries where adults work fewer hours and overstate it in countries where adults work more hours. GDP per working hour arguably offers a better measure of productivity (Freeman 1995), although it is by no means perfect.[4] Measured by GDP per hour worked as opposed to GDP per capita, the sizable lead that the United States has in national productivity diminishes greatly. In GDP per capita, for instance, in 1993 the United States had a 31 percent advantage over Germany. In GDP per hours worked, by contrast, the United States and Germany had virtually identical productivity (Figure 4). But since Americans are working more hours than employees in these countries, we are potentially further down the marginal product of labor curve and thus are probably still more productive. Without measures of capital and other input, it is not possible to go much beyond the basic statement that the United States isn't as far ahead of others as initially appears to be the case.

On the welfare side, fewer hours worked by the employed implies greater leisure, which presumably adds to a worker's utility. Similarly, persons who choose not to participate in the workplace produce valuable goods and services at home and/or enjoy greater leisure. The nonwork hours of the unemployed, by contrast, is more difficult to assess: with good benefit programs and high reservation wages, one cannot

Figure 4 GDP Per Capita, GDP Per Hours, and GDP Adjusted for Leisure



SOURCE: Calculated as described in the text with hours per adult from Table 1; GDP per capita in purchasing power parity units from the U.S. Bureau of the Census (1995, Table 1374); adults per capita from OECD, Historical Statistics (1992, Table 2.1). Adjusted GDP per capita assumes valuation of Leisure = GDP/Hours Worked in U.S.

value unemployed hours at zero, but evidence that the unemployed are less "happy" than others (Clark and Oswald 1994) clearly implies that their time should be given a lower valuation than that of others. In any case, standard neoclassical analysis suggests that adults in countries with fewer hours worked will be better off relative to those in countries with more hours worked at the same level of GDP per capita.

In Figure 4, we pursue this logic by adjusting GDP per capita (measured in purchasing power parity units) for differences in hours worked per adult among countries. We take U.S. GDP per capita and hours worked per adult as the numeraire and estimate a leisure-augmented GDP per capita for other countries (x), based on their hours worked versus those in the United States using the following formula:

$$\begin{aligned}(\text{Aug. gdp/cap})_x = \text{gdp/cap}_x + (&\text{leisure hrs}_{x(\text{per adult})} \\ &- \text{leisure hrs}_{us(\text{per adult})}) \\ &\times (\text{adults per capita}_x)(\text{valuation of leisure})\end{aligned}$$

The difficult component of the equation is the value attached to the greater leisure of adults in other countries versus the United States. One possible valuation is to set the value of leisure at GDP per hour worked in a country, and in this case the equation simplifies nicely to:

$$(\text{Aug. gdp/cap})_x = \text{gdp/cap}_x\,[1 + (\text{workhrs}_{us} - \text{workhrs}_x)/\text{workhrs}_x]$$

Another alternative is to value leisure in country x at GDP per hours worked in the United States, giving us a more conservative estimate of augmented GDP per capital, which takes U.S. work hours as the base. This valuation simplifies to

$$(\text{Aug. gdp/cap})_x = \text{gdp/cap}_x\;[1 + (\text{workhrs}_{us} - \text{workhrs}_x)/\text{workhrs}_{us}]$$

In Figure 4 we report the results of the more conservative calculation. We take GDP/capita in purchasing power parity units from the U.S. Bureau of the Census (1995, Table 1374). We estimate the additional leisure that adults in country A have versus the United States by taking the difference between hours worked per 15- to 64-year-old in the United States and hours worked per 15- to 64-year-old in country X

from Table 1 of this chapter. We obtained values for adults/capita from OECD Historical Statistics (1992), table 2.1.

Even with this conservative estimate of the value of leisure, our leisure augmented GDP per capita substantially compresses the position of the United States as the top country in the OECD league tables and considerably lowers the standing of Japan. More sophisticated analysis, valuing the nonwork hours of different people differently, would presumably produce somewhat different estimates but in the same direction, reducing the position of the North American hard-working countries. Because we work so hard, standard GDP per capita country comparisons indicate that we aren't as well off as our European compatriots.

Factors in Employee Work Time

What factors underlie the gap in hours worked or its complement, hours of leisure per employee, among advanced OECD countries?

The gap in hours worked and thus in hours of leisure per employee between the United States/Canada and western Europe may be due to the potential contribution of three factors, namely, differences in the proportion of workers who are part-time, differences in weeks of vacation (and holiday to a much lesser extent) time, and differences in hours worked per week by full-time workers.

Table 3 records the proportion of workers in various countries who are part-time. Even though European labor markets are less flexible along some dimensions than North American labor markets, the proportion of jobs held by part-timers is higher in many European countries than in the United States, although it is lower in both Germany and France than in the United States. Indeed, part-time working stands out as the sole major form of nonstandard working that has shown a substantial increase since 1970 in the majority of European OECD countries (OECD 1996).

