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Hours of Work as a Measure of Labor Market Performance: Prospects and Pitfalls

As the 21st century labor force in industrialized nations continues to develop in ways distinctly different from that of the previous century, it has become imperative to augment the binary measurement of labor market performance as reflected in the unemployment rate with a continuous measurement such as hours of work. How do we update Okun's Law for the 21st century? Although there are significant problems inherent in designing an accurate measure of work hours, and although time use surveys and household surveys each have their limitations, the measurement of working hours promises to be a valuable addition to the unemployment rate as an indicator of labor market performance. Unlike the unemployment rate, an hours-based measurement, particularly if it gauges the gap between actual and preferred hours, can provide important information on the extent of time-related underemployment, as well as the extent of overwork. This paper reviews some of the conceptual and methodological problems inherent in gathering data on hours of work, summarizes a selection of existing empirical work on the topic, and endorses an innovative proposal for creating two hours-based measures of labor market performance.

The meaning of economic performance

In 1962, Arthur Okun argued that one way of measuring the success of a nation's economy would be to gauge the difference between its actual and potential output, where the latter was defined as the output that could be produced if all resources were fully

utilized (recognizing, of course, that “full utilization” does not mean an unemployment rate of zero – at any given moment, for example, some people would be voluntarily unemployed as they quit their jobs in search of better ones, possibly moving from one part of the country to another). At the time, Okun found that in the U.S., for every percentage point increase in the unemployment rate beyond the level of “full employment” (which he defined as an unemployment rate of four percent), the nation’s potential output would be reduced by three percent, a relationship that became known as “Okun’s Law” (Okun, 1965).

Hence, optimal economic performance -- the achievement of potential GDP -- can be thought of as an economy that is operating along its production possibilities frontier at peak efficiency. A point inside the production possibilities curve (point A) represents the failure to use resources, some kind of inefficiency. If point A is the outcome of traditionally defined unemployment, the result is Okun’s Law, more recently re-estimated to show a two percent decline in output for every percentage point increase in unemployment (Altig, Fitzgerald, & Rupert, 1997; Bluestone & Harrison, 2000). But what if point A is instead the result of time related underemployment, skills related underemployment, a low employment/population ratio, unfavorable sector shifts from high productivity industries to low productivity industries, spatial and/or skills mismatch between available workers and available jobs? Can we devise an analog to Okun’s Law that takes some of these other components of inefficiency into account? Adjusting Okun’s Law to encompass time-related underemployment seems like a task worth doing, and an hours-based measurement would allow us to do that.

Okun himself cautioned that simply measuring the gap between actual and potential unemployment would be an imperfect indicator of labor market underutilization, and that

...other matters...might make labor input at full employment different from its observed level: (1) how average hours worked per man would be altered if the level of aggregate demand were consistent with full employment; (2) how participation rates in the labor force – and hence the size of the labor force – would be affected under conditions of full employment (Okun, 1965, p.15)

He goes on to caution that “the added workers, changed average hours, possible alterations in the sectoral distribution of employment, higher utilization rate of capital, and altered efficiency in the use of employees all could make a difference in productivity at full employment.” (Okun, 1965, pp15-16). Note that Okun’s terminology of “hours worked per man” reflects a labor force of forty years ago that was much more likely to be comprised of full-time prime-age male workers. His observations about these “other matters” apply even more forcefully to our current, far more heterogeneous labor force. Indeed, one possible explanation for the decline in the measured value of Okun’s Law from three percent in the 1960s to two percent today is that in more recent years, increases in hours worked have partially offset increases in lost output due to rising unemployment, so that the overall loss in GDP with respect to a rise in the unemployment rate is less than before.

It is time to update Okun’s Law to reflect changes in the composition of the labor force and changes in the nature of the work relationship. With a 40-hour workweek becoming less standard, and with the growing polarization in work hours, in which some workers complain of having too many while others complain of having too few, it becomes more imperative to use hours of work as a gauge of labor market performance.

Previous Endorsements for Hours-related Indicators of Performance

In the same year that Okun was examining the gap between actual and potential output -- and relating reductions in the unemployment rate to growth in output -- the Tenth International Conference of Labour Statisticians passed a resolution (in October 1962) that stated, in part,

Each country should aim to develop a comprehensive system of statistics of hours of work in order to provide an adequate statistical basis for the analysis of conditions of work, the study of trends of economic activity, the analysis of partial employment and underemployment, the study of productivity, the computation of industrial accident rates and the computation of average hourly earnings.

Thirty-six years later, the Sixteenth International Conference of Labour Statisticians passed a resolution (in October 1998) that stated, in part,

Subject to the availability of funds, a programme of work should be sponsored by the ILO to refine the measurement of time-related underemployment and to further develop concepts and definitions for the indicators of inadequate employment situations. The ILO should also sponsor work relating to the measurement and presentation of these statistics in a number of developing, transition and industrialized countries and evaluate and document the results.

It should be noted that “excessive work hours” are included in the concept of inadequate employment situations.

Despite these resolutions on the part of labor statisticians, the quality and availability of data on hours of work, and the comparability of data from one nation to another, are still quite rudimentary, especially in comparison with now-standardized data on unemployment rates. Questions regarding what, exactly, should be measured, and how best to measure it, are not easy to resolve. Moreover, an hours-based indicator of labor market performance, though more comprehensive than the unemployment rate, would still be far from perfect. It would not account for gaps between potential and

actual output that were caused by skills related underemployment, nor would it account for inefficiencies caused by sub-optimal organizational structure within the firm (Hodgson, 1991).

