

**Explaining Canada-US Differences in
Hours Worked:
Where does the time go?**

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The Institute for Competitiveness & Prosperity is an independent not-for-profit organization established in 2001 to serve as the research arm of Ontario's Task Force on Competitiveness, Productivity & Economic Progress.

Research published by the Institute is primarily intended to inform the work of the Task Force. In addition, it is to raise public awareness and stimulate debate on a range of issues related to competitiveness and prosperity.

The mandate of the Task Force, announced in the April 2001 Speech from the Throne, is to measure and monitor Ontario's competitiveness, productivity and economic progress compared to other provinces and US states and to report to the public on a regular basis.

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Comments on this paper are welcome and should be directed to the authors.

Explaining Canada-U.S. Differences in Hours Worked: Where does the time go?

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Abstract

Differences in estimates of US total hours worked have non-trivial implication for the measurement of US labour productivity. Calculations by Andrew Sharpe show that the average labour productivity gap between Canada and the US over 1996-2002 shrinks from 18 percent to 10 percent when US hours are estimated from the household-based Current Population Survey (CPS) instead of the establishment-based Current Employment Statistics (CES) Survey. The Institute for Competitiveness and Prosperity has concluded that while productivity is still the key challenge in closing the Canada-US prosperity gap, the difference in hours worked is an important factor. We estimate that on average, Canadians work 142 hours, or 4.1 weeks, less than their US counterparts. In this paper we review our findings to date related to hours worked differences between Canada and the US. Our complete research will be published in an upcoming working paper. In this preliminary paper we present an overview of our findings and explore some specific puzzles related to differences in hours worked between the two countries.

Prepared for the 40th annual meeting of the Canadian Economic Association, May 2006. Alberto Isgut (a.isgut@competeprosper.ca) and Lance Bialas (l.bialas@competeprosper.ca) are researchers at the Institute for Competitiveness and Prosperity. James Milway (j.milway@competeprosper.ca) is the Executive Director at the Institute. We thank researchers at the Institute - Fernando Leibovici, Sana Nisar, Clairelle Poole, Erik Tautkus and Ying Wang.

Introduction

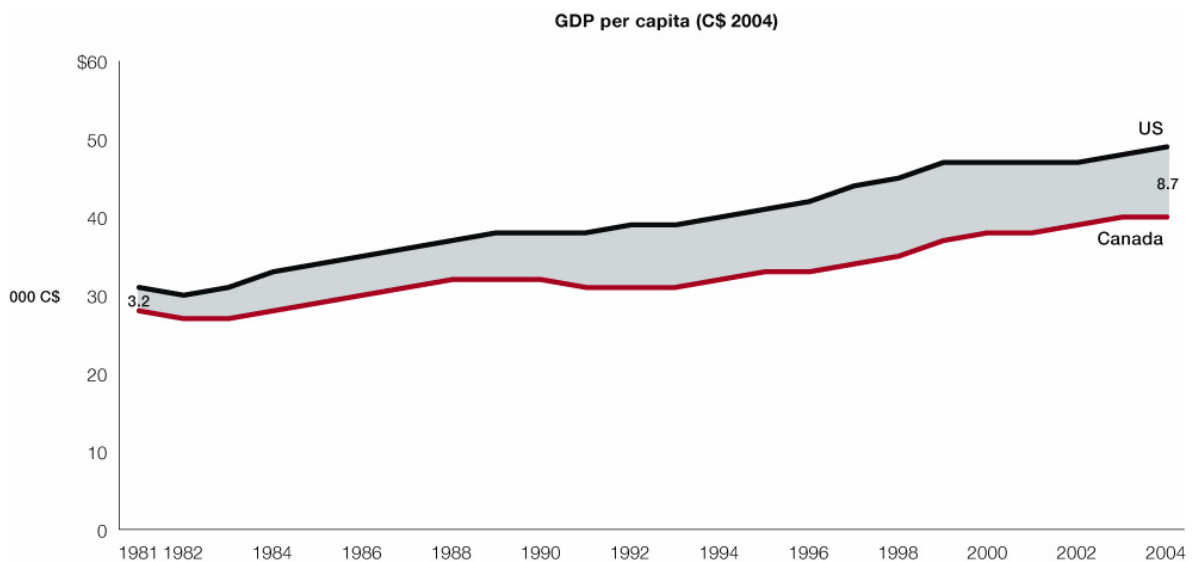
Canada's economy is strong, ranking among the most prosperous in the world. Canadians also enjoy a stable and secure environment, with a society that, while diverse, is socially cohesive, sharing fundamental values from coast to coast. We have responded well to the challenges of globalization. Canada leads the world's top performing economies in exports as a share of the economy and on a per capita basis.

But we cannot stand still. In today's world, competitiveness is not an option. To ensure that Canada's standard of living continues to rise, our economy must grow. To grow, our economy must be competitive with other jurisdictions, particularly our most significant trading partners.

The prosperity gap hinders increases in living standards

As comforting as Canada's position may look globally, the Institute has concluded that a more relevant comparison is with the United States. We believe it provides the most appropriate benchmark for our own economic progress. Against the United States, we have a significant prosperity gap (*Exhibit 1*).

Exhibit 1 Canada's prosperity gap persists



Source: Institute for Competitiveness and Prosperity based on data from Statistics Canada, Bureau of Economic Analysis, and OECD.

Our relatively poor prosperity ranking is worrisome not only because the gap is large, but also because it has slowly and steadily widened over the past two decades. In 1981, for example, Canada was only 10.3 percent or \$3,200 behind the United States. Between 1981 and 1998 the prosperity gap between Canada and the United States widened considerably – more than tripling in real dollars per capita. Since 1998 the gap has moderated somewhat to just under \$7,700 in 2002 before widening again to \$8,700, or 17.7 percent, in 2004.

This prosperity gap does not derive from a fundamental weakness in our economy, such as demographics, industry mix, or work force characteristics. The gap does indicate that Canadians are not deriving as much strength from our available resources as we could. We have found no reason why we should accept being a distant second to the United States.

This prosperity gap indicates that with a similar endowment of natural, physical, and human resources, Canadians are less successful at adding value to create goods and services for consumers here and around the world. The prosperity gap means that Canadians are not achieving their potential standard of living and that as a society we risk weakening the social safety net in which we all take great pride.

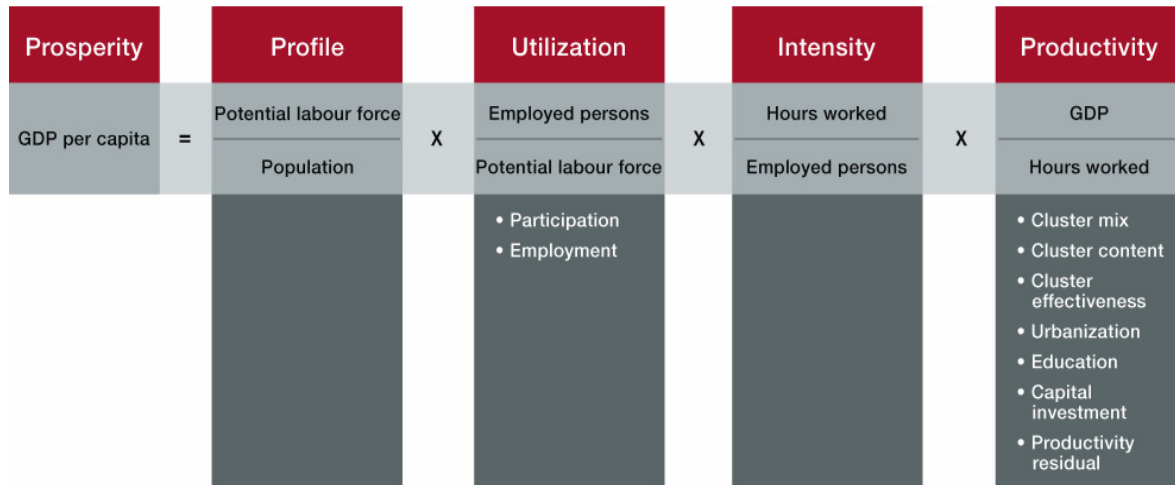
By not realizing our full economic potential we are less able to increase our economy's capacity for future upgrades and innovations and to support higher spending in areas such as health care and education. And, without action, we will witness a growing gap in economic well-being with our neighbours to the south.

To understand the reasons for the prosperity gap and its recent trends, we draw on the same framework we have used in previous reports to disaggregate Canada's prosperity gap into four measurable elements of our GDP per capita (*Exhibit 2*):

- How many people are of working age? The demographic **profile** in a jurisdiction – the percentage of the population that is between 16 and 64 and can therefore contribute to economic prosperity
- How many people are active in the work force? The **utilization** of the working age population – the percentage of the population between 16 and 64 who are seeking and succeeding in finding work
- How many hours do people work? The **intensity** of work – the number of hours workers on average spend on the job

- How much value do workers create? The **productivity** of the workforce – the success in translating working hours into products and services of value to customers in Canada and around the world.

Exhibit 2 The Institute assesses four elements of prosperity



Source: Adapted from J. Baldwin, J. P. Maynard and S. Wells (2000). "Productivity Growth in Canada and the United States" *Isuma* Vol. 1 No. 1 (Spring 2000), Ottawa Policy Research Institute.

