

Testimony by Richard Rogerson
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How the Taxation of Labor and Transfer Payments
Affect Growth and Employment

Introduction

The US faces important long run decisions about the size of its government spending programs. Pressure for change comes in part from the budgetary imbalances associated with changing demographics (the aging of the baby boomers age and increasing life expectancies) as well as from the increasing relative cost of health care. Effective public policy decisions about the longer-run scale of various government programs requires a careful assessment of both the costs and benefits associated with the size of these programs and the manner in which they are funded. A key feature of reality is that most of the revenues that fund these programs are raised by taxing labor income, either directly or indirectly. As a result, an unfortunate reality of more government spending is that it can create a disincentive for individuals to work. Because labor is an essential input used in producing output, less labor implies less output, which in turn means that overall consumption and living standards must decrease. Or, as some commentators like to put it, the reliance of governments on labor taxes means that expanding the size of government programs shrinks the size of the pie that everyone must share.

But how large is this disincentive effect? Is it large enough that it is of first order importance for policy makers to take it into consideration, or is it sufficiently small that it can safely be ignored? Some policy makers seem to believe that these effects are small and that they can therefore be ignored. Some policy makers will cite various studies by economists as support for this view. Over the last ten or so years I have devoted a great deal of effort to investigating this issue, including an assessment of the methodology behind many of these studies. Based on this research I believe that the disincentive effects of labor taxation are of first order importance and should be taken into account in any analysis of the costs and benefits of long run government spending. The focus of my testimony today is to present what I believe is some transparent and striking evidence on this issue. An important aspect to the evidence that I report is that it comes from outside of the US.

To understand why, it is important to realize that probably the most transparent and compelling evidence on this or any number of other issues comes from what economists refer to as a natural experiment, which in this context would describe a situation in which a country changes its scale of government spending in a permanent manner, financed by an increase in labor taxes, while holding all else constant. The key phrase here is "holding all else constant". Because there have been changes in the scale and design of government spending and labor taxes in the US over the last fifty or so years, one might look to the historical data from the US to tell us about the magnitude of the effects of labor taxes on hours of work. While this is a good idea in principal, certain realities serve

to obscure these disincentive effects in the US data. Central among them is the fact that the changes in these programs in the US over the last fifty years have not been particularly large relative to other economic and demographic changes. Because there are many changes both large and small that impact on the economy over any time period, this implies that the changes in government spending in the US are just one among many other changes taking place over the last fifty years. When many changes are happening simultaneously, it is difficult to reliably determine the contribution of any one particular factor to the overall economic changes that we observe. Some would say that we have a situation where the "signal to noise ratio" is relatively small.

Failure to appreciate this fact has led to many fallacious attempts to argue that higher taxes on labor do not lead people to work less. An example is useful. In the context of recent debates, several policy makers have observed that labor taxes increased during the 1990s, but that total hours of work in the US economy nonetheless grew substantially. This is proposed as evidence that higher taxes do not create a disincentive for work. But this argument is fallacious for the simple reason that it neglects to take into account that at the same time that taxes were increased, something else very substantial was also affecting the US economy. In particular, the period of the 1990s was characterized by high investment, high productivity growth and high output growth. Some proclaimed it as the advent of the "New Economy". It is hardly surprising to find that total hours of work increased during a period featuring an investment boom and high productivity growth. Since no one suggests that the high rate of investment and high productivity growth were due to the increase in taxes, it follows that economic outcomes in this period are likely dominated by these other factors. In short, this episode provides no information about the disincentive effects of higher labor taxes.

A second source of information that policy makers often rely on to support the view that the disincentive effect is small, is a large literature in the field of labor economics. This literature studies data on the choices that individual workers in the US make in different situations to infer how they would respond to changes in tax and transfer programs. Much of this literature concludes that the overall disincentive effects are relatively small. Once again, the foundation for these conclusions is very thin. First, the immediate findings of these studies are typically very sensitive to what we now know to be unreasonable assumptions. Second, the conclusions regarding the disincentive effects for the overall economy come from making extrapolations that are not at all justified by the analyses. Unfortunately, many policymakers continue to base their analysis on these estimates. While I have written several papers that relate to this issue, I will not go into these details in today's testimony, preferring to present the evidence in its most transparent form. I should emphasize that I, along with others, have analyzed this data using more sophisticated methods, and that the results from those more complex analyses confirm the findings that I will focus on today.