The Elusive Nature of Working Time

The OECD maintains an annual working time database, which is the source of the data reproduced in Table 1 below. However, in compiling this information from the statistical agencies of its member countries, the OECD notes several caveats:

The estimates themselves are derived from a number of sources, which vary by country, and are calculated on the basis of a number of different methodologies...Their comparability has been something of an unknown until recent years, when some work at the OECD has provided some preliminary indications of comparability problems. (OECD, 2001, p. 2)

Table 1: OECD Average Hours Actually Worked Per Worker Per Year, Selected Countries

	1979	1983	1990	1997	1998	1999	2000	2001
Australia	1904	1853	1866	1861	1856	1860	1855	1837
Canada	1832	1780	1788	1787	1779	1785	1801	n.a.
Denmark	n.a.	n.a.	1492	1520	1519	1544	1504	1482
France	1806	1712	1657	1605	1603	1596	1590	1532
Germany	n.a.	n.a.	1560	1513	1507	1496	1482	1467
Italy	1715	1692	1674	1640	1629	1625	1622	1606
Japan	2126	2095	2031	1865	1842	1810	1821	n.a.
Netherlands	n.a.	n.a.	1454	1380	1364	1345	1381	1346
Spain	n.a.	n.a.	n.a.	1813	1834	1816	1814	1816
Sweden	1517	1520	1549	1628	1629	1636	1625	1603
United Kingdom	1815	1713	1767	1737	1731	1719	1708	1711
United States	1838	1824	1838	1849	1850	1846	1835	1821

Source: Table F. Average annual hours actually worked per person in employment, OECD Employment Outlook, 2002, Statistical Annex, p. 320

Note: Average hours actually worked per worker per year=total hours actually worked per year in the total economy divided by the average number of persons in employment per year.

n.a.=not available

The data currently available on hours of work have been collected by one of three means: a) information gathered from employers on hours worked per job, or, alternatively, information gathered from employees on how many hours they worked, given either in response to b) a general survey questionnaire, or c) recorded in a more detailed Time Use Survey (TUS).

In the U.S., the Current Employment Statistics (CES) survey is conducted monthly by the Bureau of Labor Statistics (BLS). It provides data on hours paid only for production workers in goods producing industries and for non-supervisory workers in service producing industries. Hence, the CES does not provide hours information for approximately thirty percent of the workers in goods producing industries and approximately fifteen percent of the workers in service producing industries (Eldridge et. al. 2001). Also excluded are public sector workers, agricultural workers, and the self-employed. Moreover, this survey refers to hours paid, rather than hours worked, and therefore includes paid time off, such as vacation time and sick leave. It provides data on hours per job, rather than hours per worker, since it does not account for multiple job holding. Van Ark (1998) compares a CES-based measure of total U.S. work hours (using the BLS Hours at Work survey to adjust for the discrepancy between hours paid and hours worked and CPS data for workers not covered in the CES) with an estimate based solely on CPS data for all workers for the period 1976-1997. He finds that the CPS estimate is higher throughout the period, and that the difference between them increased from 2.1 percent in 1976 to 6.7 percent in 1997.

From the viewpoint of measuring labor market performance, it is more desirable to have information on hours worked per worker, rather than hours worked per job. Yet

the two methods of asking workers how many hours they worked each have serious limitations, and in the U.S., at least, the findings from the two methods are inconsistent (Robinson & Bostrom, 1994). In part, it is because the concept itself is so elusive. What do we mean by productivity? What do we mean by an hour of work? For that matter, what do mean by the notion of work itself?

If we think back to the classic Charlie Chaplin film, *Modern Times* (1936), the concepts of productivity and working time might seem quite straightforward: Charlie and his co-workers punch a clock to start the day, and they punch in and out even for short relief breaks. Otherwise, they stand at their positions on the assembly line and do their assigned tasks until the whistle blows and the line shuts down for lunch. Over the course of the morning, a certain number of units of output have been produced. In this context, it is a relatively simple matter to calculate productivity as the number of units per worker per hour. Indeed, in the real world, statistics on manufacturing productivity are easily available, and comparisons across nations are readily made. See, for example, reports from the U.S. Bureau of Labor Statistics comparing the percent change in manufacturing output per hour in the U.S. with that of Canada, Japan, Belgium, France, Germany, Italy, Norway, Sweden, and the United Kingdom (U.S. Department of Labor, 2001).

Even in manufacturing, though, there are still measurement problems, as illustrated by the discussion in van Ark and Timmer (2001) regarding the ICOP (International Comparisons of Output and Productivity) approach versus the PWT (Penn World Tables) approach. However, once we move away from workers who are tethered to an assembly line, and whose output is measurable in physical units, the concept of working time becomes increasingly elusive. And even in *Modern Times*, the initially

clear demarcation between working time and lunch time is challenged when the “automatic feeding machine” is introduced: will Charlie be able to multi-task, to eat his lunch while remaining at his post? Well, not in 1936 -- the boss’s verdict on the new invention, which has malfunctioned quite spectacularly, is, “It’s no good – it isn’t practical.” As Hochschild (1997) has pointed out, though, beyond the assembly line, we have found many ways to make it “practical” for workers to work while grabbing lunch.