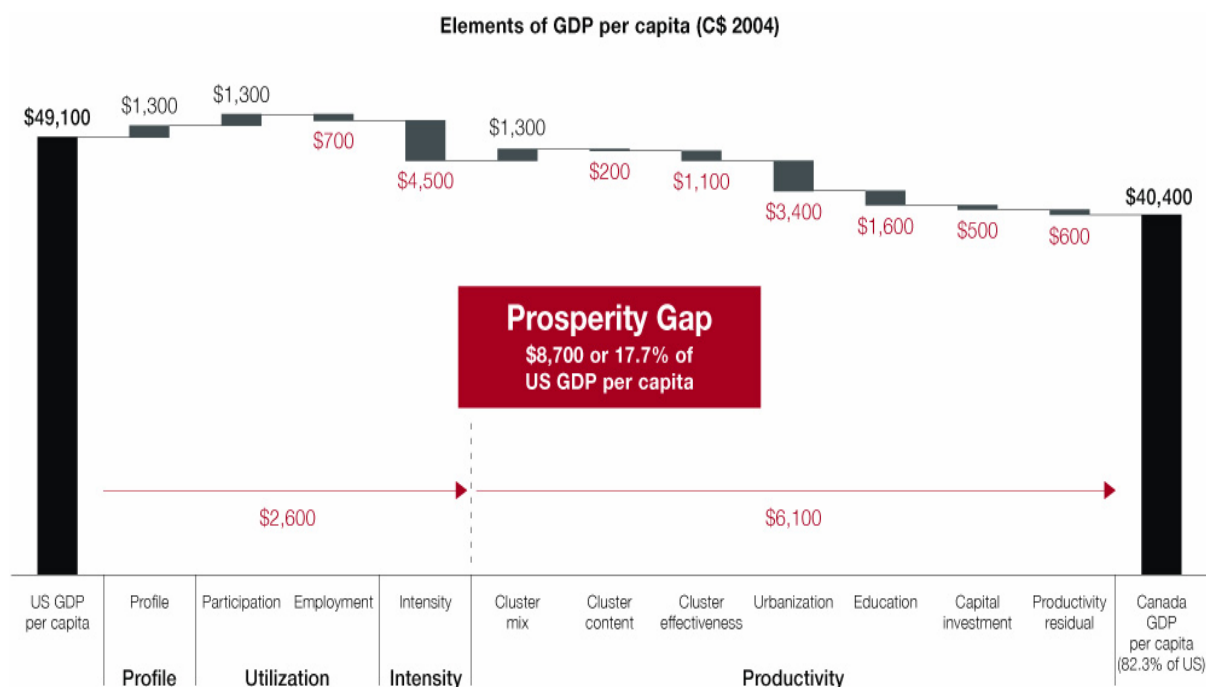
Note that the first three factors – profile, utilization, and intensity – add up to hours worked per capita. Combined, these three factors measure the physical effort Canadians are expending to create economic value. The fourth factor – productivity – measures how effective our labour efforts are in translating resources into economic value and prosperity. In this paper we turn our attention to the impact of intensity as it is a very important part of the prosperity gap between Canada and the US in hours worked.

Canada has had mixed performance in labour supply factors. Canada now outperforms the United States in profile and utilization, but underperforms in intensity.

In 2004, 67.8 percent of Canada's population was between 16 and 64. The US population in this age group stands at 65.5 percent. Canada, therefore, has a 3.4 percent advantage versus the United States in demographic **profile**.¹ Holding all other elements constant, demographic profile represents a \$1,300 advantage in GDP per capita versus the United States (*Exhibit 3*).

¹ Calculated as $[1 \text{ minus}(65.5 \text{ (United States)})/67.8 \text{ (Canada)}]=3.4 \text{ percent}$

Exhibit 3 Lower productivity and hours worked drive Canada's prosperity gap with the United States



Source: Institute for Competitiveness and Prosperity based on data from Statistics Canada, Bureau of Economic Analysis.

In a similar manner, we estimate the advantage for Canada from its higher **participation** rate and the disadvantage from its higher **unemployment** rate.

Intensity gap is significant. Intensity represents the number of hours the average worker works in a week or a year. In our earlier research², we have reported that hours worked represented a small difference in prosperity potential between Canada and the United States. Getting this measure right has been a challenge for us and for others as we compare Canadian and US economic performance. In 2005, Statistics Canada published the results of its attempts to produce comparable estimates of hours worked in the two countries.³ They concluded that the United States' Current Population Survey (CPS) provides the best comparison to Canada's Labour Force Survey (LFS). Their research indicated that Canada had a persistent and significant disadvantage versus the United States in hours worked per employee and per job. In 2004, consistent with their findings, we estimate that the average Canadian worker worked 34.6 hours

² Institute for Competitiveness and Prosperity, *Partnering for investment in Canada's prosperity*, Report on Canada 2004 and *Realizing Canada's prosperity potential*, Report on Canada 2005.

³ John R. Baldwin, Jean-Pierre Maynard, Marc Tanguay, Fanny Wong, and Beiling Yan, *A Comparison of Canadian and U.S. Productivity Levels: An Exploration of Measurement Issues*, Statistics Canada. Catalogue no. 11F0027 No. 28, January 2005.

per week, while the average US worker worked 37.9 hours. This represents a reduction in Canadian prosperity relative to the US of \$4,500.

The Institute's research has consistently pointed to the last factor, **productivity**, as Canada's key challenge in closing our prosperity gap with the US. Our work, as summarized in Exhibit 3, has pointed to the importance of investing more in post secondary education and machinery, equipment, and software, increasing urbanization in Canada, and strengthening the effectiveness of our industries through greater competition.⁴

But in this paper we turn our attention to the differences in the intensity factor. In the balance of the paper we:

- review findings by others in explaining international differences in hours worked
- describe the data we are using in our analysis
- discuss some of the hours-worked puzzles we have identified to date.

We are neutral on the question on whether the gap in hours worked is a problem for Canadians. On the one hand, we agree that the best way to increase prosperity is by working smarter not harder. On the other hand, if there are structural features of our economy that are reducing opportunities for people to work more hours then we need to consider lowering those barriers.

⁴ Institute for Competitiveness and Prosperity, *Rebalancing priorities for Canada's Prosperity*, Report on Canada 2006, March 2006.

Reviewing the literature on international differences in hours worked

Recently the international differences in work hours have attracted much attention by policymakers and academics. Variations in working hours across countries reflect a number of factors, including social conditions, employment practices, and government policies. Most academic work has focused on the widening hours-worked gap between the US and Europe. The leading explanations are related to either labour supply or labour demand.

We have identified four **labour supply theories** used to explain this divergence. The first of these explains the divergence as the result of culture, particularly with respect to European-US differences. Blanchard (2004) and others⁵ argue that Europeans have taken the bulk of their long-term increase in income in more leisure and less work, while Americans have instead taken it in more consumption. They observe that Americans began working longer than Europeans sometime between the 1970s and the early 1980s and that this reflects attitudinal differences towards the labour-leisure trade-off.

The second labour supply theory, developed primarily by Bell and Freeman (1995, 2001), attributes the trend toward diverging work hours between countries to differences in wage inequality. Their hypothesis is that in countries where workers' wages are less evenly distributed, those near the bottom of the wage distribution will be motivated to work longer hours in order to reap the benefits of moving their position up the percentile distribution of earnings. The more unevenly wages are distributed among workers, the greater the potential reward for working longer hours. On the other hand, in a country with a more even distribution of earnings, potential marginal increases in earnings are less significant and thus the motivation to increase work hours is lessened. Bell and Freeman argue that, since US earnings are among the most unequally distributed, workers have more incentive to work longer in order to gain promotions, wage increases and advance in the distribution of earnings.

The third labour supply theory suggests that the differences in working hours are the result of higher tax rates. Prescott (2004), using a dynamic model of investment and labour supply, concludes that all of the decrease in hours in Europe can be attributed to the increase in taxes. Like others, he has observed that, in the 1970s, hours worked per person in the United States and European countries, such as France and Germany, were very similar. However, in the 1990s, the average employed American worked 25 percent to 30 percent more hours than a German or French counterpart. Since the 1970s, the increase in marginal tax rates in European countries, compared to the United States,

⁵ Adair Turner (2003); Huberman et al. (2005).

discouraged labour supply and gave people an incentive to devote more time to leisure or, more accurately according to Prescott, “non-market” activities. Prescott also observes that higher taxation provides the necessary funding for transfer payments to individuals. These government transfer payments create an income effect that might provide a disincentive to more work hours and an incentive to more leisure time.

The fourth theory points to institutional factors such as unionization and labour market regulations as the cause for the international work hours’ difference. Alesina, Glaeser, and Sacerdote (2005) criticize Prescott’s study on the grounds that the labour supply elasticity number he uses in his calculation is implausibly high compared to that usually found in studies using microdata. They argue that while taxes play a role, the dominant factor explaining differences in hours worked between the US and Europe is differences in unionization and labour regulations. In the US, which the authors describe as being “less friendly to the policies of the left”, fewer than 20 percent of the labour force are covered by collective bargaining agreements, compared to more than 80 percent in France, Germany and Sweden. Furthermore, the US has no federally mandated vacation days. As a result, US full-time workers spend an average of only 7.5 days of the year on vacation, compared to 21.3 days for their European counterparts.

Glaeser et al. conclude that observed attitudinal or cultural differences can be explained by institutional structures. They conclude that as working hours in Europe began to decline, the general appetite for vacation created a social multiplier effect that increased the utility for leisure. This effect results from the increasing utility of leisure attainable when a larger number of friends and family members are taking a vacation at the same time. In addition, when many are on vacation the marginal productivity of work decreases as there are fewer workers who can interact with one another within and across firms and organizations.

Fortin (2003) shows that institutional structural differences between Canadian provinces explain regional differences in hours worked. He notes that while Canada’s hours worked are between the US and European levels, Ontario is closer to the US level and Quebec is closer to the Europeans. To explain these regional differences, Fortin points to the work disincentives inherent in Canada’s income security system and to differences in unionization rates. He also spells out the social multiplier effect we discussed above.

The leading **labour demand** explanation for differences in hours worked across countries is variations in the business cycle. Heisz and LaRochelle-Côté (2003) find a relationship between differences in Canada-US hours worked and unemployment rates. Their study finds that the sluggish economic growth in

Canada relative to the US during most of the 1990s led to a reduced demand for labour, resulting in the hours-worked gap widening to Canada's disadvantage. Other Statistics Canada research has shown that, among workers who would like a change in their workweek, the majority would prefer to work more rather than fewer hours. Drolet and Morissette (1997), using Canadian LFS supplement surveys, observed a shift from "standard" jobs involving 35-40 hour workweeks to part-time, temporary and contract employment in the early 1980s and 1990s (periods of high unemployment rates). This shift in demand away from jobs requiring longer hours resulted in an involuntary polarization of work hours in Canada. The result was a growing number of dissatisfied Canadians who would prefer to work more hours for more pay rather than fewer hours for less pay.

This background of international and Canadian research provides a good set of hypotheses to test as we explore difference in hours worked between Canada and the US.

Our sources of data

Our primary sources of data for hours worked are Canada's Labour Force Survey (LFS) and the US Current Population Survey (CPS). These are based on large monthly samples (150,000 individuals in the US and 120,000 in Canada) of households. The LFS includes civilians of age 15 or older and the CPS includes labour market questions only for civilians of age 16 or older. Since the LFS reports youngfr cohorts in two years increments, to capture the same populations we must exclude individuals of age 16 or younger from both surveys. We use the surveys for the 1997-2004 period in our cross-sectional analysis because the questions related to actual hours worked have been highly comparable in the LFS and the CPS since January 1997. We use CANSIM tabulations from the LFS to analyze long-term trends (1976-2005).