Given reasonable estimates of the difference in hours worked between part-time and full-time workers, however, it is difficult to explain much of the hours gap among employees between the United States and other countries in terms of part-time work, even for the European countries with very high part-time rates. Consider, for example, the case of the Netherlands, where 35 percent of workers are part-

Table 3 The Role of Part-Time Work in Hours Worked in Advanced OECD Countries, 1994

			Change attributable to		
Country	Share of part-time workers (%)	Overall yearly change in work (hrs.)	Change in share of part-time workers (%)	Change in work of full-timers (hrs.)	Change in work of part-timers (hrs.)
United States	18.9	—[a]	—	—	—
Canada	17.0	—	—	—	—
Belgium	12.8	–7.5	–4.9	–2.5	0.2
Denmark	23.3	–6.6	1.4	–7.1	–0.9
Italy	6.2	–3.7	–0.9	–3.0	0.4
United Kingdom	23.8	–1.5	–0.5	3.8	–0.5
Norway	26.5	—	—	—	—
Sweden	24.9	—	—	—	—
Germany	15.1	–10.9	–3.9	6–.1	–0.9
Finland	23.3	—	—	—	—
France	14.9	–4.1	–4.4	0.4	0.7
Netherlands	35.0	–6.6	–11.3	0.0	3.2
Australia	24.4	—	—	—	—
New Zealand	21.6	—	—	—	—
Japan	21.4	—	—	—	—

SOURCE: Column 1, OECD (1995, Table E; 1993 for Canada, the United Kingdom, and Denmark; 1992 for Japan). Columns 2–5, OECD (1996, Table 3.2).

[a] A dash implies that data for these countries were not provided in the OECD table.

time. The hours gap among employees in Table 1 between the United States and the Netherlands is 485 hours. Assume that the hours worked by part-timers are 60 percent of those worked by full-timers. Let *dP* be the difference between the proportion of Dutch and American workers who are part-time; according to Table 3, this is 16 percentage points (35–19 percent). Then, if the Dutch had the same proportion of part-time workers as Americans, their average hours worked would increase by $0.4/[1 - 0.4\ (0.35)]\ dP$, or by 7.4 percent.[5] This would bring Dutch

hours to 1,498, closing the hours gap by 103 hours, or 21 percent. For the other countries, the effect of increasing the part-time proportions to U.S. levels would be markedly smaller, while for Germany and France, the calculation works in the opposite direction: the low levels of part-time work imply that the adjustment would increase the difference in hours worked. The vast bulk of the difference in annual hours worked between North Americans and Europeans is evidently attributable to differences in the hours of full-time workers.

While part-time work cannot explain much of the U.S.–Europe hours gap, the increase in part-time work does help explain the 1980s–1990s fall in hours worked among European countries. Column 2 of Table 3 records the overall average yearly change in annual hours worked in European economies from 1983 to 1993 (with slight variation among countries due to differences in the data). Columns 3–5 decompose that change into the part due to changes in the share of part-timers in employment and in the hours worked of full-time and part-time workers. There is wide variation in the decomposition. In France all of the 1983–1993 drop in hours is due to an increased share of part-timers. In Germany, by contrast, the bulk of the decline in annual hours is due to falling hours of full-time workers. In the Netherlands, the increase in part-timers "overexplains" the fall in hours; the compensating factor is an increase in the hours of part-timers. In the United Kingdom, the hours worked by full-time employees works in the opposite direction to the change in part-timers. Additional data for other European countries also show considerable variation in the importance of part-time work to changes in annual hours.

If differences in the pattern of part-time work among countries do not explain the bulk of the U.S.–European work hours differences, what does? Table 4 reverts back to this issue by considering the contribution of differences in weekly hours and vacation/holiday time in explaining the hours of full-time workers. The data in Table 4 relate to full-time employees in manufacturing because that is the only sector for which we have readily available internationally comparable data. However, scattered information for workers in other sectors (for instance, from the Union Bank of Switzerland study of prices and earnings around the globe) tells a similar story. Indeed, because many countries legislate vacation time or determine it through national col-

lective bargaining, differences among sectors within a country tend to be modest.

Column 1 of Table 4 gives the annual hours worked of full-time manufacturing workers in the various countries. Column 2 of the table records the amount of vacation and holiday time in each country measured in five-day weeks. Column 3 gives standard hours per working week and is measured exclusive of overtime hours. Note that there are substantial differences in vacation and holiday time, due almost entirely to vacations—in the United States the typical worker has a 2.4 week vacation compared to 5.1 weeks for the typical European. Hours worked per week differ much less, with Germany and Norway having the lowest scheduled hours.

Column 4 calculates the difference in annual hours worked between each of the countries and the United States. The differences are large: the 261-hour difference in annual hours of full-time workers in manufacturing between the United States and Germany is 6.5 full

Table 4 The Contribution of Vacation/Holidays and Weekly Hours to Differences in Annual Hours Worked per Full-Time Employees in Manufacturing

Country	Annual work (hr.)	Vacation/ holiday (5-day weeks)	Work per week (hr.)	Differences U.S.A. (hr.)		
				Overall	Due to vacation/ holidays	Due to hours
United States	1,904	4.6	40.0			
France	1,763	7.0	39.0	141	94	48
Germany	1,643	8.5	37.6	261	147	114
Italy	1,764	8.1	40.0	140	140	0
Netherlands	1,709	8.3	38.9	195	144	52
Norway	1,718	6.4	37.5	186	68	119
Sweden	1,784	7.6	40.0	120	120	0
United Kingdom	1,769	6.6	38.8	135	78	57
Europe average (unweighted)	1,736	7.5	38.8	168	113	57

SOURCE: Tabulated from Bell and Freeman (1995, Table 5.2), using data from the Federation of German Employer's Association.

weeks of work, and the 120-hour difference between the United States and Sweden is 3 full weeks of work. Column 5 gives our estimate of the contribution of vacation and holiday time to the difference in annual hours between the United States and other countries. Column 6 gives our estimate of the contribution of hours worked per week to the difference in annual hours between the United States and other countries. In both of these calculations we take the United States as the base and calculate the annual hours worked in other countries as if they had U.S. vacation and holiday time, or as if they had U.S. weekly hours.