Outside of manufacturing, it is far more difficult to measure output, and harder still to measure output per hour of work: how can we calculate productivity in circumstances where both the numerator and the denominator are so nebulous? In the U.S., the Bureau of Labor Statistics “normally does not publish productivity series for most two-digit industries outside of manufacturing, or for non-manufacturing as a whole. For a number of industries, this would require the use of data that are not considered reliable.” (Dean, 1999, p.33).

When people are asked how they spend time, how do they distinguish work activities from time spent in other endeavors? Even if they focus on work done for pay, and exclude unpaid household work like washing the kitchen floor, the boundaries are neither clear nor consistent. Thus, as one noted researcher has pointed out,

Does ‘paid work time’ include time spent ‘scrubbing up’ after a dirty job, time spent commuting to the workplace, a period of illicit rest in the middle of working time? (Gershuny, 2000, pp.251-252).

Moreover, once we allow for simultaneous activities, the categorization becomes even murkier for the respondent to sort out. A report from a time use study in New Zealand notes that

...people could be at their workplace for long periods and be paid but actually asleep some of the time. For example, at night a house surgeon may be on call

ready for an emergency but be asleep until this happens. In theory, these people should have recorded “sleeping” as their activity but they may have recorded the time as working (Callister & Dixon, 2001, footnote 14).

We might argue that commuting time shouldn't count as working time. After all, the neighbors in a car pool who discuss the fate of the hometown sports team while traveling to their respective workplaces are not working. But what about the railway commuter who spends the 45-minute train ride reviewing the documents that will be needed for the day's tasks?

Should the morning commute be treated differently from the evening commute? In a recent study, it was found that workers who went to meetings away from their normal workplaces say that the travel time to the meeting destination was work time, because they were rehearsing, reviewing, and otherwise preparing for the meeting. On the other hand, they said the travel time *back* was not work time, because they had finished their assignments and could turn their attention to other, non-work-related matters (Schwartz & Lynn, 2001).

As the nature of work changes, time and place no longer offer the clear demarcations between paid work and other activities. For the most part, when the assembly line workers in *Modern Times* spent time inside the factory, they were working; when they spent time outside the factory, they were not. Contrast this with the subtitle of *The Time Bind*, a recent book by Arlie Hochschild (1997). It reads, *When Work Becomes Home and Home Becomes Work*. Hochschild's subtitle refers to the phenomenon she found at the large company she studied, in which workers chose to spend more time at work because it was a refuge from the stress of their home lives, the reverse of the usual assumptions about work and home.

For workers with a high degree of autonomy, though, including many academics and other professionals, much of their work is done at home, and some of what happens at the workplace is not work at all. Home phones might be used for work-related calls, and office phones might be used to make doctor's appointments or dinner reservations; home computers might be used to draft papers or tally grades, while computers at work are used to check email from friends or do some on-line shopping (much of which is apparently done from the workplace). While traveling, the time spent on cell phones or small computers might be work-related, or it might not. For the self-employed who are not based in a specific office, the distinctions might disappear altogether.

Compared with the early part of the twentieth century, when the typical worker might have been a male breadwinner who worked full time producing a tangible good for a single employer, today's workforce is far more heterogeneous, and today's work arrangements are far more likely to be nonstandard. However difficult it was to measure hours of work back then, it is more difficult, conceptually and empirically, now.

Nevertheless, it must be done. The question is, how?

Measuring Work Hours with Time Use Surveys

Although methods differ within and across nations, time use surveys often involve the completion of a time diary asking individuals to account for how they spent one full 24-hour day (or in some instances, two days). Non-response rates tend to be higher than in other surveys, and there is a tradeoff between asking for more detailed information and risking higher rates of non-response. Some of the motivation for using this methodology arises from the recognition that we collect far more data on market activities than on non-market productive activities, despite the fact that the latter also reflects the use of scarce

resources to produce goods and services. The United Nations System of National Accounts (SNA) establishes a “production boundary” around goods and services that are sold in the market, but recommends that nations keep “satellite accounts” to keep track of productive non-market activities, such as those that are produced within the household, generally for the household’s own use. In a review of time use studies from 14 nations (Australia, Austria, Bulgaria, Canada, Denmark, Finland, France, Germany, Great Britain, Israel, Italy, the Netherlands, Norway, and the United States), Goldschmidt-Clermont & Pagnossin-Aligisakis (1995) conclude that

Time-use measurements clearly have a potential for assessing the economic dimensions of human labour. Perhaps the most important indication they give is that, on average, the labour inputs into non-SNA activities are of the same order of magnitude as the labour inputs into SNA activities. Labour statistics however record only the latter; because of this enormous gap, labour statistics give a distorted image of how even industrialized societies utilize the available labour resources to achieve their standard of living.

The fact that our output and employment statistics reflect only market transactions, while productive activities may occur inside or outside of a market setting, does have some implications for how we measure economic performance. As the “production boundary” shifts, across nations, across time, or both, it becomes less possible to compare performance from one setting to another. Moreover, if poor economic conditions cause people to leave the paid labor force, but they then produce goods and services within the home, it is not so much the case that output has fallen, but that we have failed to count it when it crosses to the other side of the production boundary. As Eisner points out,

The failure to take into account nonmarket activity may also lead to exaggerating the losses from cyclical unemployment and the extent that recessions cause a reduction in output. If laid-off workers devote more of their time to repairing the roof, painting the house, and caring for the children, it implies a partial offset to

the loss of output occasioned by their absence from the workforce. (Eisner, 1994, pp.27-28).