The questions in the surveys refer to the week that preceded the interview, known as the reference week. In the CPS, the reference week always includes the 12th of each month, and in the LFS it includes the 15th. In the LFS, the reference week has often included Canada's statutory holidays such as Thanksgiving in October, Remembrance Day in November and, less commonly, Easter in April. In the period studied, which includes 96 monthly LFS surveys, one of these statutory holidays was included in the reference week on 17 occasions. In contrast, the CPS included a major holiday (Labor Day) only once. This problem can lead to a serious underestimate of actual hours worked in Canada and requires correction. Maynard (2005) explains how Statistics Canada adjusts the estimates of actual hours worked to expunge the effect of statutory holidays. In this paper we follow a somewhat simpler procedure (*Exhibit 4*)

Exhibit 4 Adjustment of actual hours worked when the reference week includes a major holiday

The first step is to identify surveys when the presence of a statutory holiday in the reference week distorts the actual hours data. For that purpose, we followed the following procedure:

- (1) Compute the means of *actual total hours worked* and *usual total hours worked* for each survey between January 1997 and December 2004 for both the LFS and the CPS.
- (2) Compute for each survey month and year the difference between actual and usual hours, and the first and third quartile of the difference between actual and usual hours.
- (3) Define a survey month as an outlier if the mean difference between actual and usual hours was less than 1.5 times the first quartile or more than 1.5 times the third quartile of this variable.

The second step is to adjust outlier observations by imputing *usual total hours worked* to *actual total hours worked* if the respondent said that the main reason for a part-week absence from work was a holiday or vacation.

In both surveys, individuals are first asked about the number of hours they usually work at the job. Then, separate questions are asked to determine the actual hours worked in the reference week. If the respondent has more than one job, similar questions are asked about each job.

Both surveys contain similar variables for demographic, occupational, industry, and other worker characteristics. While the categories for these variables often differ across surveys, most differences are trivial and where necessary we developed simple concordances. In only one case, for the answers to the question “Why did you work part-time?”, we needed to adjust the statistical universe. In the CPS the question is asked to all the individuals who usually work fewer than 35 hours in all jobs, but in the LFS it is asked to all the individuals who usually work less than 30 hours in their main job. To ensure compatibility of answers, for this variable we consider individuals who satisfy both conditions.

To preview the dataset, *Exhibit 5* includes a data summary for selected variables for Canada, the US and Ontario's 14 peer states as defined by the Institute.⁶ The first four rows show the average number of individuals in the working age population, in the labour force, employed, and employed who worked in the reference week. The difference between the last two groups consists of individuals who were absent from work for the full week due to vacation, illness, or other reasons. Rows 5-7 show the labour force participation rate, the unemployment rate, and the percentage of employed persons who worked more than zero hours during the reference week. The exhibit shows that Canada has both a lower participation and a higher unemployment rate than the US during 1997-2004. It also shows that Canada has a lower percentage of employed persons who worked during the reference week compared to the US. Compared to its US peers, Ontario has higher rates of participation, unemployment, and employed who worked in the reference week.

Exhibit 5 Data summary, 1997-2004

	Canada	US	Ontario	US Peers
1. Working age population ('000)	23,658	207,957	9,066	132,967
2. Labor force ('000)	15,915	140,586	6,183	89,288
3. Employed ('000)	14,738	133,726	5,780	84,819
4. Worked in reference week ('000)	13,564	128,257	5,351	81,378
5. Labor force participation rate	67.3%	67.6%	68.2%	67.2%
6. Unemployment rate	7.4%	4.9%	6.5%	5.0%
7. Employed who worked in reference week (%)	92.0%	95.9%	92.6%	95.9%
8. Weekly hours worked per employed person who worked in reference week	38.1	39.5	38.3	39.5
9. Weekly hours worked per employed person	35.0	37.9	35.4	37.9
10. Annual hours worked per employed person	1,751	1,894	1,771	1,894
11. Marginal income tax rate (2004)	28.16%	20.52%	25.95%	20.18%
12. Labour regulation index (1998)	64.2	49.7	65.5	49.7
13. Unionization coverage rate	32.26%	13.70%	28.23%	16.21%

Note: Rows 1 to 10 are averages for the 1997-2004 period, based on the 96 monthly LFS and CPS surveys between January 1997 and December 2004. They include individuals of age 17 or older and are computed using final survey weights. The estimates of annual hours worked are obtained by multiplying weekly hours worked per employed person by 50. This calculation assumes that workers take, on average, 2 weeks off a year due to statutory holidays. See text for description and sources for rows 11 to 13.

Rows 8-10 of the table show the weekly hours worked per employed person who worked in the reference week, the weekly hours worked per employed person, and the annual hours worked per employed person. Row 8 is the mean of the survey responses to the question "How many hours did you actually work in all

⁶ This group includes US states with more than 50 percent of Ontario's population. This comprises California, Florida, Georgia, Illinois, Indiana, Massachusetts, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Texas and Virginia.

jobs during the reference week?” Row 9 is estimated as Row 8 times the percentage of persons who worked during the reference week (Row 7), and Row 10 is estimated as Row 9 times 50. We multiply the average hours worked by all the employed workers by 50, instead of by 52, to factor in statutory holidays.⁷ We refer to the last number, the annual hours worked per employed person, as labour intensity, which we can express as

$$Labour\ intensity = 50 \times \left[\begin{array}{l} \text{Percent of employed persons} \\ \text{who worked in reference week} \end{array} \right] \times \left[\begin{array}{l} \text{Weekly hours worked} \\ \text{by employed persons} \\ \text{who worked in reference week} \end{array} \right]$$

Rows 11-13 summarized additional data which we use in our analysis. Row 11 shows weighted averages of the marginal personal income tax rate. Row 12 is a weighted average index of labour standards index calculated by Block, et al. (2003). Row 13 shows the percentage of the workforce covered by a union contract.

Exhibit 5 shows a gap in labour intensity of 142 hours when comparing Canada against the US over the 1997-2004 period, and of 123 when comparing Ontario against its US peers. These differences are not trivial: using Canada’s and Ontario’s weekly hours worked per employed person they translate into a gap of 4.1 weeks a year for Canada against the US and 3.5 weeks a year for Ontario against its US peers. In both comparisons, about half of the gap can be attributed to the difference in the percentage of employed persons who worked in the reference week and the other half to the difference in weekly hours worked by employed persons who worked in the reference week.

⁷ Alesina et al. (2005, Table 4) count 12 holidays a year in the US. Maynard (2005, Table 5) shows 6 to 10 holidays in Canada depending on the province or territory. Given this information an estimate of two weeks a year of statutory holidays seems reasonable.

Pondering the puzzles in Canada-US differences in hours worked

As we review the differences in Canada-US hours worked some interesting questions emerge. In this section we set out these questions and review findings to date. In summary,

- Why is the Canada-US gap in hours worked widening? Over the past three decades, Canadians have reduced their annual working hours – but the decline is less steep than in other OECD countries. In the meantime, US workers are working more hours. The prosperity gap between Canada and the US has widened and yet Canadians are working less and their US counterparts working more. What’s puzzling is why US workers are not taking more of their prosperity in greater leisure time.
- Why do Canadians take more weeks off? Half of the Canada-US gap in hours worked is because more Canadians are away from work in any given week. This translates into two fewer weeks of work annually. The puzzle is why the greater incidence in Canada of absent from work for vacation – as well as illness and personal family responsibility?
- Why are Canadians working more part-time? The greater incidence of part-time work in Canada explains more than 20 percent of the total gap in hours worked. An important question arising from this is whether or not Canadian part-time workers would prefer to work more hours. Results from questions in the CPS and the LFS indicate that a much higher percentage of Canadian part-time workers want more hours of work than US part-time workers. What are the features of the Canadian economy that are giving rise to this apparently greater incidence of involuntary part-time work in Canada?
- Are attitudes towards hours of work different in Canada and the US? Attitudinal research done by the Institute in Ontario and 11 of the most populous states indicates minimal differences towards working extra nights or weekends to enhance standard of living. However, there are some statistically significant differences among those with higher income and education - US respondents are more likely to agree that they are willing to invest extra hours to increase their standard of living.
- Are hours worked differences related to marginal tax rates? Or are they related to labour regulations and union coverage? Two different conclusions have been reached by researchers to explain differences between European and US hours worked. Some argue that the differences are the result of marginal tax rates; others point to differences in

regulations and union coverage. We have attempted to measure the impact of these variable on hours worked and are concluding that stricter regulation and union coverage are more important in explaining Canada-US differences.

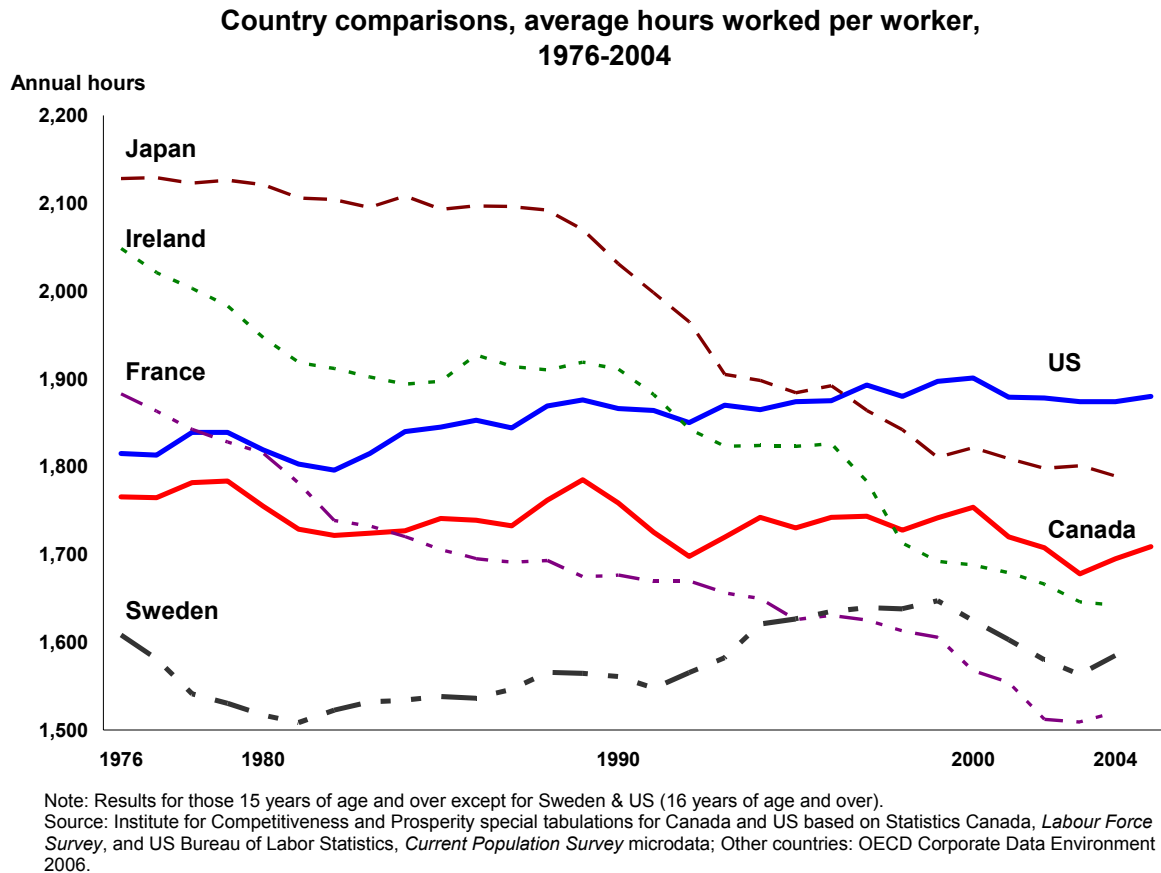
- Why don't Americans take more time off as their income increases? One of the major differences between Canadian and US workers is the incidence of weeks away from work. Canadian workers are twice as likely as Americans to be away from work in a given week. This gap widens as income increases. As incomes increase in Canada, workers take more weeks off; in the US there is no such trend. What is puzzling is why higher income Americans are not choosing more leisure.