So why should we turn to the experiences of other countries for evidence? As I said above, one would ideally like to have a situation where we witness a large permanent change in the scale of tax and transfer programs, where we can reasonably think that the changes are large compared to other changes, and where we have allowed sufficient time

for individuals to respond to the changes. While the US does not fit this ideal situation, it turns out that other advanced economies do.

A striking feature of the evolution of labor taxes in other advanced economies is that there have been very dramatic differences across countries in the extent to which they have changed over time, and that these changes have been permanent. For example, since 1960, taxes on labor have increased by more than three times as much in some European countries than in the US. It follows that looking at the changes in hours worked and labor taxes across OECD countries provides an excellent opportunity to learn about the disincentive effects of labor taxes.

Let me emphasize that my testimony today is solely about the long run effects of the long run level of government spending and labor taxes. As the economy continues to recover from the largest recession in the post WWII era there has been much discussion of the desirability and efficacy of various temporary policies on short-run economic outcomes. The short term effects of temporary changes in various economic policies, especially those enacted in unusual circumstances, can be very different than the longer run effects of permanent changes in policies. As a result, the effects that I discuss today should not be interpreted as bearing directly on the likely effects of the various temporary stimulus measures that have been enacted.

The testimony that follows is based on my 2010 monograph *The Impact of Labor Taxes on Labor Supply. An International Perspective*. This represents a relatively non-technical presentation of some key evidence. I have pursued this analysis in a much more technical fashion in a series of other papers, most notably my work with Lee Ohanian and Andrea Raffo (2008), and with Johanna Wallenius (2009).

Some Basic Theory

While I do not want to devote much time or space to a discussion of economic theory, I do want to note one point. A very robust implication of basic economic theory is that if the government taxes labor income and uses the proceeds of the tax to fund transfer payments to individuals (e.g., social security) or alternatively, provides them with goods or services that they would otherwise have bought for themselves (e.g., education or health care), then individuals will choose to work less. This reduction in hours may take many forms: an individual may choose not to work while in college, a family may choose to only have one member in the labor force, an individual may not take on a second job, or may retire earlier. In contrast, if the revenues are used to fund other types of spending, like national defense, for example, then basic economic theory does not have a robust prediction. Moreover, many economists interpret long run evidence from the US to imply that in such a case there will be no effect on individual labor supply.

The key message from this is that it is labor taxes used to fund transfer payments or provision of services that individuals would otherwise buy for themselves that are of key interest in terms of assessing the impact of labor taxes and government spending on labor

supply. But, these are in fact the dominant forms of government spending, and the dominant form of projected future increases.

Labor Taxes in the OECD

Table One shows effective average tax rate on labor in several OECD countries in 1960, 1980 and 2000. In each case the value is the average for a five year interval centered on the year in question. The source for these tax rates is McDaniel (2006), and they represent the average effective tax rate on labor income that captures not only direct taxes on labor income but also payroll taxes and consumption taxes. A basic message of economic theory is that taxes on consumption distort the labor supply decision in very much the same way as taxes on labor earnings: in both cases the individual would get less consumption per unit of time devoted to work.

Table One				
Average Effective Taxes on Labor Income				
	1960	1980	2000	Change 1960-2000
Australia	15.8	24.6	27.2	11.4
Austria	31.3	43.6	48.5	17.2
Belgium	29.0	43.6	50.0	21.0
Canada	20.7	28.5	36.0	15.3
Finland	26.0	40.4	52.4	26.4
France	36.6	43.7	49.7	13.1
Germany	33.5	43.4	47.7	14.2
Italy	25.5	33.2	49.1	23.6
Japan	18.4	23.4	30.5	12.1
Netherlands	32.1	49.2	45.1	13.0
Spain	16.0	24.4	35.6	19.6
Sweden	31.6	53.9	59.1	27.5
Switzerland	17.3	25.1	32.7	15.4
United Kingdom	25.7	36.1	36.0	10.3
United States	22.1	26.4	28.6	6.5
Average	25.4	36.0	41.9	16.5