The numbers in columns 5 and 6 show that much of the observed difference in annual hours worked between the United States and other countries is attributable to the low vacation and holiday time in the United States. With the sole exception of Norway, the annual hours difference due to differences in vacation and holiday time are larger than the differences due to hours worked. In the case of Italy and Sweden, where scheduled hours are the same as in the United States, all of the difference is due to vacation and holiday time. In Germany and Norway both vacation and holiday time and hours worked per week contribute substantially to the annual hours gap with the United States. For the other countries, the differences in vacation and holiday time dominate the observed difference between U.S. annual hours and the country's annual hours.

The final line in Table 4 presents a crude summary of the factors underlying country work hour differences. It gives unweighted averages of annual hours, vacation and holiday time, and hours worked for the European countries covered in the table. It also shows the contribution of vacation and holiday time and hours worked to the difference between the average annual hours and hours in the United States. Approximately two-thirds of the gap between annual hours of full-time workers is attributable to differences in vacations and holidays and one-third to differences in hours per week.

WHY WORK SO HARD?

Standard labor supply analyses link individual work hour decisions to wages and nonlabor income. In standard analysis, changes in market wages have an ambiguous effect on work time or effort because these changes have both an income and substitution effect typically illustrated in textbooks with an indifference curve diagram. Only in the case of the pure substitution effect can responses to changes in wages be signed, holding income/utility fixed, wage changes should induce individuals to substitute hours in the same direction as the change in wages. Nonlabor income has an unambiguous effect on work hours, with increases in income reducing time worked if leisure is a normal good. Changes in nonmarket productivity or wages will also have an unambiguous effect on time worked in this model, since higher nonmarket opportunities increase total income and induce substitution of work time to nonmarket time. Note that in standard labor supply presentations, inequality of earnings opportunities does not enter the supply decision in any obvious way. Instead, the standard model focuses on the effect of a change in individual wages without considering changes in the distribution of wage opportunities in the market.

In marked contrast, analyses of labor supply concerned with designing contracts to motivate workers place great stress on the shape of the opportunities frontier facing workers and thus on the distribution of opportunities. Piece rate or incentive pay schemes link rewards to effort measured in terms of output. Tournament pay systems link rewards to relative effort. In linking hours worked to the dispersion of opportunities in the relevant market, our analysis of differences in hours worked across countries or among persons in different markets within a country builds on the insights from these types of models.

Consider, for example, two workers, each of whom faces a differently shaped earnings opportunities set due to differences in the distribution of pay in the labor market, differences in job security provisions, or differences in unemployment insurance or other safety net provisions. Hans works in Germany, where pay differences among firms or within a firm among workers are relatively modest, where there is considerable job security, and where unemployment benefits in any event are high and relatively long-lived. Hank works in the United

States, where there are large pay differences among firms or within a firm among workers, where employment at-will produces a high degree of job insecurity, and where unemployment benefits are more modest and relatively short-lived. Who is more likely to work more hours and put in more effort on his current job? If Hans doesn't work that hard he doesn't lose all that much, and if he works hard he doesn't gain all that much either. But if Hank doesn't work hard he can lose his job and suffer painful unemployment or a sizable fall in pay at a new job. On the other hand, if he works hard, Hank can rise in the highly unequal pay distribution and make much more money.

Expressed differently, if the percentile position of a worker in the earnings distribution in his market (either through the firm that employs him, promotions within that firm, or pay within a job grade in that firm) depends on his hours worked/work effort, greater inequality in pay will induce greater work effort. For U.S.–Europe contrasts, our hypothesis can be decomposed into three steps:

1) For an incremental hour of work/effort, employees improve themselves in the relevant earnings distribution commensurately in terms of percentile position in the United States and Europe (if U.S. workers' earnings rise more,[6] this simply augments our story).

2) Any given change in the distribution of earnings translates into a larger difference in earnings in distributions with greater dispersion of pay, and therefore American absolute earnings are more dependent on percentile position than European absolute earnings.

3) Individuals respond to differences in the return to hours/effort with greater hours/effort.

Expressed somewhat differently, the hours-inequality argument is that a mean-preserving spread of wages raises effort/hours. The correct incentive variable in a labor supply equation is not the current wage (as in many labor supply analyses), but the incremental change in the lifetime-expected stream of income due to an increment in effort/hours today—the derivative in lifetime income streams with respect to an additional hour/effort at work. Because we believe that this derivative is positively affected by pay inequality, we expect higher inequal-

ity to be associated with greater hours/effort. To the extent that the level of the wage an individual receives affects the percentile position and therefore the expected return to hours/effort, wage levels matter as well.