One potential use of time use data would be to see how nonmarket activity fluctuates over the course of the business cycle: do laid-off workers behave as Eisner suggests? How do unemployed workers use their time? How might we use this data to refine our notions about “discouraged” workers (Joyce & Stuart, 1999)?

Although time use surveys hold great potential for yielding finely grained information about working time, their primary focus on non-market time use has meant that this potential has not been realized. In the U.S., a recent report from the National Research Council states: “Time-use data can be used to improve measures of how time is spent at work or while working for pay and to understand the effects public policy on labor market and job outcomes.” (Ver Ploeg et.al., 2000). It *can* be used this way, but most often, it has not been used for this purpose. As U.N. researchers have pointed out,

...the traditional TUS does to a large extent leave it to the respondent to decide whether an activity represents “work.” Because these surveys mostly have been designed to study the time spent in unpaid or non-economic activities and for the valuation of non-market production, it has been left to the respondent to designate certain activities as “paid work” or similar and virtually no detailed recording have been made of what the persons actually do during such periods. Nor have there been many instructions to those who record and code the activities of what to include as “paid work,” except to identify separately longer meal breaks and travel time. ... At present, therefore, the potential of TUSs for providing statistics on working time and the way it is organized have not been fully realized (Hoffman & Mata, 2000, p.9).

Similarly, a researcher from the ILO comments,

The emphasis of most time surveys has traditionally been on the measurement of unpaid domestic activities and other non-market activities. These activities are measured in time use surveys with much detail: respondents are requested to provide information separately for each type of activity and to be extensive in its description; activities are then coded using a wide range of categories. A similar level of detail is generally not deemed to be important for those activities which the respondents consider as “work.” In respect of these activities, respondents

have usually been requested to state only whether they were at work or not. Thus, the potential of time use surveys as a source of labour force statistics has not yet been fully realized. This is a pity because time use surveys represent a potentially rich source of labour force data, especially on the number and characteristics of employed persons and for the measurement of working time (Husmanns, 1999, p.1).

The U.S. will launch a large-scale time use survey in 2003. It will be a computer assisted telephone interview (CATI), and the interviewers will ask for rich detail on non-work time, including information on what the respondent was doing, where they were, and who else was in the room at the time. For work time, however, respondents will be asked only what time they started and what time they stopped. Here are the instructions given to respondents:

Now I'd like to find out how you spent your time yesterday, [designated day] from 4:00 in the morning until 4:00 am this morning. For each activity, please try to tell me, as accurately as you can, how much time you spent doing it. In order to code activities, I'll need to know where you were and who else was with you.

(If we get to times you spent working for pay, just tell me what time you started working and what time you stopped.)

There is no need to report any activities that take less than 5 minutes, and if any activity is too personal, there is no need to even mention it (Schwartz & Lynn, 2001, p. 33).

A concern expressed by Rydenstam (2001) with regard to the non-comparability of paid and unpaid work...that a 10-minute coffee break, or personal phone call, or other brief non-working use of time would be recorded and netted out of the housewife's work day, but not out of the paid worker's day, because of the greater detail collected on all activities other than time at the workplace, might also apply to the comparison of workers in standard vs. nonstandard work arrangements. In addition, preliminary studies done in preparation for the launch of the American Time Use Survey (ATUS) have identified some other important considerations in efforts to collect data on workers outside of

standard working arrangements, such as the self-employed, telecommuters, and multiple job holders. Schwartz and Lynn report that

A few respondents (5/24, 21%) were concerned that the survey represented an inaccurate picture of how they spent their time because the previous day had been an “atypical” or “unusual” day for them. For example, some respondents who usually worked multiple jobs in a single day had only worked at their main job on the previous day... Other multiple job-holders expressed concern about the survey’s restriction to single-day reporting. These respondents worked one job on weekdays and another on the weekends. They felt that the survey’s selection of one day out of the week inadequately represented what it was like to be a multi-job holder (Schwartz & Lynn, 2001, p.16).

The need for information on weekly work hours has also been recognized by Harvey et. al.(2000). They endorse the recommendations of the EUROSTAT Harmonised Time Diary project, that respondents be asked for detailed one-day time diaries and supplementary but less detailed information on time use for the rest of the week. They also recommend that questionnaires accompanying the time diaries ask about motivations for working the hours respondents specify, with a question like this one:

- I would like to know why you work the hours you presently work. Could you please tell me if any of the following reasons explain why you work these hours? You may choose as many answers as apply to you
- a) I had no choice, my employer requires these hours.
 - b) No other suitable job was available.
 - c) These hours enable me to share responsibilities for caring for a child or adult with other members of my household.
 - d) I expect to work these hours in my field of employment.
 - e) These hours enable me to be home when my children are at home.
 - f) I like working these hours.
 - g) These hours enable me to participate in a sport, hobby, or voluntary activity.
 - h) These hours enable me to continue working at my other job.
 - i) These hours allow me to attend my classes or training.
 - j) These hours make it easier or cheaper for me to get to and from work.
 - k) Other (please explain). (Harvey et. al., 2000, pp.34-35)