Turning to the first puzzle...

Why is the Canada-US gap in hours worked widening?

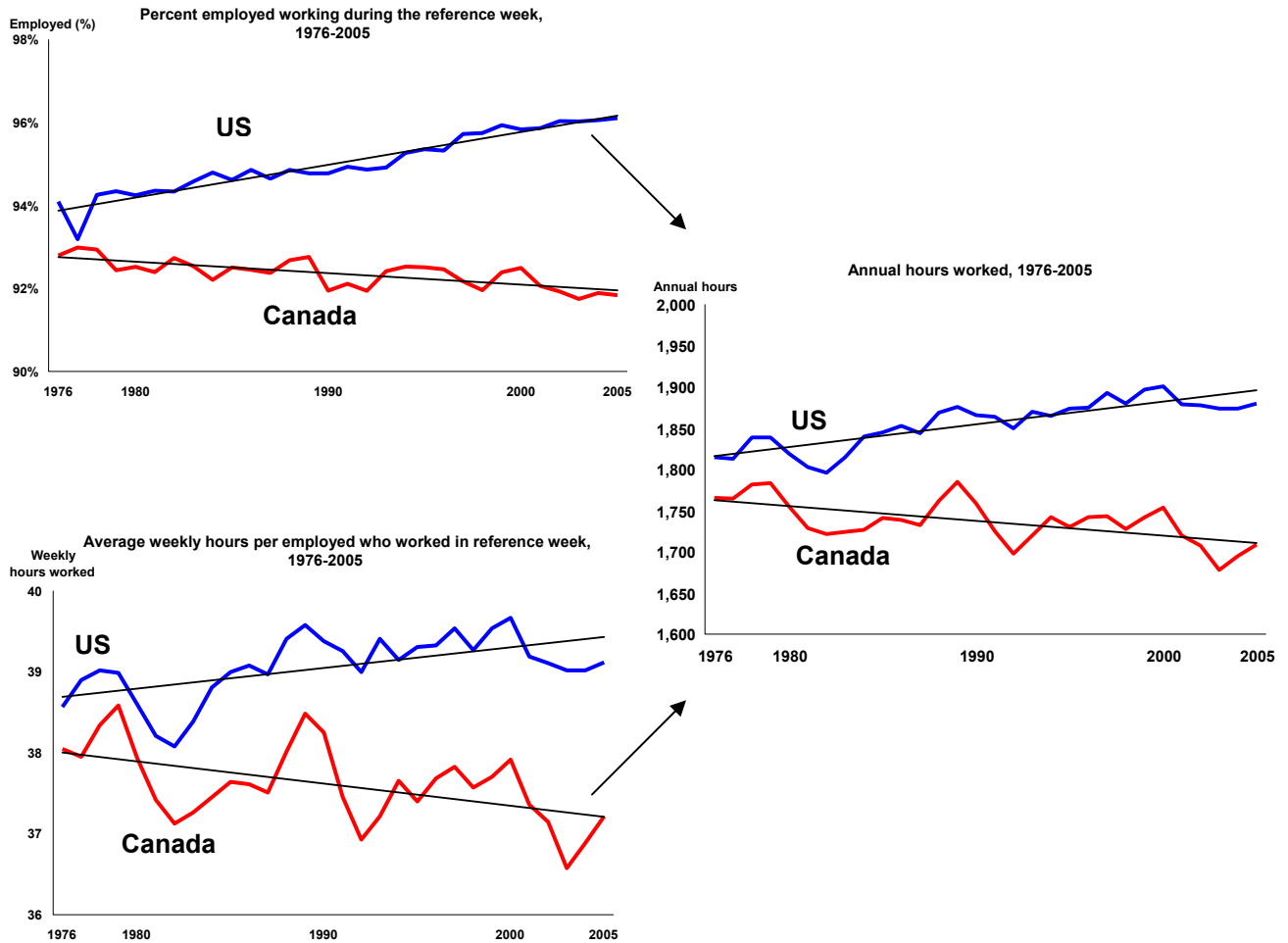
In order to put the Canada-US comparison in perspective, *Exhibit 6* shows the evolution of annual hours worked per employed person, or labour intensity, between 1976 and 2004 for selected OECD countries. Most of the countries shown exhibit downward trends in labour intensity, although the trends differ significantly among them. The reduction in hours worked has been steepest for France where hours worked are now lower than in Sweden, the traditional leader in the provision of social benefits. In fact, Sweden has increased hours worked since 1980. Ireland and Japan – two economies which have experienced periods of rapid economic growth – have sharply reduced their hours worked. In contrast, in the US hours worked actually increased between 1982 and 1999. Note that in 1976 Canada and the US had similar labour intensity. Since then, an increasing gap between the two countries has emerged. Canada's decline in hours worked per worker appears very mild. In fact, while in 1976 Canada was the country with the second lowest labour intensity, in 2004 it was third from the top, above France, Ireland and Sweden.

Exhibit 6 The United States shows little reduction in hours worked over the last three decades



As explained above, we can decompose labour intensity into the percentage of employed persons who worked during the reference week and the hours they worked. In both elements of intensity, Canada and the US have gone in different directions over the 1976-2005 period (*Exhibit 7*). There has been an increasing gap in the percentage of employed persons who worked during the reference week. Over this period, it increased in the US from 94.1 percent to 96.1 percent and decreased in Canada from 92.8 percent to 91.8 percent. Over the same period, there has been a growing gap in weekly hours worked by those employed who worked in the reference week - increasing in the US and decreasing in Canada. With the combined effect of these trends, the gap in annual hours worked per employed person, or labour intensity, increased substantially during the 1976-2005 period. In 1976, the difference in annual hours worked per worker was 50 hours; by 2005 this gap had grown to 171 hours.

Exhibit 7 Hours worked in Canada has fallen behind the US in both weeks at work and hours worked per week



Note: Canadian data are persons aged 15+; US data are 16+.
 Source: Institute for Competitiveness & Prosperity special tabulations based on data from Statistics Canada, *Labour Force Survey*, and microdata from US Bureau of Labor Statistics, *Current Population Survey*.

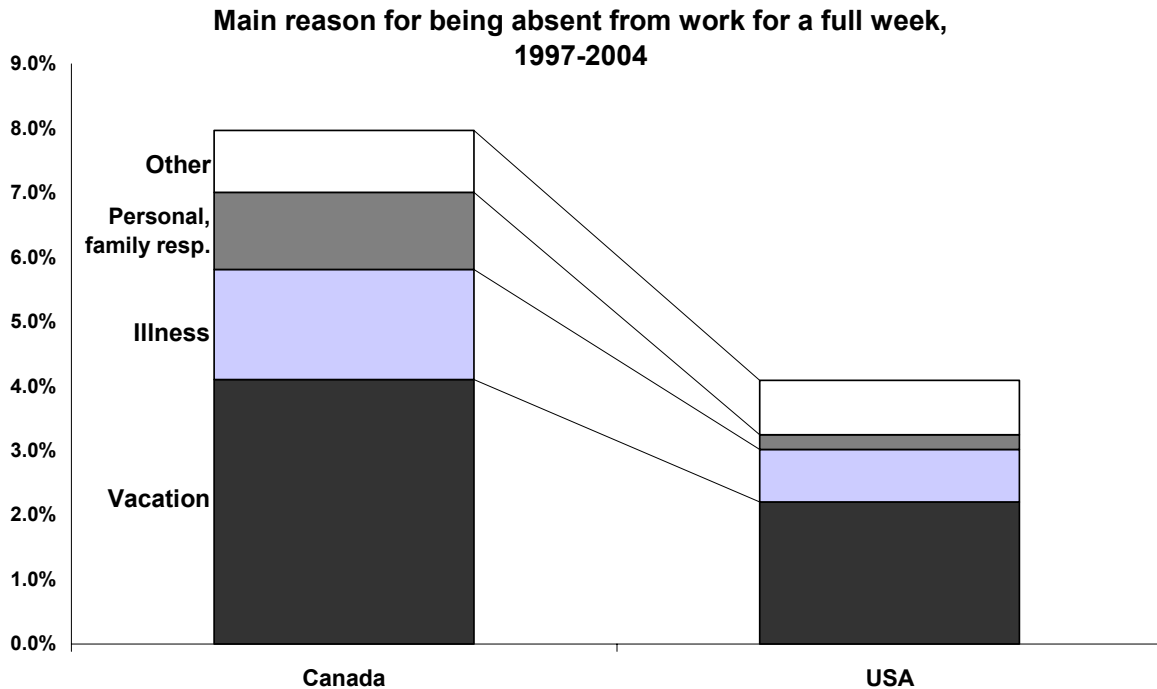
Why are Canadians taking more full weeks off work?