Empirical Evidence

Is pay inequality, in fact, related to hours worked?

Bell and Freeman (1995) showed a positive rank correlation between the variance of ln (earnings) and mean weekly hours among full-time workers across nine countries in the 1989 ISSP survey, which is suggestive of just such a relation. Specifically, using data on earnings and hours worked from nine countries including the United States, Germany, the United Kingdom, Netherlands, Austria, Italy, Ireland, Northern Ireland, and Norway, the correlation analysis performed by Bell and Freeman (1995) showed a strong association between the hours-worked ranking of a country and the variation in ln earnings ranking in that country, but no significant association between the hours-worked ranking and the mean-earnings ranking, as might follow from standard labor supply analysis.

Using data from the May 1985, 1989, and 1991 CPSs, we build on evidence of within-cell variation among occupations, industries, and regions in hours worked and test the role of wage variation in explaining these hours patterns.

Specifically, we grouped workers into categories of noncompeting markets by detailed industry, detailed occupation, detailed industry-occupation, detailed industry-region, and detailed occupation-region as defined within the CPS. The rationale for this decomposition is to arrive at labor market cells that reasonably contain the distribution of wages relating to an individual worker's future opportunities. Exploiting the fact of significant hours differences across cells, we attempt to explore the role of differences in the derivative of lifetime opportunities with respect to hours/effort in explaining the hours patterns. Absent such measures, we estimate the incentive for workers to put in more hours/effort by the dispersion of pay in the job market in which they work.

Throughout the bulk of our analysis, we concentrate on full-time, private nonagricultural workers (working 35+ hours).[7] Using the two-

digit categorizations of industry and occupation in the CPS and limiting the data to private nonagricultural workers gave us 42 potential two-digit industries and 41 potential two-digit occupation cells to use for our calculations. The hours figures used in this analysis are "usual hours worked per week," as reported in the CPS. In calculating the hourly earnings of nonhourly workers, we divided usual weekly earnings by usual hours worked. The hourly earnings of hourly workers are self-reported in the CPS.

For each detailed industry and/or occupation-region cell, we calculated four statistics:

1) the mean hours worked in the relevant cell,

2) the mean ln (hourly earnings),

3) the standard deviation in ln (hourly earnings), and

4) the 90/10 percentile ln earnings spread of full-time workers.

Appendix Table A1 shows the calculated statistics of mean hours, pay, and inequality in pay by industry for each year. Appendix Table A2 shows the resultant estimates by occupation for each year. We note sizable variation in mean hours worked across both industry and occupation in these tables.

Table 5 summarizes the basic relationship in these data in terms of the correlation coefficients between hours worked and the level and dispersion of pay across the relevant cells. In each of the three years analyzed, we obtain a positive and in most cases significant correlation between hours worked and the dispersion in hourly earnings, measured by either the standard deviation or the 90/10 percentile spread in ln (hourly wages). The strong positive relationship between hours worked and wage variability is more robust than the cross-section relation between hours worked and the level of pay—work hours are higher in higher paid occupations but lower in higher paid industries in two of the three years.

How robust is the empirical relation between inequality of pay and time worked? As shown in Table 5, changes in the measure of inequality of pay do not noticeably affect the relationship nor do changes in the cell categories.[8] However, in order to provide a further check on the basic relationship, we regressed hours worked by an individual in

Table 5 The Correlation between Hours Worked and the Level of Variance of Wages, by Detailed Industry, Occupation, and Region Cells as Indicated[a]

Cell category	Mean ln (hourly earnings)	Std. ln (hourly earnings)	90–10 spread
May 1985 CPS Data			
Detailed industry *n*=41	–0.220	0.200	0.111
Detailed occupation *n*=42	0.380**[b]	0.399**	0.411**
Detailed industry—occupation *n*=721	0.105**	0.061	0.072
Detailed industry—region *n*=160	–0.249**	0.096	0.166**
Detailed occupation—region *n*=161	0.179**	0.328**	0.346**
May 1989 CPS Data			
Detailed industry *n*=42	0.240	0.118	0.035
Detailed occupation *n*=43	0.425**	0.457**	0.285
Detailed industry—occupation *n*=829	0.214**	0.082**	0.000
Detailed industry—region *n*=164	0.145**	0.240**	0.194**
Detailed occupation—region *n*=166	0.293**	0.224**	0.261**
May 1991 CPS Data			
Detailed industry *n*=42	–0.120	0.225	0.239
Detailed occupation *n*=42	0.249	0.591**	0.486**
Detailed industry—occupation *n*=866	0.158**	0.070**	0.070**
Detailed industry—region *n*=167	–0.199**	0.080	0.143
Detailed occupation—region *n*=164	0.178**	0.541**	0.266**

[a] For private nonagricultural workers, 35+ hours.