While this proposal would yield some valuable data on weekly work hours for those completing the time use survey, and while a proposed “Alternative Classification of Time Use Activities” (Hoffman & Mata, 1998) holds the promise of yielding far more detailed information on working time, the methodology suffers from other inherent problems. As Hussmanns argues,

...labour force data obtained from time use surveys can very well complement data obtained from labour force surveys. However, they cannot replace them. This is because time use surveys are relatively costly surveys which most countries cannot conduct at sufficiently frequent intervals to monitor current changes over time of the labour market. Moreover, due to the complexity of the data editing and processing tasks, the timeliness of time use survey results often lags behind that of labour force survey results. Other shortcomings of time use surveys as a source of labour force data include the higher sampling errors resulting from their smaller sample sizes and limiting the possibilities for a detailed breakdown of the data, the higher non-response rates that are likely to result from the higher response burden, and current limitations to the international comparability of the data (Hussmanns, 1999, p.7).

Finally, research by Mishel and Bernstein (1994) shows that in the period 1973-1992, three quarters of the increase in average annual hours was attributable to an increase in weeks worked per year, and only one quarter to an increase in hours worked per week. Since time use surveys do not measure weeks worked, they cannot be used to estimate annual hours.

Measuring Work Hours with Household Surveys

One advantage of time use surveys is that they focus specifically on time, and typically ask respondents to record their activities “today,” or to report on how they spent “yesterday,” starting at a specified hour and continuing for the next twenty-four.

Household surveys, on the other hand, might ask respondents a variety of questions on a range of topics, only one of which is work hours the previous week. In the U.S., time use

surveys indicate that work hours have declined, while household surveys show that they have risen. Robinson and Bostrom (1994) have argued that the gap in estimated work hours per week calculated by the two methodologies has grown over time, from one hour in 1965, to four hours in 1975, and six hours in 1985. They have argued that it is the household survey data that's inaccurate. They say that it is a matter of perception, that individuals in the CPS household survey tend to overstate their actual number of work hours, and that those who work the longest hours tend to overstate them by the largest amounts.

Some of the discrepancies between the results from time diaries and those from household surveys can be attributed to differences in time periods covered, and in whether survey samples were representative of the population. Thus, Schor points out that declines in working time between a 1965 time use survey and a later one in 1975 can be attributed to the fact that the 1965 sample restrictions caused it to be higher income, whiter, and more likely to be employed than the later sample, and concludes that the observed reduction in working time "...is in part caused by comparing a sample of high-hours people with a representative sample." (Schor, 2000, p.78). Moreover, Schor argues that time diary researchers do not control for the effects of the business cycle, or for the growth of involuntary underemployment, both of which cause some workers to have far fewer hours of work than they would like, even while others who have kept their jobs are required to work more. Finally, Smeeding (1997) argues that the high rate of non-response in time use surveys may be selective...that those working longer hours are more likely to refuse to participate; along these same lines, Hochschild (1989) argues that those who drop out of time use surveys may also be those with higher work hours. If so, the

results of time use surveys may be skewed by the disproportional absence of people who work long hours.

Jacobs uses data from the 1992 National Survey of the Changing Workforce to compute a calculated measure of working time, based on departure and return times net of commuting time, and finds that this measure correlates well with the self-reported data on working time from the CPS. He argues that the discrepancy between self-reported and time-diary measures of working time may not necessarily indicate exaggeration in self-reports, but rather "...a reflection of the statistical artifact of regression to the mean between two measures that are correlated with some error" (Jacobs, 1998, p.46).

Although there have been attempts, such as those described above, to reconcile the discrepancies between the two methods of collecting data on working time, the dispute has continued. As Smeeding recommends,

One way to solve this dilemma would be to collect *both* time use *and* labor force survey estimates of work time from the same survey population in the same survey. Such estimates could shed considerable light on the way that various measures of time worked compare (Smeeding, 1997, p. 9).

His recommendation will become a reality in the U.S. when the American Time Use Survey (ATUS) is launched in 2003. The survey will be conducted monthly, on a sample drawn from those on their final month of interviews from the CPS.

Although the magnitudes of their estimates vary, researchers who use data from household surveys such as the CPS show three phenomena: first, annual hours of work in the U.S. have been rising since the mid-1980s; second, this increase is due primarily to an increase in weeks worked, rather than an increase in weekly work hours; and third, there is increasing polarization in the distribution of work hours. As Schor, writing in 1991 points out,

One of the great ironies of our present situation is that overwork for the majority has been accompanied by the growth of enforced idleness for the minority. The proportion of the labor force who cannot work as many hours as they would like has more than doubled in the last twenty years. Just as surely as our economic system is “underproducing” leisure for some, it is “overproducing” it for others (Schor, 1991, p.39).

Bluestone & Rose (2000) argue that as a result of greater job insecurity, it may be the *same* workers who are both overworked and underemployed -- that workers who have faced layoffs in the past or fear imminent job loss in the future will work long hours while they are able, to compensate for times when they might not have enough work.

Because of a change in methodology in 1994, CPS data on work hours are not strictly comparable before and after that year. The change was made in an attempt to improve the precision of the data. Before 1994, respondents were first asked (without any lead-in by the interviewer) how many hours they worked last week at all jobs, and were then asked about lost hours or extra hours. Here is how the questions are currently asked:

Lead-in: Now I have some questions about the exact number of hours you worked last week.