More Canadians are absent from work during the entire reference week and, as we have seen, this gap has been widening over the last three decades. Both the LFS and CPS ask why respondents were away from work for the entire reference week (*Exhibit 8*). The Canada-US difference represents an annual gap of almost two full weeks.⁸ Of these two weeks, one week is explained by Canadians taking

⁸ The difference of 3.9 percent in Exhibit 8 times 50 weeks (52 weeks less statutory holidays) translates to 1.95 weeks.

more vacations than Americans, half a week by illness, and another half week by personal responsibilities.

Exhibit 8 Canadian workers are twice as likely as those in the US to be away from work for a full week



Note: "Personal, family responsibilities" includes childcare problems and other family or personal family obligations in both countries. "Other" includes maternity/paternity leave or weather affected job or school/training.

Source: Institute for Competitiveness & Prosperity based on Statistics Canada, *Labour Force Survey*, and Bureau of Labor Statistics, *Current Population Survey*.

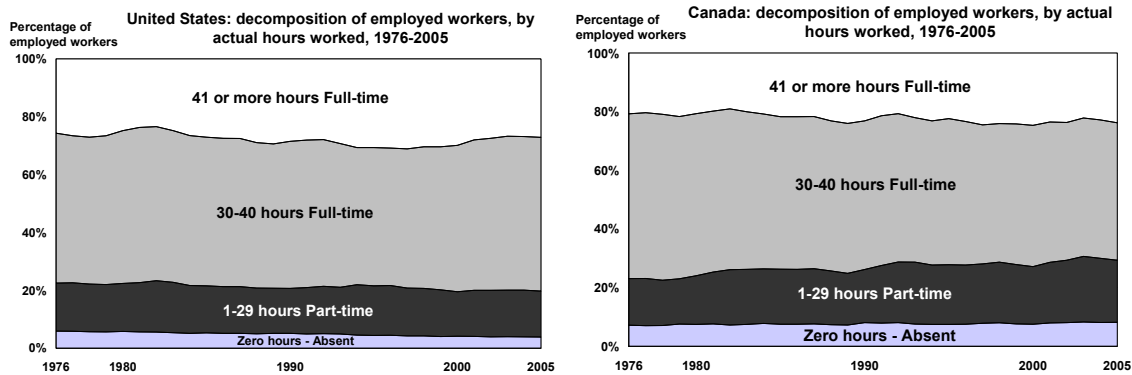
Does the incidence of part-time employment explain the Canada-US gap in hours worked?

Between 1976 and 2005, the percentage of Canada's work force working part-time⁹ has grown from 15.9 percent to 21.2 percent. In contrast, this percentage decreased slightly in the US, from 16.6 percent in 1976 to 15.9 percent in 2006 (*Exhibit 9*). The Canadian incidence of part-time workers exceeded that of the US in every year since 1980. And, as we have seen, the percentage of Canadians working zero hours in a reference week has also grown relative to the US. As a counterpart of these distributional changes during this period, the incidence of individuals working between 30 and 40 hours per week decreased in Canada

⁹ The definition of part-time employment varies across countries. In the US, an individual is considered to be working part-time if he or she usually works less than 35 hours a week in all jobs; in Canada the criterion is to usually work less than 30 hours in the main job. For comparison purposes Exhibit 9 is based on working less than 30 hours (actual) for all jobs. This 30-hour threshold is consistent with OECD and ILO standards.

from 56.2 percent to 46.9 percent and increased slightly in the US from 51.8 percent to 53.2 percent. Finally, the percentage of individuals working 41 or more hours has been consistently higher in the US than in Canada, with an average difference of 5.5 percent over the period.

Exhibit 9 More Canadians than Americans are working part-time

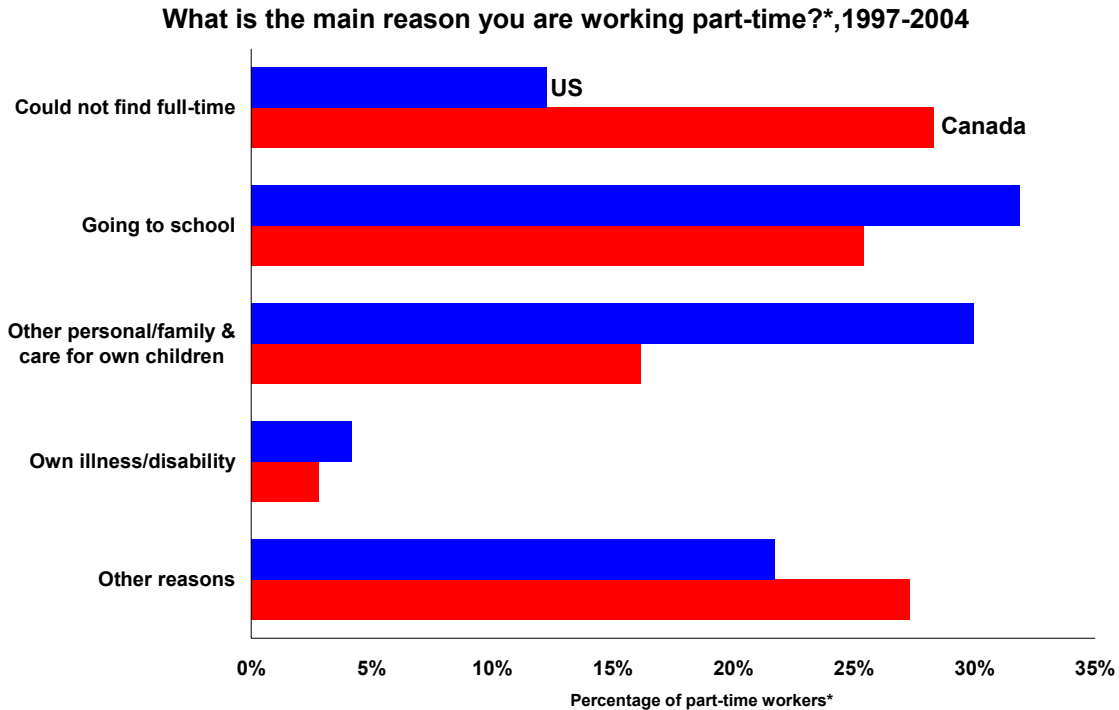


Source: Institute for Competitiveness & Prosperity special tabulations based on data from Statistics Canada, *Labour Force Survey*, and microdata from US Bureau of Labor Statistics, *Current Population Survey*.

To what extent does the higher incidence of part-time work in Canada reflect a choice or an inability to find full-time work? Both the LFS and CPS ask the main reason for working part-time.¹⁰ In Canada, the most frequent response in recent years – given by 28.3 percent of part-time workers – is “Couldn’t find full-time work” (*Exhibit 10*). In the US this response is given by only 12.3 percent of part-time workers. The reasons given most frequently by US respondents are “Going to school” (31.9 percent) and “Childcare and other personal/family reasons” (30.0 percent). Among Canadians, 16.2 percent refer to child care and 25.4 percent to going to school.

¹⁰ LFS question: “What is the main reason you usually work less than 30 hours per week at your main job?” CPS question: “Some people work part-time because they cannot find full-time work or because business is poor. Others work part-time because of family obligations or other personal reasons. What is your main reason for working part-time?”

Exhibit 10 A quarter of Canadian part-time workers indicate they would prefer full-time work



Source: Institute for Competitiveness & Prosperity based on data from Statistics Canada, *Labour Force Survey*, and microdata from US Bureau of Labor Statistics, *Current Population Survey*.

If Canada had the same proportion of full-time workers and part-times workers as in the US, we estimate that the 1997-2004 gap in annual hours worked between the two countries would fall from 142 hours to 113 hours, or 21 percent¹¹. In other words, a fifth of the intensity gap between the two countries

¹¹ If we express the Canada-US gap in hours worked as

$$Gap = [p_{1-29}^{US} \bar{H}_{1-29}^{US} + p_{30+}^{US} \bar{H}_{30+}^{US}] - [p_{1-29}^{CA} \bar{H}_{1-29}^{CA} + p_{30+}^{CA} \bar{H}_{30+}^{CA}],$$

where p_{1-29} and p_{30+} are the percentages of the employed who work, respectively, 1 to 29 hours and 30 or more hours; and \bar{H}_{1-29} and \bar{H}_{30+} are the average annual hours worked by employed persons who work, respectively, 1 to 29 hours and 30 or more hours. Notice that $p_{1-29} + p_{30+}$ equals the ratio of employed who worked in the reference week. If we assume counterfactually that Canada has the same incidence of part-timer workers as in the US and attribute the extra weight to full-timer workers, the hypothetical gap would be

$$Gap' = [p_{1-29}^{US} \bar{H}_{1-29}^{US} + p_{30+}^{US} \bar{H}_{30+}^{US}] - [p_{1-29}^{US} \bar{H}_{1-29}^{CA} + (p_{30+}^{CA} + (p_{1-29}^{CA} - p_{1-29}^{US})) \bar{H}_{30+}^{CA}].$$

is attributable to greater incidence of part-time work in Canada. Our calculation assumes no difference in hours worked among part-timers and full-timers in the two countries – only the proportion of workers varies. However, this assumption is not critical as Canadian part-time workers work about the same weekly hours as their US counterparts (17.4 hours in Canada versus 17.5 hours in the US).