[b] ** Indicates statistical significance at greater than 0.05% level.

the 1991 May CPS sample on a set of measures of personal characteristics, family income, and the wage, together with our measures of market inequality: the standard deviation of ln (hourly earnings) in an occupation-industry cell; the standard deviation of ln (hourly earnings) in an occupation cell; and the standard deviation of ln (hourly earnings) in an industry cell. Table 6 records the results of these calculations. The results are clear: all of the measures of inequality are estimated to have a positive effect on hours worked. Since (as is common in cross-section calculations like these) family income obtains a positive coefficient while the hourly wage has a negative coefficient in the hours regression, we would not interpret the equation as a labor supply relation, but rather as a check on the robustness of the inequality-time worked correlation that we argue is a more appropriate measure of the incentive to work hard than standard wage measures.

While we regard the results from Table 5 and 6 as supportive of the hours-inequality hypothesis, we note that this result is sensitive to one change in specification, namely, the inclusion of part-time workers in the sample. With part-timers included, the significant positive correlation between inequality of pay and hours worked disappears. Among industries, the correlation became negative in two of our three years whereas among occupations it remains positive but insignificant. One reason for this pattern is that there is considerable measurement error in the pay and possibly hours of part-timers that produces a large standard deviation in pay. Part-time work is associated with spurious inequality in pay, and, by definition, with fewer hours worked in a cell. This will bias the correlation of inequality to hours downward. Appendix Table A3 shows, however, that even with this bias, excluding part-timers who report working less than 10 hours per week, we obtain regression results with part-timers that are weaker than those in Table 6 but still support the basic hours-inequality hypothesis.

The hours-inequality hypothesis would, of course, be strengthened by evidence from other countries that workers respond to the incentives brought about by greater pay inequality by changing their actual work hours, as well as evidence that pay inequality affects desired work hours. While we lack detailed household data from other countries, the 1989 ISSP data allow us to evaluate worker preferences across countries. Ideally, we would want to analyze individual responses to two types of questions: how important individuals believed hours/effort to

Table 6 Hours Regressions, May 1991 CPS[a]

Dependent variable: ln (usual hours worked per week)										
Independent variables										
ln (hourly wage)	0.013 (0.003)	–0.020 (0.003)	–0.007 (0.003)	–0.020 (0.003)	–0.019 (0.003)	–0.016 (0.003)	–0.009 (0.003)	–0.014 (0.003)	–0.011 (0.003)	–0.007 (0.003)
ln (family income)	0.011 (0.002)	0.082 (0.002)	0.010 (0.002)	0.008 (0.002)	0.008 (0.002)	—	0.009 (0.002)	0.009 (0.002)	0.009 (0.002)	—
Std. dev. of ln (hourly wage) (ind. occ. cell)[b]	0.159 (0.013)	0.323 (0.014)	0.103 (0.014)	0.020 (0.015)	—	0.019 (0.015)	—	—	—	—
Std. dev. If ln (hourly wage) (occ. cell)[c]	—	—	—	—	—	—	0.402 (0.021)	0.326 (0.021)	0.327 (0.023)	0.333 (0.022)
Marriage dummy	—	0.011 (0.003)	0.017 (0.003)	0.012 (0.003)	0.011 (0.003)	0.012 (0.003)	—	0.015 (0.003)	0.015 (0.003)	0.015 (0.003)
Female dummy	—	–0.051 (0.003)	–0.052 (0.003)	–0.049 (0.003)	–0.049 (0.003)	–0.048 (0.003)	—	–0.056 (0.003)	–0.051 (0.003)	–0.050 (0.003)
Less than high school	—	–0.032 (0.008)	–0.014 (0.008)	–0.005 (0.008)	–0.007 (0.007)	–0.007 (0.004)	—	–0.013 (0.007)	–0.014 (0.007)	–0.015 (0.007)
Some high school	—	–0.010 (0.007)	–0.011 (0.007)	–0.010 (0.007)	–0.010 (0.007)	–0.011 (0.006)	—	–0.012 (0.007)	–0.011 (0.007)	–0.013 (0.006)
Some college	—	0.002 (0.005)	0.005 (0.005)	0.003 (0.005)	0.003 (0.005)	0.004 (0.005)	—	0.001 (0.005)	0.003 (0.005)	0.004 (0.005)

College graduate	—	0.026	0.034	0.028	0.027	0.027	—	0.026	0.029	0.029
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)		(0.004)	(0.005)	(0.004)
College plus	—	0.053	0.071	0.056	0.055	0.053	—	0.054	0.061	0.059
		(0.006)	(0.006)	(0.006)	(0.006)	(0.006)		(0.005)	(0.006)	(0.005)
Union dummy	—	–0.012	–0.023	–0.015	–0.015	–0.017	—	–0.016	–0.020	–0.022
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)		(0.004)	(0.004)	(0.004)
Region dummy	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Industry[d] dummy	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Occupation[d] dummy	No	Yes	No	Yes	Yes	Yes	No	No	No	No
R^2	0.0287	0.139	0.110	0.150	0.151	0.147	0.050	0.103	0.125	0.122
N	8,615	8,615	8,615	8,615	8,820	9,926	8,820	8,820	8,820	9,445

[a] For private, nonagricultural workers, 35+ hours. Standard errors are in parentheses.
[b] Standard deviation in ln (hourly wage) in detailed industry/occupation cell.
[c] Standard deviation in ln (hourly wage) in detailed occupation cell.
[d] Detailed occupation and industry dummy variables.

be in determining pay/promotion/status within their work, and an individual's current hours and desired hours of work.