The last row of this table is striking--it shows that in terms of averages, tax rates on labor increased by more than 16% over this time period, almost three times the 6.5% increase that was observed in the US. In fact, the US was the only country to have an increase that was less than 10%. Some countries even had increases in excess of 20%. Importantly, the table also shows that these increases have been permanent, since almost two-thirds of the overall increase takes place during the first 20 year period, and there was no tendency for taxes to decrease in the last twenty years. Recalling the earlier discussion about natural

experiments, it follows that countries other than the US are much more likely to provide a cleaner look at the effects of higher tax rates on aggregate hours of work.

Hours Worked in the OECD

Table Two shows hours worked in 1960, 1980 and 2000 for the same set of countries as Table One. These hours data come from the OECD Labor Markets Database and the Groningen Growth and Development Database. They are the product of employment and annual hours of work per person in employment, divided by the size of the population aged 15-64 and then expressed as weekly values.

Table Two				
Weekly Hours Worked Per Person Aged 15-64				
	1960	1980	2000	% Change 1960-2000
Australia	24.0	22.7	23.9	-0.6
Austria	26.8	21.4	20.0	-25.5
Belgium	25.5	18.7	17.6	-30.9
Canada	22.2	22.8	24.4	9.8
Finland	28.7	23.9	21.0	-26.7
France	25.5	20.0	17.2	-32.5
Germany	28.3	21.1	18.4	-35.2
Italy	23.4	17.9	16.7	-28.7
Japan	29.5	26.9	25.4	-13.8
Netherlands	22.6	17.5	18.6	-17.6
Spain	23.3	19.3	19.1	-17.9
Sweden	26.6	22.9	22.5	-15.4
Switzerland	29.1	24.5	25.3	-13.0
United Kingdom	28.1	23.0	22.5	-20.0
United States	23.6	23.4	26.3	11.3
Average	25.8	21.7	21.3	-17.6

These data are interesting in and of themselves, so we begin by noting some of their features. First consider what happened to the average value for hours worked. Hours worked decreased dramatically from 1960 to 1980, followed by a small decrease thereafter. The overall drop in hours from the beginning to the end of the period is more than 17%. This is an enormous drop in hours worked, and to appreciate this fact it is useful to provide some perspective. Everyone is familiar with the fact that the labor market exhibits fluctuations associated with the business cycle, with more total work being done during expansions and less total work being done during recessions. The counterpart of this is that unemployment tends to be higher in recessions and lower in expansions. In fact, trying to understand these fluctuations in the total amount of work

being done has long been viewed as one of the key puzzles in macroeconomics. But going from normal times to a fairly severe recession is usually associated with a drop in total hours worked of about 3%. The size of the average drop that we see across countries is more than five times as large. So this drop in hours worked over time is indeed something very dramatic.

The second striking pattern in these data is the dramatic differences in the overall change in hours worked across countries. At one extreme is the US, which actually witnessed an increase of more than 11% between these two dates, and at the other extreme are Germany and France, with declines of more than 30%. If we contrast the differential changes between the US and Germany, the difference is more than 45%. These differences in changes in working hours are staggering.

While the US is at one extreme, it is important to note that the US is not an outlier. Canada also displayed substantial growth in hours of work, and Australia had basically no change in hours worked. Moreover, among the countries that exhibited substantial decreases in hours worked, there is still a lot of variation. Switzerland, for example, had a decrease in hours worked of 13%, which is much less than what occurred in France, Germany and Belgium.

Changes in Taxes and Changes in Hours of Work

We now put together the two key pieces of data: the changes in labor taxes and the changes in hours worked.¹ It is instructive to begin with a look at what happened to the simple averages across countries for both labor taxes and hours worked. Between 1960 and 2000 the labor tax rate increases by 16.5 percentage points, and hours of work decrease by 17.6 percent. This suggests a strong negative effect of taxes on hours of work. In fact, if one considers the fact that this period also coincides with the dramatic increase in female labor force participation, for reasons largely unrelated to changes in taxes, these values represent an underestimate of the effects of taxes.