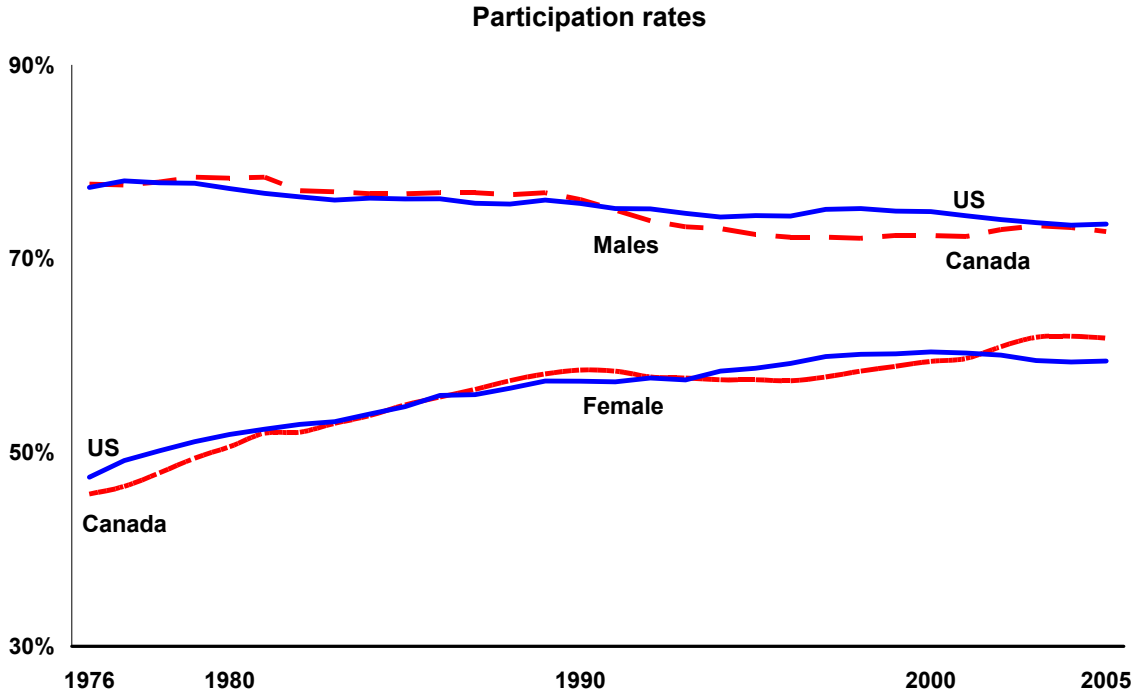
Now, the incidence of part-time work may merely reflect individuals' preferences regarding the allocation of time between work and other activities. We have noticed above, though, that Canada has a significantly higher incidence of part-timers who claim that they work part-time because they cannot find full-time work. If we assign counterfactually to those workers, both in Canada and the US, the average hours worked by full time workers, the gap would be reduced from 142 to 102 hours, or 28 percent.¹² . The reduction in the gap is bigger than above because a higher proportion of workers have worked part-time voluntarily in the US than in Canada during 1997-2004.

Part-time work is more prevalent among women than among men. But there are only minimal level and trend differences between Canada and the US in participation rate by sex (*Exhibit 11*). In both countries, male participation decreased slightly over the 1976-2005 period, while female participation increased substantially. In both countries the participation gap between males and females was cut in half, roughly from 30 percent in 1976 to 15 percent in 2005. While participation trends are similar, the average hours worked by males and females differ importantly in Canada and the US. While in the US, hours worked are increasing for both males and females, in Canada they are decreasing. The gap in annual hours has increased more for females than for males. In 1976-80, both males and females worked around 70 hours more in the US than in Canada. In 2001-05 the gap for males doubled, but the gap for females tripled

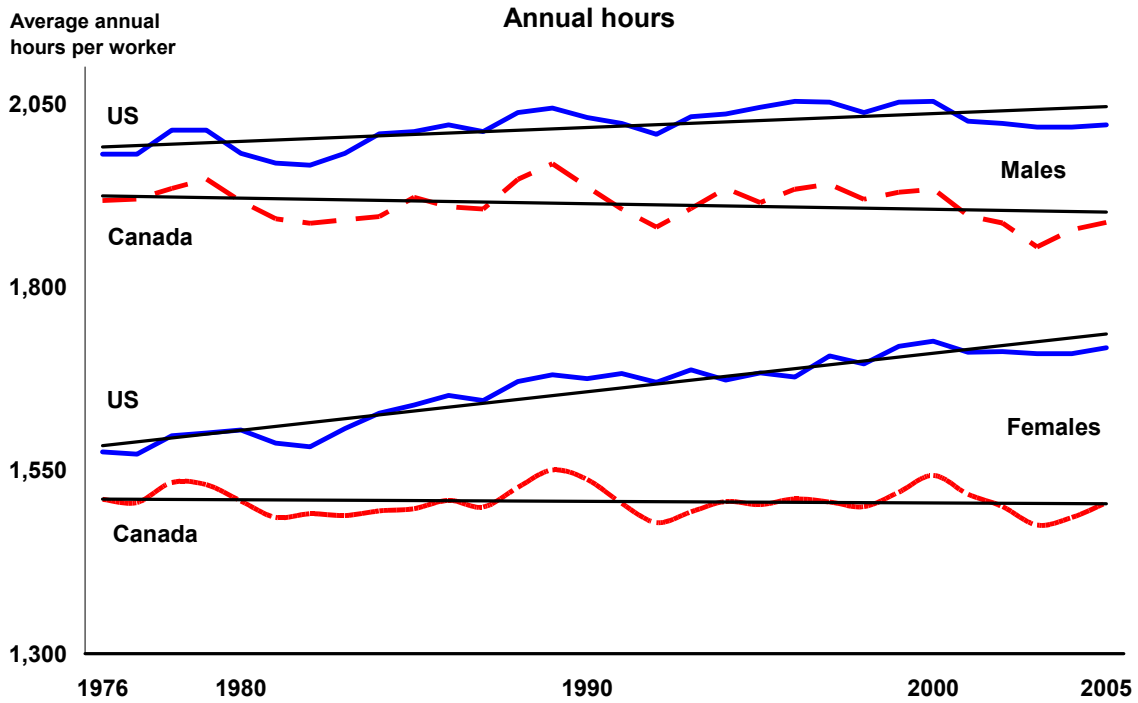
¹² We estimate the contribution of involuntary part-timers to the gap as

$$\left[p_{INV}^{US} (\bar{H}_{30+}^{US} - \bar{H}_{1-29}^{US}) - p_{INV}^{CA} (\bar{H}_{30+}^{CA} - \bar{H}_{1-29}^{CA}) \right] / Gap$$
, where p_{INV} are the ratios of the employed who claim that they work part-time because they cannot find full time work. This number was 5.1percent for Canada and 1.9percent for the US, on average, during 1997-2004.

Exhibit 11 Participation rates by men and women do not differ between Canada and the US – and do not explain differences in hours worked



Source: Institute for Competitiveness & Prosperity based on data from Statistics Canada, *Labour Force Survey*, and microdata from US Bureau of Labor Statistics, *Current Population Survey*.



Source: Institute for Competitiveness & Prosperity based on data from Statistics Canada, *Labour Force Survey*, and microdata from US Bureau of Labor Statistics, *Current Population Survey*.

Are attitudes towards hours of work different in Canada and the US?

One of the usual explanations for international differences in hours worked is attitudinal or cultural – people in some societies place a higher value on leisure than in others. In 2003, the Institute of Competitiveness & Prosperity explored difference between Ontarians and their counterparts in 11 of the more populous US states.¹³ We explored attitudes of the public and the business community related to issues of competitiveness, innovation, risk taking, and others. Overall we were struck by the similarities in attitudes between Ontarians and their US counterparts. We asked two questions related to people’s willingness to invest more work time to advance in prosperity. Overall we found no statistically significant differences in respondents’ willingness to work extra hours to achieve a higher standard of living for themselves or their family (Exhibit 12). While this finding does not address directly the overall cultural attitudes towards work and leisure, it does indicate that Ontarians do not have dramatically different attitudes towards extra work for economic advancement.

Exhibit 12 Ontarians’ willingness to work more to achieve a higher standard of living does not vary from US peer group respondents

Q. For each of the following situations, would you please tell me which, if any, you would be prepared to do in order to achieve a higher standard of living for yourself and/or your family? Would you be willing to...	Ontario		US	
	General Public (n=500)	Business Community (n=250)	General Public (n=800)	Business Community (n=675)
	%	%	%	%
Yes, would work late at least occasionally	92	99	92	99
Work late 3 out-of-5 nights a week	56	68	61	76
No, would not work late even occasionally	7	1	8	1
Yes, would work weekends at least occasionally	84	91	86	92
Work 3 out of 4 weekends	43	41	47	52
No, would not work weekends even occasionally	15	9	13	8

Source: Institute for Competitiveness & Prosperity analysis, Working Paper 4: Striking similarities: Attitudes and Ontario's prosperity gap, September 2003, page 31.

However, when we break down the survey results by respondent groups, we find that there are some statistically significant differences among university educated and higher income people. In Ontario, 48 percent of respondents with a graduate degree agreed that they were willing to work three out of five nights a week to improve their standard of living while 63 percent of their US counterparts expressed this willingness. This difference is statistically significant at the 99 percent confidence level. Similarly, 25 percent of respondents with a graduate degree in Ontario indicate a willingness to work three out of four

¹³ Institute for Competitiveness & Prosperity, Working Paper 4, *Striking similarities: Attitudes and Ontario’s prosperity gap*, September 2003

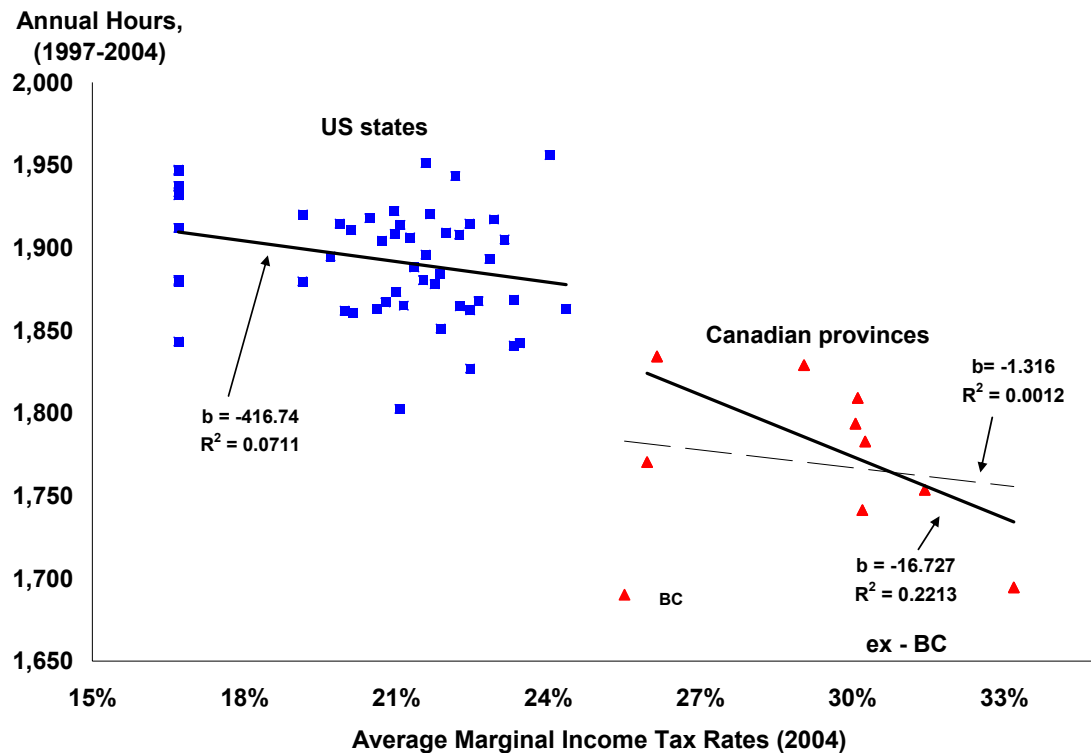
weekends versus 45 percent of their US peers, a difference that is also statistically significant at the 99 percent confidence level.