Last week, did you lose or take off any hours from (work/your main job) , for any reason such as illness, slack work, vacation, or holiday?

(If yes) How many hours did you take off?

Last week, did you work any overtime or extra hours (at your main job) that you do not usually work?

(If yes) How many additional hours did you work?

So, for last week, how many hours did you actually work at your (main) job?

(For multiple job holders) Last week, how many hours did you actually work at your other job(s)? (Rones, Ilg, & Gardner, 1997, p.14)

After this change, the proportion of workers who answered that they worked exactly 40 hours last week declined, and that has been taken as evidence that these respondents are no longer answering reflexively, but did actually calculate their work hours in the previous week. Since the studies highlighting discrepancies between household survey data and time use diary data were based on the pre-1994 questions, some experts argue that in comparisons using the redesigned CPS questions, the discrepancy would be reduced, “if it exists at all.” (Eldridge et. al. 2001)

Measuring the Gap Between Actual and Preferred Hours

Given the growing polarization in work hours, do workers get the number of work hours they desire? What proportion of long hour workers would prefer to cut back? What proportion of short hour (or no hour) workers would prefer to work more? What does the gap between actual and preferred work hours tell us about labor market performance?

If workers are not working the number of hours they desire, either because they do not have enough work or because they are unable to refuse additional work, that is not only an issue for the measurement of economic wellbeing, but also for the measurement of economic performance. If individuals work fewer hours than they desire, they are underutilized, in a manner comparable to Okun’s unemployed workers: the result is that a nation’s actual output falls below its potential.

However, it can also be argued that if actual hours are greater than desired, particularly among those who work more than 40 hours per week, that too has implications for economic performance, because of its impact on productivity. For example, Schor (1991) cites instances of increased workplace accidents among auto

workers required to work long hours. The long hours of hospital interns and residents have also come under scrutiny, and have been linked to medical errors, some of which are fatal. New York is the only state in the U.S. that regulates hours for interns and residents, but even here, investigations by the Department of Health in 1998 showed violations in 12 out of 12 hospital inspections (DeBuono, 1998). In 1999, the National Labor Relations Board ruled that residents were primarily employees rather than students, and therefore had the right to organize and bargain collectively. Reducing work hours promises to be a high priority; the reduction of medical errors is a likely result (American Medical Student Association, no date).

Of course, achieving a reduction in working hours is not necessarily easy to accomplish. The conflicting interests between workers and employers is neatly captured in the following interchange from the 1933 Marx Brothers movie, *Duck Soup*, in which Groucho Marx plays Rufus T. Firefly, the dictator of Fredonia:

Minister of Labor: The Department of Labor wishes to report that the workers of Fredonia are demanding shorter hours.

Rufus T. Firefly: Very well, we'll give them shorter hours. We'll start by cutting their lunch hour to twenty minutes.

Just as we have shown earlier that “working time” is an elusive concept, so is the concept of “preferred hours.” These are not exogenously determined, nor do they occur in a vacuum. As social and economic conditions change, and as institutions change, individuals change their expectations and desires.

One aspect of this change is reflected in labor force participation rates, which may also be interpreted as the decision to increase desired hours of work from zero to some positive number. In the U.S. during World War II, for example, surveys of women war workers as they first entered the workforce showed that overwhelmingly, they wanted to

leave it when the war ended. After a few years of working and earning their own incomes, however, most said they wanted to stay and keep working (Goodwin, 1994).

Changes in workplace location can also have an impact on potential workers, such as housewives, choosing to enter the workforce. The advent of telecommuting has made it possible for a larger range of jobs to be done by workers based at home, with the following consequences:

The work-at-home option reduces the fixed costs of entering the labor market – the time and money costs of commuting, the costs of work clothing, and the costs of child care while commuting. The lower fixed costs associated with working at home translate into a lower reservation wage for home-based work, so that women who are likely to have large fixed costs associated with working outside of the home – women with young children, women with elderly relatives at home, women who are disabled, or women who live in rural areas that may require substantial commutes to an on-site work location – will be more likely to be in the labor market if they can be home-based workers (Edwards & Field-Hendrey, 2001, p.277).

Just as housewives whose circumstances seemed to preclude labor force participation have responded to new opportunities, so, too, have we seen changes in the labor force participation of pensioners, particularly those who retired before age 65. Until recently, a person who retired was assumed to have left the labor force permanently (Singh & Verma, 2001). Now, however, we have the concept of the “working retiree” (Herz, 1995). It may sound like an oxymoron, but it refers to the growing number of people who decide to stay in the labor force even though they receive pension income. Here, too, the advent of nonstandard work arrangements may have influenced the participation decision.

In addition to the forces that influence people’s decisions to enter or stay in the labor force, a host of economic, social, and institutional factors affect the number of hours that labor force participants say they would prefer. If we look at self-employment,

for example, studies tend to show that, on average, the self-employed work longer hours than individuals who work for an employer (“dependent” workers). However, there is substantial polarization *within* the group of self-employed: they are more likely to work either very long or very short hours, compared with dependent workers. If we examine this further, the polarization is particularly pronounced among women who are self-employed, many of whom say they chose self-employment in order to have greater schedule flexibility (Devine, 2001).