While it is interesting to look at the averages, it is obviously a more powerful test to examine the pattern of changes across countries. That is, to what extent is it the case that countries which had larger increases in taxes also had larger decreases in hours worked? The correlation between the percentage point change in tax rate and the percent change in hours of work is equal to -.60.

Another way to represent this information is to run a simple regression of percent change in hours of work on change in tax rate:

$$\log(h_{i2000}) - \log(h_{i1960}) = a(\tau_{i2000} - \tau_{i1960}) + \varepsilon_i$$

where h_{it} is hours worked in year t in country i , and τ_{it} is the labor tax in country i in year t . The result of this regression is a coefficient of -1.21 on the change in tax rates,

¹ A more structured analysis of these data in the context of a formal model of labor supply can be found in Ohanian et al (2008). See also Prescott (2004).

implying that if tax rates increase by ten percentage points, then hours of work will decrease by 12.1 percent.

One may ask the following: if taxes exert such a significant negative effect on labor supply, how is it that hours of work in the US have increased at the same time that taxes on labor have increased? Does this not contradict the main message? In other work (Rogerson (2007) and Rogerson (2010)) I have dealt with this issue directly and shown that there is indeed no contradiction. The key point is that the period from 1960 to 2000 is a period of sustained increases in female labor force participation and a movement from home production to market production. While there is still much ongoing research on this dramatic secular trend, no one believes that the underlying cause is directly related to taxes. In Rogerson (2010) I show that if one controls for the movement from home production to market production, the US data provide a similar estimate.

Cultural Differences

If someone were to only look at the data shown for the year 2000, one would see that hours worked are lowest in the continental European economies of Belgium, France, Germany and Italy, are at intermediate levels in the UK, Finland and Sweden, and are the highest in the US, Canada, Australia, Japan and Switzerland. Many commentators are content to explain away these differences as being due to cultural differences, with the idea being that people from some countries either enjoy leisure more or are less focused on work.

This view leads some people to argue that US policy makers should not look to these other countries for information about how tax policies influence hours of work. In particular, they would argue that the reason many Europeans work less than Americans is not because of high taxes on labor and generous transfer systems, but instead because preferences toward work and consumption are systematically different across countries.

A closer look at the data suggests that this is not a very compelling story. Specifically, if one looks back at the data for 1960, one sees that hours of work are actually higher in Germany, France, and Belgium than they are in Canada, the US and Australia. That is, fifty years ago the relative work levels of these countries were reversed. This evidence seems inconsistent with the view that claims Europeans work less because they either value leisure more or do not care so much about consumption.

The above piece of evidence tells us to focus on the following key fact. Back in 1960, hours of work in many European countries, including France and Germany, were slightly higher than they were in the US. Since that time, hours have increased somewhat in the US, but decreased dramatically in most European countries. The question is why? Something has changed in Europe relative to the US during the last forty years that has led to these very different changes in the amount of work being done. The above analysis

leads us to conclude that relative changes in the rate at which labor is taxed is the dominant force in explaining these very different changes.

Moreover, it should be noted that the way I have examined the data actually allows for the possibility that Europeans have different attitudes about how much they want to work. To see why, it is important to note that the above estimates of tax effects did not come from comparing the relative level of work in Europe with the relative level of labor taxes in Europe. This procedure would in principle mistakenly attribute differences that might be due to preferences to differences in taxes. Instead, the above analysis focused entirely on the changes in work in each country with the changes in taxes in that same country. In a country where people like to work a lot, for whatever reason, this will manifest itself as higher hours worked in both 1960 and 2000, and hence does not affect the change in hours between these two dates. Similarly, in a country in which people prefer not to work so much, this would manifest itself as lower hours of work in both 1960 and 2000. Once again, this has no bearing on the change in hours between 1960 and 2000.

Other Explanations for Differences in Hours Worked

The evidence just presented shows that there is a strong negative correlation between changes in hours and changes in labor taxes in a sample of 15 OECD countries. I have interpreted this as evidence in support of the notion that the changes in taxes were the source of the changes in hours worked in these countries. But one still needs to be concerned with the possibility that the changes in hours worked might be due to some other change that might be going on at the same time as the changes in labor taxes, and that because of this we are misguided in claiming that the change in hours of work is due to taxes.