Given the overlap between education and income it is not surprising to see analogous results for higher income respondents. In Ontario 55 percent of respondents earning \$100 thousand or more annually report a willingness to work three out five weeknights to advance their standard of living versus 65 percent of their US counterparts (significant at the 95 percent confidence level). This difference is also seen among those earning between \$75 and \$100 thousand annually. On the other measure – willingness to work three of four weekends – we see no statistical difference between Ontarians and their US counterparts on the basis of income.

Are hours worked differences related to marginal tax rates? Or are they related to labour regulations and union coverage?

As we discussed earlier, Prescott has concluded that the difference in hours worked between Europe and the US is attributable to tax rates on labour. We have attempted to determine the impact of marginal tax rates on hours worked differences between Canada and the US. To measure marginal tax rates on labour we computed for each state and province the weighted average of statutory income tax rates for singles with no dependents at each income level between \$1,000 and \$200,000. The weights were estimated on the basis of the Canadian distribution of earnings of the employed from the LFS and applied to all jurisdictions in both countries. Using a single set of weights for all jurisdictions allow us to focus on the differences in tax structures across jurisdictions. A simple regression between marginal effective tax rates and hours worked indicates a weak relationship (*Exhibit 13*). In Canada, the relationship is not significant unless the outlier, British Columbia is excluded. In this case, hours worked falls as marginal tax rates increase with an R^2 of 0.22. In the US, the relationship is also negative but the relationship is weak ($R^2 = 0.07$).

Exhibit 13 Marginal effective tax rates have a limited impact on hours worked



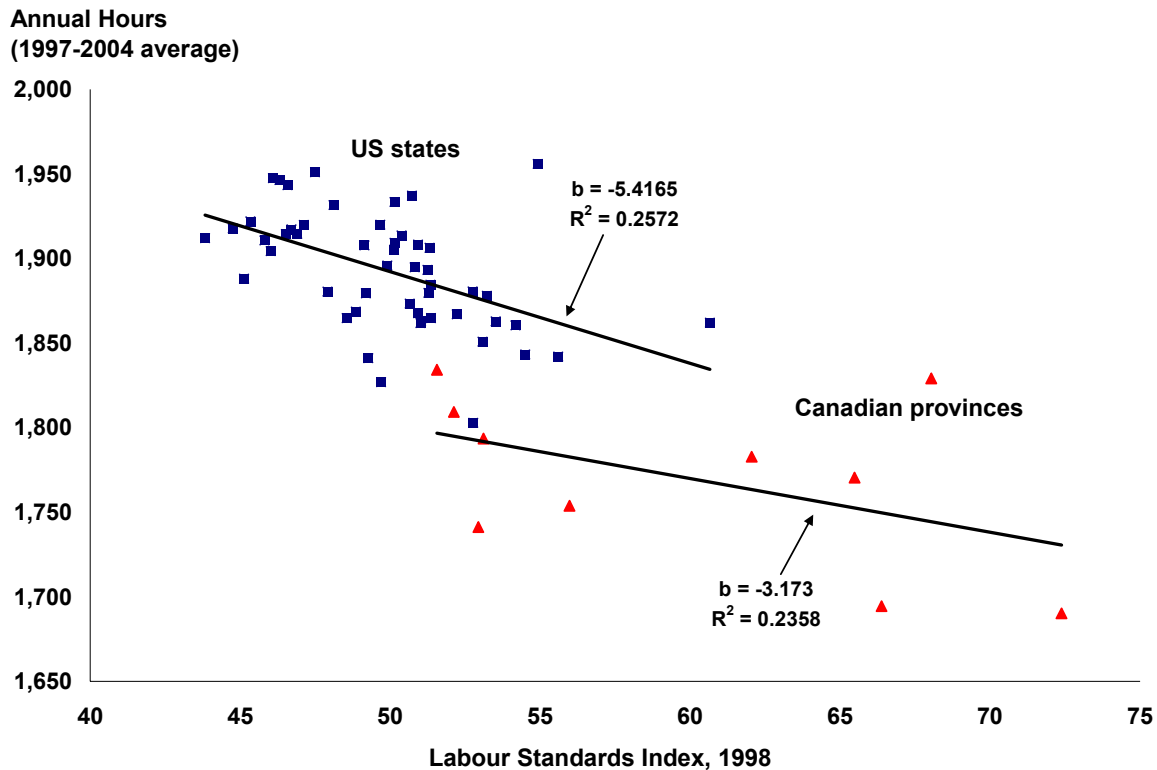
Source: Institute for Competitiveness & Prosperity special tabulations (hours data); Ernst & Young Canada, and National Bureau of Economic Research, TAXIM (tax data).

The research conducted by Glaeser et al. indicates that the main driver of European-US hours worked differences is the degree of regulation and unionization. To test the applicability of this hypothesis for Canada-US differences, we draw on Block, Roberts and Clarke (2003) who developed detailed indices of labour standards regulation across Canadian provinces and US states. They developed ten sub-indices. Five of these relate to standards requiring employer payments (minimum wage, overtime, paid time off, employment insurance, and workers' compensation) and five relate to standards constraining employer allocation of labour (collective bargaining, employment equity, unjust discharge, occupational safety and health, and advance notice of plant closings and large scale layoffs). They adjust each sub-index by the proportion of the labour force covered by the regulation and sum these adjusted sub-indices to calculate an overall labour standard index.

The index for each state or province can be seen as a measure of how much regulation is in place to affect working conditions and labour-management relationships. The indices indicate that labour standards tend to be higher in Canada than in the US. When we regress the overall indexes against hours worked in each of the ten provinces and 50 states and DC we find a negative relationship – as the labour standard index increases, hours worked decreases

(Exhibit 14). The slopes of the inter-provincial and inter-state relationships are similar as is the strength of the relationship. If we treat all 61 jurisdictions as homogenous the relationship is even stronger with the R^2 rising to 0.56 and the slope at -7.78.

Exhibit 14 Labour standards reduce hours worked

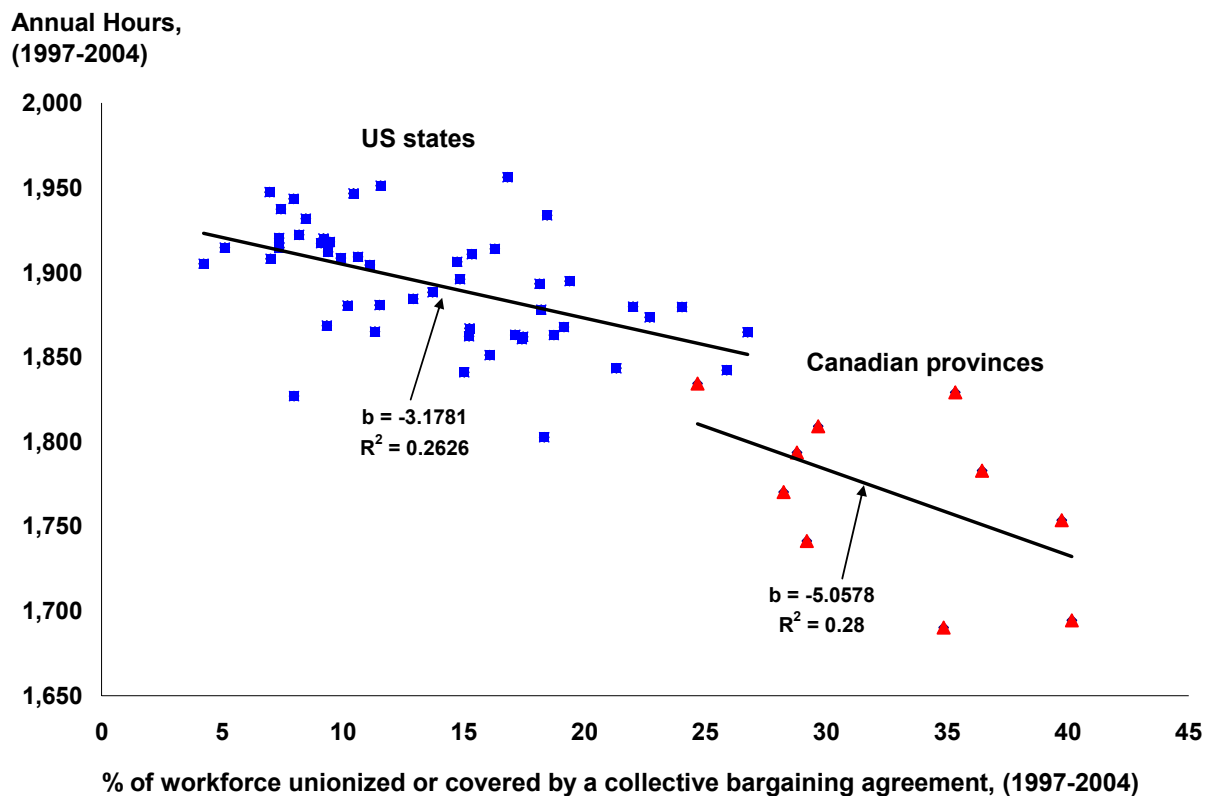


Source: Institute for Competitiveness & Prosperity special tabulations (hours data); R. Block, K. Roberts, and R. O. Clarke (2003), "Labor Standards in the United States and Canada" (labour standards indexes).

It appears that the impact of labour regulation is stronger than marginal effective tax rates. Note that we have used each jurisdiction's total labour standard index as our independent variable. No doubt some of the sub-indices, such as overtime or paid time, relate more to hours worked than others, such as unjust discharge. We intend to deepen our understanding of the impact of labour regulations with hours worked.

Glaeser et al. also use union coverage as a measure of regulatory impact. We find a negative relationship between union coverage and hours worked across the ten provinces and 50 states and DC (Exhibit 15). The slopes for the inter-provincial and inter-state relationships are similar as are the R^2 measures.