One problem with measuring preferred hours, therefore, is that individuals’ preferences are not determined exogenously, and they may change as conditions and opportunities change. Another is that they have not been measured regularly or systematically, so the data is based on several specific surveys in which the topic was probed. These surveys do not necessarily use the same questions, nor do they define the relevant population in the same way, nor is it always clear whether questions regarding the desirability of shorter hours are premised on commensurate reductions in pay. Hence, the results may not be comparable across countries, nor might the results of different surveys be comparable even within the same country.

In the United States, for example, one survey that asked about actual versus preferred hours was the 1992 National Study of the Changing Workforce. Findings from that study indicated that half of the workers said they wanted fewer hours, and only one-sixth wanted more. Even when asked if they would be willing to sacrifice a day’s pay each week to gain an extra day of free time, 25.8% said yes. Similarly, 24.7% said they would trade off some career advancement to gain flexibility in scheduling starting and ending times for their jobs (Jacobs & Gerson, 2000).

These findings do not seem consistent with a study based on the May 1985 supplement to the Current Population Survey, which found that 27% of U.S. workers wanted to work more hours, and only 8% wanted to work fewer, assuming that their hourly rate of pay would stay the same (Bell & Freeman, 2001). Both of these studies were limited to individuals who were currently working, and do not take into account the desires of those who were unemployed, discouraged, or marginally attached. Lang & Kahn (2001) reviewed several studies of U.S. workers and they also conclude that higher proportions U.S. workers want to work more, rather than fewer, hours (assuming a proportionate adjustment to pay). They also note that results of two 1989 European surveys are inconsistent, one showing that Europeans are more likely to want fewer, rather than more hours, the other showing the reverse.

In comparing results across countries, Bell and Freedman argue that U.S. workers are more likely than those in Western Europe to want additional hours of work (and their commensurate additional earnings), despite the fact that they already work longer hours than their European counterparts. They also note that this is a comparatively recent occurrence, and that before the 1980s, Europeans' work hours were longer than that of Americans. They attribute this change to a response to the growth of inequality of earnings within the U.S., and argue that desired hours are related to inequality of earnings (as well as instability of jobs and a weak social safety net) in the following manner:

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 (Bell & Freeman, 2001, pp.88-89).

Bell (2000) makes a similar argument to explain why a larger proportion of black workers than white workers in the U.S. want to work more hours: that it is a reflection of higher earnings inequality within the occupations in which black workers are concentrated. This is true among women, where the racial gap in actual hours worked is small, as well as men, where the racial gap is larger, with black men working fewer hours than white men.

Alternatives for Measuring the Underutilization of Labor

In the United States, the U.S. Department of Labor's Bureau of Labor Statistics announces, on the first Friday of each month, the unemployment rate for the previous month. Each month, it also publishes five other measures of labor underutilization, the most inclusive of which, U-6, counts marginally attached workers (individuals who are not currently employed or unemployed, but say they would like a job, are available for work, and have looked for work in the recent past, though not in the last four weeks) and those working part time involuntarily. In January 2002, for instance, when the official unemployment rate was 6.3%, the U-6 rate was 10.5% (neither rate is seasonally adjusted) (U.S. Department of Labor, 2002). One possibility for an improved indicator of labor market performance would be simply to use a more inclusive measure, such as U-6. However, such a measure would still be a head count, albeit one that acknowledged more heads to be counted. A measurement based on hours offers a more finely detailed, and, if measured correctly, a more accurate indicator of labor market performance.

Haveman, Buron, and Bershadker (2001) propose an hours-based measurement, “foregone potential earnings,” (FPE) to signify underutilization of human capital. Limiting their attention to civilian, non-student men ages 18-64, they define potential earnings as the income one would receive working 40 hours per week, fifty-two weeks per year, and then measure the difference between actual and potential earnings. They argue that

Our FPE indicator provides a more complete picture of economic performance than other statistical measures of labor force activity, such as the unemployment rate. Whereas the unemployment rate simply indicates the percent of individuals in the labor force looking for work, our FPE indicator applies to individuals in and out of the labor force, quantifies in dollar amounts the level of underutilization, and identifies the sources of underutilization (Haveman, Buron, & Bershadker, 2001, p.146)

They distinguish between underutilization that results from exogenous constraints, versus that resulting from individual preferences (although we might wonder whether this is truly underutilization if it is the individual’s preferred outcome), and find that although exogenous constraints account for substantially more underutilization than individual preferences, the gap between them narrowed over the period 1975-1992.

While this approach has considerable merit for its purpose, measuring the underutilization of human capital among prime age males, that goal is somewhat different from the measure of labor market underutilization we are seeking, and not very useful for international comparisons. In the Haveman et. al. conceptualization, a worker who gets paid for 2,080 hours per year is fully utilized, regardless of how much vacation time or other paid time off he receives. Variations in paid time off within and between countries would not be taken into account. Moreover, although the definition of 2,080 hours as full utilization is based on a supposed widely accepted social norm, this standard is becoming

less of a norm even for U.S. males, and is not applicable to U.S. females or to workers in other nations. Finally, as the authors themselves acknowledge, using predicted wages to value an individual's time is not an ideal measure, since it incorporates any existing labor market distortions such as discrimination into the measure, and also implicitly assumes that the structure of wage rates wouldn't change as a result of full utilization.