The 1989 ISSP data offer some valuable insight in this regard. Workers were asked to comment on "how important the quality of their work" was in determining their pay. An individual had the choice to respond in one of three ways: very important, somewhat important, or not very important. To the extent that the quality of an individual's work reflects work effort or hours, as it reasonably might, our theory would predict that individuals who respond that quality is extremely important would work more hours. As Figure 5A makes clear, we find precisely this relationship in the data for all countries. Figure 5B cross-tabulates responses to this question and to the question on how hard an individual works. Note that individuals who believe quality is extremely important in determining pay are more likely to "work hard even if it interferes with the rest of their lives" than are workers who believe quality to be relatively unimportant. Once again, with the exception of Austria, these results are uniformly true among countries in the sample. In sum, evidence from the ISSP offers additional support to the hours-inequality hypothesis with respect both to actual and desired hours of work, and suggests that workers in other countries respond similarly to workers in the United States in their hours preferences.

CONCLUSION

This chapter has documented the fact that Americans, and to a lesser extent Canadians, work hard, putting in more hours—and wanting to put in even more—than employees in many other advanced countries. It has shown that taking account of differences in the amount of time worked across countries alters the position of the United States in standard comparisons of GDP per capita. It has presented calculations of the relationship between inequality of pay and hours worked within U.S. occupation and industry job markets that suggest inequality of pay contributes to hours worked. In sum, in the United States we work hard because we face a good "carrot" for putting out time and effort, and because we also face a substantial "stick" if we do not.

Figure 5A Average Weekly Hours and Feelings about Importance of Work Quality for Pay

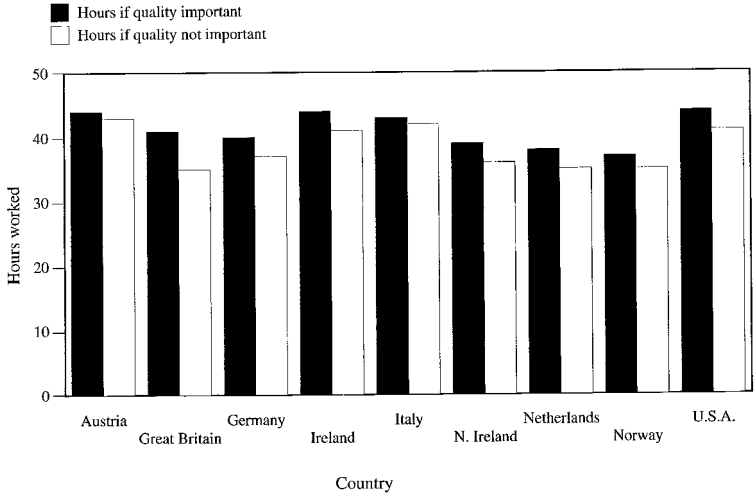
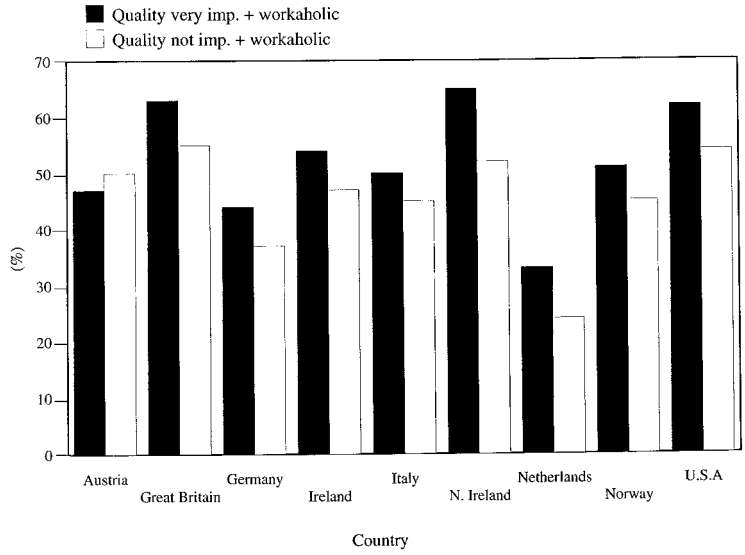


Figure 5B Workaholics[a] and Feelings about Importance of Work Quality for Pay



SOURCE: ISSP 1989.

[a] Workers who work hard even if it interferes with the rest of their lives.

