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nominal rigidity even in the face of volatile exchange rates. And even when prices adjust, they respond only partially (22 percent) to bilateral exchange rate shocks in the first adjustment. After further price adjustments, the cumulative pass-through is around 34 percent into U.S. import prices. However, there is a sharp difference in dollar pass-through, conditional on first and long-run adjustment, between prices that are rigid in dollars versus a foreign currency. Basically, prices in whichever currency they are set respond partially to exchange rate shocks at most empirically estimated horizons. This fact is consistent with low aggregate pass-through of exchange rate shocks into U.S. prices because most U.S. imports are priced in dollars. On the other hand, for most developing countries, pass-through into local currency prices is high because most of their imports are priced in a foreign currency, dollars.

These findings, along with, the positive correlation between the frequency of price adjustment and pass-through, suggest an important selection effect that drives currency choice and the frequency of adjustment. The variables that define the choice depend on the desired (flexible price) exchange rate pass-through of goods, which in turn depends on the degree of strategic complementarity in pricing across goods and the sensitivity of costs to exchange rate shocks. Given this selection effect, the profit/losses associated with sub-optimal prices during periods of non-adjustment can be small and the gains to exchange rate flexibility can be limited.

[1] *The term "real rigidities" is used to capture reasons why firms do not want to move their price relative to the industry price level by much, even when they can adjust prices. For an early discussion, see L. Ball and D. Romer, "Real Rigidities and the Non-Neutrality of Money," NBER Working Paper No. 2476 (Also Reprint No. r1437), July 1990, and* The Review of Economic Studies, *57(2) (April 1990) pp. 183–203.*

[2] *G. Gopinath and R. Rigobon, "Sticky Borders," NBER Working Paper No. 12095, March 2006, and* Quarterly Journal of Economics, *123(2) (May 2008) pp. 531–75.*

[3] *G. Gopinath, O. Itskhoki, and B. Neiman, "Trade Prices and the Global Trade Collapse of 2008–09," NBER Working Paper No. 17594, November 2011.*

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[6] *G. Gopinath and O. Itskhoki, "In Search of Real Rigidities," NBER Working Paper No. 16065, June 2010, and in* NBER Macroeconomics Annual 2010, *Volume 25, D. Acemoglu and M. Woodford, eds. (Chicago: University of Chicago Press Journals, 2011), pp. 261–309.*

[7] *"Reset price inflation" is inflation that is calculated from the sample of prices that have changed.*

[8] *G. Gopinath, P-O. Gourinchas, C-T. Hsieh, and N. Li, "Estimating the Border Effect: Some New Evidence," NBER Working Paper No. 14938, April 2009, and as G. Gopinath, P-O. Gourinchas, C-T. Hsieh, and N. Li, "International Prices, Costs and Markup Differences,"* American Economic Review, *101(6) (October 2011) pp. 2450–86.*

Time Use

Daniel S. Hamermesh*

Until 2000, economists paid scant attention to distinctions in how people used their time other than between working for pay and not working. In part, that neglect stemmed from the realization that this simple distinction was of central importance for economic growth, unemployment, and tax policy. There was also the belief that changes in the mix of non-market activities would not affect market outcomes; and finally, there was a paucity of data on time use outside the labor market. Yet not all time away from work is the same: most people would rather watch television than wash dishes, for example.

We are now rapidly going beyond the simple work/non-work distinction, spurred partly by the burgeoning in many countries of large random samples describing people's time use. These "time diaries" record the previous day's activities, either in specific categories or with free descriptions that are then categorized by a statistical agency. The United States, which had been a laggard in developing these data, is now a leader:

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since 2003 the U.S. Bureau of Labor Statistics has produced its American Time Use Survey (ATUS), containing diaries kept by roughly 1000 adults each month. Many of the findings discussed in this article are based on analyses using the ATUS.

Time at Work, Chores, and Leisure

There is pretty good evidence that paid work time has not changed greatly in the United States in the past four decades. Men are working less, women more. But until the advent of large-scale time use surveys in the United States, we could not know how time outside work has changed. Are we engaging in more leisure activities? Spending more time caring for our children, aged parents, houses, pets—things that we could pay somebody to do for us, what we call household production? Put bluntly, are we having more fun, or just doing more unpaid work-like activities?

Economists are now able to answer these questions. Of course, the answers depend on how we define non-work activities. The general trends seem pretty clear, though: 1) Time diaries corroborate the conclusions from household surveys in which people respond to questions about how many hours they worked in the past week. On average, there has been little change in paid work time, with men cutting back on work, women increasing it, but not to men's levels. 2) Since 1965, time spent in household production activities has dropped. But that decline hides sharply different trends by gender: women are spending less time on household production, men more, but still less than women. Defining total work as work-for-pay-plus-household-production, it is clear the total has dropped since the mid-1960s in the United States. 3) Although the sources of men's and women's newly free time differ, both sexes are now spending more time in leisure activities. Whether we're happier or not, we are more involved in activities that most people would regard as leisure.[1]

This increase in leisure time has not been spread evenly among all adult Americans. Among college graduates, leisure has hardly increased at all. For those who made it only to or through high school, there have been large increases in leisure time. These differences should make one think about the net effects of the sharp rises in earnings and income inequality that have occurred in the United States over these decades. While the rich and well-educated have gotten richer, they have no more leisure time in which to enjoy their income. Lower-income people have not done so well financially, but they have a lot more time over which to spread the smaller income increases that they have experienced.[2]

Who is working more in total, men or women? Put differently, who is enjoying more leisure, men or women? In a large number of wealthy countries there is little or no difference—men's extra work for pay is almost exactly offset by women's extra household work. This near equality does not hold in poorer countries, though, where women work much more in total than men. Similarly, the same greater work burden on women occurs in countries where surveys describing citizens' attitudes suggest that men have more power than elsewhere.[3]

As Table 1 shows, in the United States between 2003 and 2009 men worked in total an average of 495 minutes on a typical day, women 505 minutes. Men spent more time in leisure (mainly because they watched more television), women more time in personal maintenance. But the times spent outside of work and household chores were nearly equal.