An example will help to illustrate the point. It is well known that the economies of continental Europe differ from the US economy in several respects other than taxes. For example, these economies tend to have more regulated labor markets in terms of features such as employment protection policies, which are policies that make it difficult for firms to adjust their workforce downward. Many researchers argue that such policies lower the incentives for firms to hire workers, thereby adversely affecting total hours of work. Unions are also more prevalent in these economies. And many researchers argue that unions adopt policies that have negative consequences for overall employment and hours of work.

It is plausible that at the same time that these economies were increasing their taxes on labor that they might also have been increasing the degree of employment protection and increasing the role of unions. After all, in some sense transfer payments, employment protection and greater union presence are typically viewed as common aspects of the European welfare state. So maybe it is changes in employment protection or unionization that are driving the changes in hours worked and we are incorrectly interpreting these

changes as being due to increases in taxes, simply because we have not looked for changes in these other factors. In this section I deal with this critique.

To be sure, no matter how many other stories one considers regarding the decline in hours worked in these other countries, it is always possible that someone comes up with yet another one. If we are trying to come up with plausible stories about changes that might account for a small change in hours worked, then there are presumably many stories that one would have to consider. But if the changes in hours worked are very large, then we need to come up with some large changes that took place in the economy, and there are typically many fewer large changes going on at any point in time. Recall from the data presented in the previous section that in some economies, hours worked decreased by more than 30% between 1960 and 2000. If we are trying to understand what might account for this it stands to reason that we can focus our attention on big changes in the economy.

It turns out that it is quite difficult to come up with examples of big changes in the 15 economies that I have been studying that have the right qualitative pattern, i.e., that changed much more in countries like France than in the US. I have shown elsewhere that factors such as unionization or employment protection do not seem to work.²

Supporting Evidence: Home versus Market Production

If higher taxes are largely responsible for the large differences in hours worked across countries, then perhaps there are other pieces of evidence that would also support this view. In this section I will describe some related evidence that has to do with cross-country differences in time devoted to household production.

If taxes increase, this creates an incentive for individuals to do more things for themselves rather than purchase them in the market. The intuition is simple: if you are working to purchase something in the market, then higher taxes imply that you have to work more hours in order to earn enough money to purchase a particular item. Since time spent in home production is not taxed, higher taxes serve to make it more economical to do things for oneself rather than purchasing them through the market.

It follows that holding all else constant, if one economy has higher tax rates than another economy then we would expect to see more time devoted to home production in the economy with a higher tax rate on labor. And if the effects of taxes are sizable, then these effects should also be sizable. In (Rogerson 2010) I reported data showing how time allocated to home production has changed over time in the US. Unfortunately, the data that would permit a cross-country comparison of time series changes in time devoted to home production are not available. However, there are a few data sets that provide a

² This finding is contrary to the conclusions reached by Alesina et al (2005). In my discussion of that paper I argued why the results of Alesina et al are not compelling.

recent snapshot of how time devoted to market and home production differ across some countries.

Four recent studies offer information about differences in home and market work between the US and European countries based on time use studies. A common finding is that differences in market work are indeed significantly offset by differences in homework. Freeman and Schettkat (2001) study time allocation data for married couples in Germany and the US in the 1990s. Whereas Americans devote more time to market work than do Germans, Germans in turn devote more time to home production than Americans. The striking finding is that when one adds up total time devoted to work (i.e., market work plus home production) it turns out that the two countries are virtually the same. This study also shows that the patterns of consumer expenditure differ in a corresponding fashion, i.e., Germans spend more time on meal preparation at home and spend less money at eating establishments.

Freeman and Schettkat (2005) extend this analysis to a larger set of countries and report that as of the early 1990s, time spent in home production in European countries is about 20% higher than in the US. This implies that increased time in home production only partially offsets the decrease in time devoted to market work.