Notes

1. The ISSP is a program of cross-national collaboration carried out with research institutes that conduct annual surveys of social attitudes and values. The virtue of the survey is that it seeks to ask similar questions in identical form in the participating nations.
2. In the ISSP there is a question about preferred hours of work that asks: Think of the number of hours you work and the money you earn on your main job, including overtime. Bell and Freeman (1995) analyze the responses to this question. It shows that Americans are more likely to want more hours and more pay than Europeans, but by much smaller amounts than are shown by questions that exclude overtime. The European Economic Community has asked workers about their preferences between increases in pay (for all hours of work) and reductions in hours worked that would maintain their real income in a collective bargaining session. The responses show that people prefer increases in pay, consistent with the hypothesis that most workers are in equilibrium in their choices about current hours of work.
3. Preferences for hours worked appears to be very closely linked to age in Japan, according to various work hour surveys (see Public Opinion Survey on Working Hours and Five-Day Workweek, for example), with younger Japanese disproportionately predisposed to shorter working hours than their more senior colleagues.
4. The problem is that with the same capital stock, fewer hours worked (due, say, to unemployment) implies higher labor productivity. Thus, Spain will have a relatively high productivity when employment falls—hardly an indicator of a good economic performance. All partial economic indicators are potentially misleading.
5. Let H = annual hours; F = hours of full-time workers; and p = proportion of workers who are part-time in the given country. Assume part-timers work $0.6F$ hours. Then $H = (1 - p)F + 0.6pF = (1 - 0.4p)F$. A change in p thus changes H by $0.4Fdp$. Dividing by H to get percentage changes in annual hours, we get $DH/H = 0.4/(1 - 0.4p)dp$.
6. Data from the 1989 ISSP suggest that at least with respect to perceptions, this may be true. U.S. workers (87 percent) are far more likely to indicate that "the quality of their work is important in determining their pay" than are German workers (47 percent).
7. There are two compelling reasons for concentrating our empirical analysis on full-time private nonagricultural workers. First, the theory that we build on to explain the wage-inequality link is based on a significant amount of future job attachment that is less likely to be an important component of the marginal decisions of part-time workers. Second, measurement error problems are likely to be exacerbated among workers reporting very low numbers of usual weekly hours.
8. Small numbers of observations in individual cells imply that estimates are sensitive to extreme values of hours or wages (either true or measured with error). Correlation estimates by major industry-occupation cells produced a qualitatively similar, although less strong relationship between hours worked and wage variation.

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Table A1 Mean Weekly Hours and Wages in Nonagricultural Industry, Full-Time Workers Only[a]

Industry	Weekly hours[b]	Std. dev. ln (hours)	Hourly wages	Std. dev. ln (hourly wage)
Mining	47.1	0.217	13.87	0.526
Transportation	45.1	0.180	10.71	0.484
Private household services	44.8	0.245	3.56	0.596
Petroleum and coal	44.6	0.134	12.64	0.300
Wholesale trade	44.1	0.140	11.10	0.487
Other professional services	43.8	0.170	12.75	0.623
Non-electrical machinery	43.5	0.122	12.71	0.467
Rubber and plastics	43.2	0.130	9.47	0.439
Repair service	43.2	0.140	8.75	0.436
Tobacco manufacturers	43.0	0.166	16.80	0.593
Motor vehicles and equipment	42.8	0.120	12.86	0.434
Food and kindred products	42.6	0.130	9.26	0.480
Business services	42.6	0.133	10.85	0.574
Stone, clay, and glass	42.6	0.097	11.40	0.410
Insurance and real estate	42.5	0.136	11.19	0.510
Fabricated metal	42.5	0.104	10.76	0.420
Chemicals and allied products	42.5	0.110	15.32	0.491
Education services	42.4	0.143	10.51	0.541
Electrical machinery	42.4	0.111	12.85	0.513
Retail trade	42.3	0.136	7.73	0.504
Leather and leather products	42.3	0.112	8.62	0.539
Entertainment and rec. services	42.3	0.136	8.61	0.518
Toys, amusements, and sporting	42.3	0.133	8.41	0.531
Aircraft and parts	42.3	0.104	12.97	0.458
Other transportation equipment	42.3	0.106	13.75	0.382
Primary metals	42.2	0.111	11.52	0.404
Utilities	42.2	0.113	14.00	0.425
Textile mill products	42.2	0.106	8.11	0.436
Construction	42.2	0.117	11.45	0.471
Paper and allied products	42.1	0.097	10.81	0.414
Communications	42.0	0.119	13.51	0.454

Industry	Weekly hours[b]	Std. dev. ln (hours)	Hourly wages	Std. dev. ln (hourly wage)
Professional and photo equipment	41.9	0.098	11.60	0.479
Lumber and wood, except furniture	41.9	0.096	8.40	0.339
Social services	41.8	0.150	8.41	0.555
Personal services excluding household	41.6	0.128	6.86	0.461
Printing and publishing	41.6	0.107	10.54	0.481
Hospitals	41.6	0.115	10.91	0.434
Banking and other finance	41.6	0.108	11.70	0.501
Furniture and fixtures	41.3	0.070	8.50	0.346
Miscellaneous manufacturing	41.2	0.078	7.92	0.509
Health services excluding hospitals	41.1	0.118	9.00	0.459
Apparel	40.2	0.057	6.56	0.448

[a] Full-time workers are defined to be workers with usual weekly hours ≥ 35.
[b] Usual weekly hours at main job.