With the sudden abundance of time-use data in the United States and the ability to make longer-term comparisons, we can now answer questions about changes in various demographic groups' use of time and differences among them. College students are spending less time studying and attending class than before, even accounting for demographic changes in their gender/racial/ethnic/background mix. Immigrants use time differently from natives, being no more likely to work for pay but working more if they do choose to work. They are less likely to do things at all that require dealing with the native world, but spend more time on them if they do them at all. This difference disappears among second-generation Americans.[4]

People who are better-educated and have greater earnings capacity tend to sleep less, which is not surprising since their time is more valuable. However, while the greater value of time reduces time spent on many other non-work activities, additional education may

Table 1 — Time Use by Americans Ages 20-64: Minutes per Representative Day, 2003–2009*

	Men	Women
Market Work	340	241
Household production	155	264
Personal maintenance**	616	635
Leisure	329	300

*Based on ATUS samples of 31,614 women, 24,742 men.
** Most of "personal maintenance" is sleep.

reverse this effect for some people: the better educated may realize the benefits of such activities as exercise, health management, and other things. In fact, this latter effect seems to predominate — time spent exercising rises with education, even though more educated people have less leisure time.[5]

How we use time outside of work is especially important in parenting. With the rise of dual-earner couples as women's labor force participation rates have increased, one might worry that kids are not getting the same attention as earlier. Working parents may indeed be spending less time parenting than employed parents used to — the evidence on that is unclear. But reliance on alternative scheduling — with one spouse working a nonstandard schedule—has increased, allowing for the possibility that one parent can typically spend time with the child (or children). The interesting development is that time spent with kids has increased especially sharply among more educated parents. With those parents also increasing their market work, this change is surprising. One possible explanation, consistent with the data, is that increased competition for entry into elite colleges has spurred parents to spend more time with kids in hopes of raising their chances of acceptance at leading universities—the Tiger Mom phenomenon.[6]

The notion of household production goes back at least to the early 1930s, but the formal theory was laid out by Gary Becker in 1965. He noted that families are like little factories, combining their own time and purchased goods to create commodities that they can then enjoy.[7] The power of the theory stems from the implications of the fact that while we all pay about the same prices for purchased goods, our values of time differ greatly. While household production is mentioned in the research discussed here, most of the studies — and the immense literature by sociologists who examine time use — involves accounting, that is, listing patterns of time use rather than using the theory to uncover new economic relationships.

One study explicitly used the theory to measure how people substitute food and other purchases for time as their time became more valuable. In the United States between 1985 and 2003, time devoted to food purchasing, preparation, and clean-up, and eating, decreased as people's wages increased. The decrease was especially pronounced among the well-off, whose wages increased most. Another study used the theory to examine the hoary but crucial economic question of how tax changes affect women's market work time. Going beyond the standard work-non-work distinction, the evidence shows that most of the impact of changing incentives for paid work operates through decreases in household production; these are modified by changes in the prices of purchased goods that are most readily substituted for a woman's time at home.[8]

One issue that has intrigued social psychologists, the so-called "third shift" of high-earning women and men who feel frazzled and always rushed for time, also has been studied using the theory. High wages lead people to work more, leaving less time to enjoy with purchased goods. Those same people also have more money to spend. For these well-off people, time is scarce and purchased goods are plentiful; so it is not surprising that, even if they did little paid work, they complain about not having enough time (just as it is not surprising that low-income people complain less about being short of time, more about being short of money).[9]

When We Do Things, and the Macroeconomy

All of these studies discuss *how much* time is devoted to different activities, but *when* we do things also matters. For example, Americans do more paid work on weekends and at night than workers in other rich economies. Would this pattern change if the government imposed large penalties on work at unusual times? Work at such times probably would be reduced, but the responses would not be enough to get American work schedules in line with those in Europe and Japan. When we work also depends on when others are working—and what good alternatives exist to working. The timing of television shows affects when we work: because shows are nominally one hour later in the East, people living there start and end work later and go to sleep later than people in the Midwest. The timing of work, sleep, and other activities among people in other time zones is cued partly by those in the eastern time zone (where nearly half of all Americans reside).[10]

We know that the average American is less likely to be working for pay in a recession, especially a severe one, if working means putting in fewer hours. But is the freed-up time then used for household production — on chores that might have been postponed from good times and that might even substitute for purchased services — or is it used for leisure or personal maintenance? With the ATUS now providing enough data to answer this question, the evidence shows that only part of the extra time is reallocated to household production. This fact implies that a recession does not just represent substitution of non-market for market production; it represents a real loss of goods and services, whether they are produced in the market or at home.[11]

Although paid work time decreased in the United States in the first half of the twentieth century, and in Europe during the third quarter of that century, those drops were gradual and their causes are hard to sort out. How would we spend time if we suddenly were forced to work less, so that our unusually long work time decreased to levels of other rich countries? Japan and Korea both cut working time by raising the penalties that employers pay for using overtime hours. Almost none of the freed-up time was used for additional household production, with extra TV-watching and grooming taking up much of the extra non-work time.[12] Again, household production did not substitute completely for paid work.

The development of large-scale household surveys in the 1960s and 1970s enabled a boom in studies that linked empirical research to the theory

of individual behavior. I expect that, as still more time-use data become available in the United States and other countries, more research will take advantage of the unique perspective that economic theory provides into issues of time allocation. The data will be there awaiting the clever application of theory to generate new facts.

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