Nevertheless, as Haveman et. al. have shown, using hours as a measurement provides the common denominator for several different kinds of labor market problems, including those that show up as unemployment, involuntary part-time work, or labor force withdrawal. It can capture a wider array of problems causing poor labor market performance, the main exclusion being skills-related underemployment. A recent study of the labor force in 16 European nations, based on a 1998 survey (Bielinski, Bosch, & Wagner, 2001) also focuses on an hours measurement, and also emphasizes the value of including those who are not currently in the labor force, but would like to be.

This study compares actual and preferred work hours across 16 European nations, and analyzes the data not only on the individual level, but also at the household level, to account for interactions in actual and desired working time among household members. The authors note that although Europeans would like to have employment rates as high as those in the U.S., they prefer shorter working hours than those in the U.S. In discussing barriers to achieving preferred hours, they observe that

...the strict division between full-time and part-time work that still persists in most countries is an obstacle to the realisation of working time preferences. Currently, the choice is between working a prescribed number of hours as a full-timer or reducing working time and ending up in an employment form – part-time work – that still has little recognition or acceptance. Moreover, it usually turns out to be difficult to return to full-time work if desired at some point in the future, and in fact many workers find it impossible to go part-time in the first place because employers are not interested in employing part-timers. If elective

working times below the full-time norm are to become commonplace, it may be necessary initially to put in place statutory arrangements to counter the widespread view that part-time work is an “incomplete” or even an inferior employment form (Bielinski, Bosch, & Wagner, 2001, p.104).

This study would have to be modified in several ways if it were undertaken in the U.S., although it is appropriate for the context of European labor markets. It treats self-employment and “dependent” work as mutually exclusive categories, although that is not necessarily the case in the U.S., where individuals combine working for an employer and doing other work for themselves. Similarly, the European data appear to refer to only one job per worker, whereas a substantial minority of workers in the U.S. are multiple jobholders, either combining a full-time job with additional hours at a part-time job or in self-employment, or combining several part-time jobs, in some cases also in addition to self-employment. Nevertheless, the focus on actual versus preferred hours for those in and out of the labor force, as well as the ability to analyze the data at the individual and the household level make this study valuable for considering what an hours-based labor force measurement would look like.

What Would an Hours-Based Measurement Encompass?

Richard Dennis of the Australia Institute has proposed two new measures to be used as supplements to the standard unemployment rate. His purpose is to find measurements that will encompass underemployment and overwork, as well as conventionally defined unemployment. These new measures would require that respondents in household surveys be asked, on a monthly basis, not only how many hours they actually worked in the reference week, but also how many hours they desired to work.

For those working fewer hours than desired, the first measure, the Hours Based Unemployment Rate (HBUR), would have hours of underemployment (the difference between desired and actual hours) as its numerator and actual hours worked plus hours of underemployment as its denominator. Those working fewer hours than desired would fall into one of four categories: unemployed persons seeking full time work, unemployed persons seeking part time work, part time workers seeking additional hours, and full time workers working less than 35 hours per week for economic reasons.

A second measure, the Labor Market Mismatch Rate (LMMR), would divide the sum of hours of under-work (where desired hours are greater than actual) and hours of over-work (where actual hours are greater than desired) by the total amount of hours worked to indicate the degree of dissatisfaction with labor market outcomes. As Dennis says,

Policies which are effective in improving the capacity of the labour market to match the desires of employees and employers will have a noticeable impact on the measure, whereas the unemployment rate, for example, would provide no feedback if significant numbers of people simultaneously experienced a reduction in their hours of work while another group were forced to work longer hours (Dennis, 2001, p.23)

Developing an hours-based measurement is not an easy task. We have already seen the problems that arise in defining actual and preferred work hours in a way that yields accurate, useful, and consistent information. Other questions that need to be addressed are whether we are measuring hours on a daily, weekly, monthly, or yearly basis. Hamermesh (1996) argues that in focusing on weekly hours, we miss important variability that occurs at the level of hours per day or days per week. For example, the costs of commuting to work are fixed costs that increase with additional days of work, but not with additional hours per day. For productivity measurement, we want annual

hours. If this new measure is to supplement the unemployment rate, we want to be able to report it monthly. If it is analogous to the unemployment rate, it would refer to the situation in the week prior to the survey. Are we measuring actual hours, preferred hours, or the gap between the two? How can we use time diary information to refine the questions that should be asked in household surveys, both to improve their accuracy and to capture emerging new forms of work arrangements?

In spite of the difficulties enumerated above, the two new indicators proposed by Deniss would provide invaluable information regarding time-related underemployment and overwork. The task of gauging labor market performance is not easy, but it is worth doing, and gathering the relatively small amount of additional data required to compute Deniss's Hours Based Unemployment Rate and Labor Market Mismatch Rate seems like the logical first step. Our current reliance on unemployment rates gives an increasingly inaccurate picture of actual performance, and these additional indicators would be valuable augmentations. As Okun himself says,

...measures of unemployment understate the economic cost and the economic problem of a slack economy. The unemployment rate misses the submerged part of the iceberg associated with depressed rates of participation in the labor force, the shrinkage of the workweek through part-time jobs and the loss of overtime, and the sag in labor productivity. (Okun, 1965, p.22).

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