Using data from the recent Harmonized Time Use Study, Ragan (2005) compares several European countries with the US and finds that on average, individuals in Belgium, France, Germany, Italy and the Netherlands studied here have between 15 and 20% more time devoted to home production than do Americans.³

In another study of time use data, Burda et al (2008) reach a similar conclusion based on information for Germany, Italy, the Netherlands and the US. In particular, they find that Europeans engage in 15 to 20% more time in home production than do Americans.⁴

Related work has also been carried out by Davis and Henrekson (2004). Consistent with the tax effects on home versus market production discussed above, they show that countries with higher marginal tax rates systematically have lower employment in those market activities for which there are good nonmarket substitutes. The magnitude of the estimated effect is large. An increase in taxes of one quarter of one percent leads to a

³ Alesina, Glaeser and Sacerdote (2005) present data from another source which challenges this conclusion. As noted by these authors, however, their data set seems ill-suited to cross-country comparisons. The Harmonized Time Use data set used by Ragan was designed to specifically address the shortcomings mentioned by Alesina et al, and hence seems more reliable.

⁴ In comparing countries using the 2003 data it is important to be aware of changes in survey design in the US. Relative to earlier surveys in the US, the American Time Use Survey, initiated as part of the CPS, tends to generate larger amounts of time reported to child care. In the US this results in an almost 50% increase in time devoted to child care relative to the 1985 time use survey data.

decrease in the employment share in the broad set of sectors that have good home produced substitutes equal to 2.4%. They find that tax effects are most noticeable in precisely these sectors.

Summary

I have examined changes in hours of work and labor taxes in a panel of countries between 1960 and 2000. These data suggest a very substantial effect of permanent increases in labor taxes on the long run level of labor supply. Using these estimates, if the US were to increase the overall long run size of government spending relative to GDP by as little as 3 percentage points, and finance it entirely by increased taxes on labor, the effect on total hours of work would be equivalent to a loss of between 6 and 9 million jobs- a decrease of about the same magnitude as experienced during the recent recession.

References

- Aguiar, M., and Hurst, E., "Measuring Leisure: The Allocation of Time Over Five Decades." *Quarterly Journal of Economics* 122 (2007a): 969-1006.
- _____, "Life Cycle Prices and Consumption," *American Economic Review* 97 (2007b), 1533-1559.
- Alesina, A., Glaeser E., and Sacerdote B., "Work and Leisure in the US and Europe: Why So Different?," in *NBER Macroeconomics Annual*, 2005.
- Burda, Michael, Dan Hamermesh, and Philippe Weil, "The Distribution of Total Work in the EU and US," in *Are Europeans Lazy? or Americans Crazy?*, edited by Tito Boeri, Oxford University Press, Oxford, 2008.
- Davis, S., and Henrekson, M. 2004. "Tax Effects on Work Activity, Industry Mix and Shadow Economy Size: Evidence from Rich Country Comparisons," *NBER Working Paper #10509*.
- Freeman, R., and Schettkat, R., "Marketization of Production and the US-Europe Employment Gap," *Oxford Bulletin of Economics and Statistics* 63(2001): 647-670.
- _____, "Marketization of Household Production and the EU-US Gap in Work," *Economic Policy* 20 (2005): 6-50.
- McDaniel, C., "Effective Tax Rates for 15 OECD Countries: 1950-2003," mimeo, 2006.
- Ohanian, L., Raffo, A., and Rogerson, R., "Long-Term Changes in Labor Supply and Taxes: Evidence from OECD Countries, 1956-2004," *Journal of Monetary Economics* 55 (2008), 1353-1362.
- Prescott, E., "Why Do Americans Work So Much More than Europeans?," *Quarterly Review of the Federal Reserve Bank of Minneapolis*, July 2004, 2-13.
- Ragan, K. 2005, "Fiscal Policy and the Family: Explaining Labor Supply in a Model with Household Production," mimeo, University of Chicago.
- Rogerson, Richard. "Structural Transformation and the Deterioration of European Labor Market Outcomes." *Journal of Political Economy*, 2007.

Rogerson, Richard. *The Impact of Labor Taxes on Labor Supply. An International Perspective*. AEI Press. Washington DC. 2010.

Rogerson, R., and Wallenius J., "Micro and Macro Elasticities in a Life Cycle Model with Taxes," *Journal of Economic Theory*, 2009.