Table A2 Mean Weekly Hours and Wages in Nonagricultural Detailed Occupation, Full-Time Workers Only[a]

Industry	Weekly hours[b]	Std. dev. ln (hours)	Hourly wages	Std. dev. ln (hourly wage)
Health diagnosis	57.0	0.197	16.79	0.527
Lawyers and judges	46.7	0.157	22.39	0.473
Motor vehicle operators	46.5	0.189	8.83	0.410
Supervisors, proprietors, and sales	46.3	0.165	11.25	0.507
Executives, administrators, and managers	45.2	0.154	14.73	0.546
Teachers, college	44.9	0.178	17.68	0.523
Other professional specialties	44.3	0.187	12.07	0.582
Sales reps, finance, and business services	44.2	0.148	12.36	0.562
Sales reps, commodities, excluding retail	44.1	0.133	13.79	0.516
Natural scientists	44.0	0.130	15.20	0.529
Private household services	43.8	0.211	3.25	0.586
Other transportation and material moving	43.8	0.166	10.51	0.431
Engineers	43.3	0.122	19.28	0.325
Mechanics and repairers	43.1	0.129	11.08	0.405
Construction laborers	43.1	0.134	8.81	0.445
Other precision production	43.0	0.129	11.41	0.455
Teachers, except college	43.0	0.144	8.94	0.570
Mathematical and computer scientists	43.0	0.117	17.74	0.372
Management	42.7	0.113	14.44	0.449
Supervisors–administrative support	42.5	0.122	11.63	0.432
Engineering and science technicians	42.1	0.100	12.62	0.415
Engineering and science	42.0	0.105	14.75	0.500

Industry	Weekly hours[b]	Std. dev. ln (hours)	Hourly wages	Std. dev. ln (hourly wage)
Fabricators, inspectors, and samplers	41.8	0.110	9.49	0.424
Construction trades	41.7	0.114	11.61	0.450
Handlers, equip. cleaners, laborers	41.7	0.114	7.38	0.432
Health assessment and treating	41.5	0.117	13.16	0.356
Machine operators, excluding precision	41.3	0.092	8.13	0.423
Food service	41.3	0.148	5.31	0.426
Personal services	41.2	0.118	7.18	0.467
Personal service occupations	41.1	0.118	6.49	0.518
Protective services	41.1	0.093	6.48	0.391
Sales related	41.0	0.034	11.19	0.151
Health technologists and technicians	40.9	0.093	10.14	0.329
Freight, stock, and material handlers	40.7	0.092	7.03	0.381
Health service	40.6	0.123	6.71	0.366
Computer equipment operators	40.6	0.075	9.33	0.420
Financial records, processing	40.4	0.070	7.96	0.318
Main and message distributing	40.4	0.041	7.87	0.430
Other administrative support, clerical	40.4	0.075	8.63	0.395
Cleaning and building services	40.3	0.078	6.46	0.346
Secretaries, stenographers, and typists	40.0	0.058	8.36	0.355

SOURCE: May 1989 CPS.

[a] Full-time workers are defined to be workers with usual weekly hours ≥ 35.

[b] Usual weekly hours at main job.

Table A3 Hours Regressions[a]

Dependent variables: ln (usual hours worked per week)						
Independent variables						
ln (hourly wage)	0.147 (0.005)	0.101 (0.006)	0.085 (0.006)	0.059 (0.006)	0.141 (0.005)	0.080 (0.006)
ln (family income)	–0.007 (0.004)	0.004 (0.004)	0.003 (0.004)	–0.002 (0.003)	–0.002 (0.004)	0.002 (0.003)
Std. dev. of ln (hourly age)[b] (ind–occ cell)	0.062 (0.021)	0.044 (0.021)	0.076 (0.022)	–0.080 (0.024)	—	—
Std. dev. of ln (hourly wage)[c] (occ cell)	—	—	—	—	0.374 (0.033)	0.374 (0.035)
Marriage dummy	—	0.030 (0.006)	0.023 (0.006)	0.013 (0.006)	—	0.022 (0.006)
Female dummy	—	–0.121 (0.005)	–0.100 (0.006)	–0.089 (0.006)	—	–0.097 (0.006)
Less than high school	—	–0.012 (0.014)	–0.025 (0.014)	–0.008 (0.014)	—	–0.027 (0.014)
Some high school	—	–0.117 (0.013)	–0.119 (0.012)	–0.110 (0.012)	—	0.117 (0.012)
Some college	—	–0.094 (0.009)	–0.087 (0.009)	–0.085 (0.008)	—	–0.087 (0.008)
College graduate	—	0.017 (0.008)	0.026 (0.008)	0.018 (0.008)	—	0.020 (0.008)

College plus	—	0.015 (0.010)	0.040 (0.011)	0.020 (0.011)	—	0.026 (0.011)
Union dummy	—	0.005 (0.008)	–0.010 (0.008)	0.010 (0.008)	—	–0.007 (0.008)
Region dummy	No	Yes	Yes	Yes	No	Yes
Industry[d] dummy	No	No	Yes	No	No	Yes
Occupation[d] dummy	No	No	No	Yes	No	No
R^2	0.088	0.152	0.217	0.217	0.098	0.181
N	10,344	10,344	10,344	10,344	10,344	10,540

[a] For private, nonagricultural workers, including part-time workers, standard errors are in parentheses.
[b] Standard deviation in ln (hourly wage) in detailed industry/detailed occupation cell.
[c] Standard deviation in ln (hourly wage) in detailed occupation cell.
[d] Detailed occupation and industry dummy variables.

Part II

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Volume I

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