Exhibit 15 Higher union coverage reduces hours worked (1997-2004 average)



Source: Institute for Competitiveness & Prosperity special tabulations (hours data); Statistics Canada, *Labour Force Historical Review*, and US Union Membership and Coverage Database, available at www.unionstats.com (unionization rates).

Finally, we conducted a multiple regression analysis using marginal tax rates, labour regulation indices, union coverage, and a US dummy to determine the relative impact of each on hours worked. Exhibit 16 shows regression results based on a cross-section of jurisdictions, including the 10 Canadian provinces, the 50 US states, and DC. The dependent variables are weekly hours worked per employed who worked in the reference week (in logs), the rate of employed working during the reference week, and the annual hours worked (in logs). The explanatory variables are the average marginal income tax rate, Block et al. (2003) overall index of labour standards (in logs), the unionization coverage rate, and a dummy variable equal 1 for US jurisdictions.

Exhibit 16 Labour regulations and union coverage are the key drivers of differences in annual hours worked

	Weekly hours per employed who worked in reference week (in logs)			Rate of employed who worked during the reference week			Annual hours worked (in logs)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Average marginal income tax rate	-0.135 *	-0.196 *	-0.186 *	-0.232 ****	0.014	0.028	-0.367 ****	-0.182	-0.158
	(0.061)	(0.086)	(0.086)	(0.042)	(0.038)	(0.034)	(0.074)	(0.100)	(0.096)
Labour regulations index (in logs)	-0.093 ***	-0.103 ***	-0.085 ***	-0.064 ***	-0.023 *	-0.000	-0.157 ***	-0.127 ***	-0.085 **
	(0.023)	(0.025)	(0.029)	(0.016)	(0.011)	(0.011)	(0.028)	(0.029)	(0.032)
Unionization coverage rate			-0.051			-0.067 ***			-0.118 **
			(0.041)			(0.016)			(0.045)
US (yes=1, no=0)		-0.010	-0.015		0.039 ***	0.032 ***		0.029 **	0.016
		(0.010)	(0.011)		(0.004)	(0.004)		(0.011)	(0.012)
Constant	4.069 ***	4.130 ***	4.071 ***	0.254 ***	0.006	-0.071	8.235 ***	8.049 ***	7.912 ***
	(0.084)	(0.105)	(0.114)	(0.058)	(0.046)	(0.045)	(0.102)	(0.121)	(0.126)
Observations	61	61	61	61	61	61	61	61	61
F test for equality of US/Canada slopes	0.55	0.07	0.47	51.03 ***	4.70 **	4.11 **	3.64 **	0.30	0.02
R-squared	0.44	0.45	0.47	0.65	0.86	0.89	0.69	0.72	0.75

Note: Regressions computed by OLS. Standard errors in parentheses. ****, ** and * indicate significance at the 1%, 5%, and 10% confidence levels, respectively.

The regression results for weekly hours worked (Columns 1 to 3) show a negative effect of both marginal income taxes and labour regulations, though the latter is much more statistically significant. Both the US dummy and the unionization coverage are statistically insignificant. In summary, these regressions identify the index of labour regulations as the main explanatory factor for weekly hours. This factor is economically as well as statistically significant. An increase of (the log of) this index from the US average to the Canadian average, a 17 percent increase, is associated with a reduction of 0.82 in hours worked per week, which represents 57 percent of the 1.43 gap in weekly hours between the two countries. Finally, F tests included in the table show that in these regressions there are no statistically significant differences in slope coefficients for the sub samples of Canadian provinces and US states.

The regressions for the rate of the employed who work in the reference week show that the effect of taxes and labour regulations practically disappears when the US dummy is included (Columns 4 and 5). The US dummy explains 3.9 percent of the difference in this variable between Canadian provinces and US states, which coincides exactly with the Canada-US gap in this variable shown in Exhibit 5. Does this mean that the number of weeks worked in a given year is a “cultural” phenomenon? Column (6) shows that unionization coverage is also statistically significant. The US dummy decreases a little, to 3.2 percent, but remains highly significant. In addition, notice that in these three regressions the slope coefficients are significantly different for the sub samples of Canadian

provinces and US states. In additional regressions not included in the table we find, for example, that the coefficient for unionization is negative and significant both for Canadian provinces and US states, though much smaller in absolute value for the latter. In the regression with country-specific slopes for unionization, marginal taxes, and labour regulations, the estimate of the US dummy remains similar in value (3.1 percent) and statistically significant at the 95 percent level. In all, the differences in weeks worked during the year between Canada and the US is explained by differences in unionization coverage and idiosyncratic factors that are unrelated to either taxation or labour regulations.

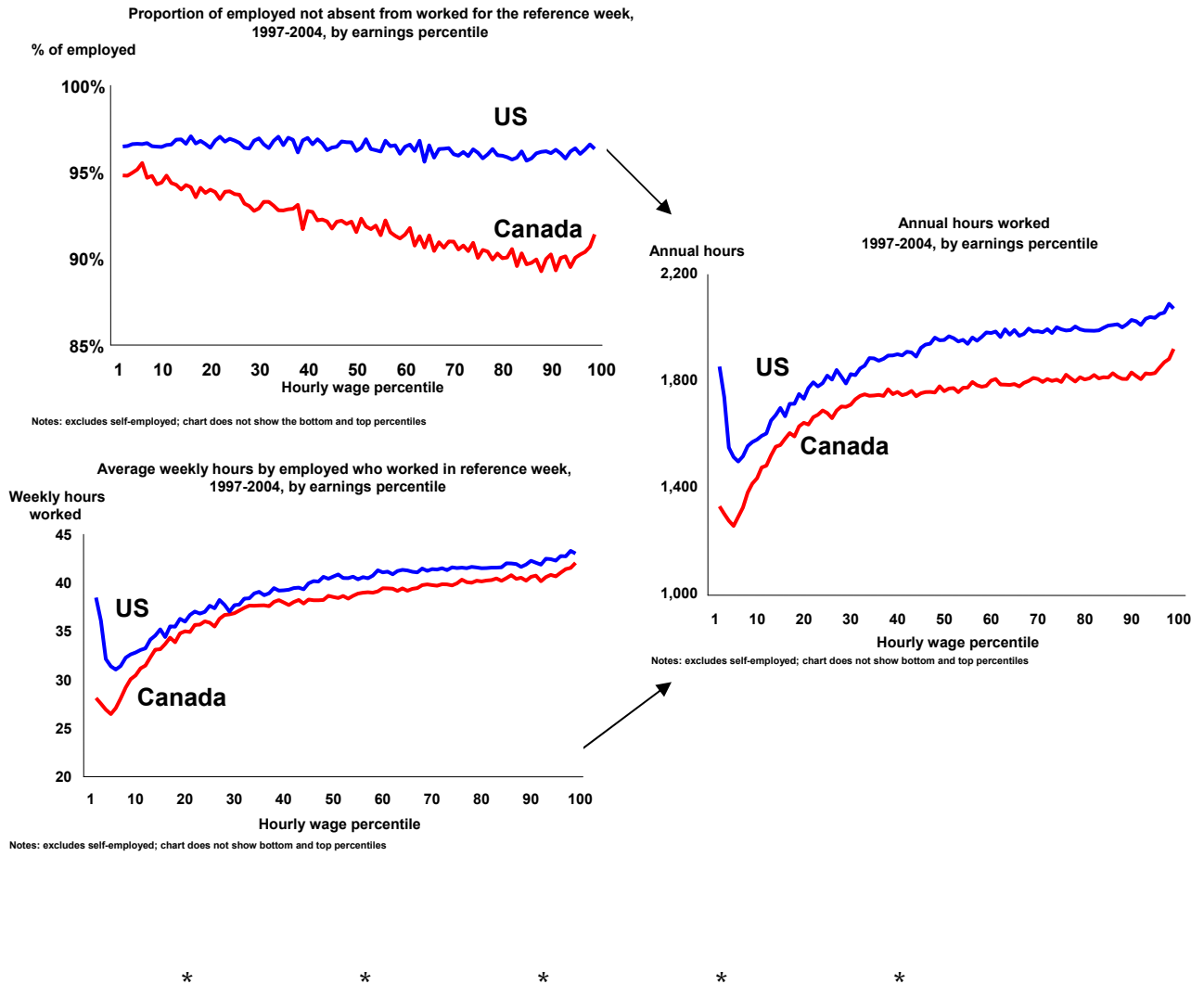
Finally, the regressions for hours worked per year (Columns 7 to 9) show that labour regulations play an important role. Taxation loses its statistical significance once the US dummy is included in the regressions (Column 8). Interestingly, when unionization coverage is also included in the regression (Column 9), the US dummy is no longer significant. Therefore, when it comes to explaining annual hours, which combine weekly hours and weeks per year, only labour regulations and unionization coverage remain statistically significant. If we increase both variables from the US mean to the Canadian mean, we estimate that US annual hours worked would decrease by 74 hours, which represents 52 percent of the 142 hours gap in labour intensity between Canada and the US. *Why don't Americans take more time off as their income increases?*

The gap in annual hours worked widens slightly as incomes increase. The top ten percent of wage earners in the US work an average of 2,047 hours annually¹⁴ versus 1,850 hours among the same cohort in Canada on average over the 1997-2004 period. This 197-hour gap represents a 10.6 percent difference. Across the work force in both countries the gap is 143 hours annually, or 8.1 percent more hours by US workers.

Behind these differences are dramatically different trends in weeks away from work and hours worked per work week (*Exhibit 17*). In both Canada and the US, hours worked per week (among those not absent from work for the week) increase as income grows. The difference between the two countries hardly varies over the range of income levels (except for the lowest 10 percent where Canada-US gap is widest). However the difference in weeks worked widens significantly as income increases. In Canada, as income grows more workers are absent from work for a full week. In the US, the pattern is similar but not nearly as pronounced. Higher income Americans are almost as unlikely to be away from work for a full week as lower income Americans. Clearly US workers are not taking more weeks off work (for vacation and other reasons) as their income grows.

¹⁴ Excluding 100th percentile

Exhibit 17 Canada-US gap in weeks worked grows with income



While Canada's prosperity gap with the US is due primarily to productivity, we cannot overlook the impact of hours worked differences between the two countries. Clearly, the preferred way to increase prosperity is by working smarter not harder. However, if excessive regulations are reducing opportunities for people to work more hours to improve their standard of living we need to assess their cost to Canada's prosperity. The Institute is continuing its research into hours worked differences between Canada and the US and will be publishing these results in a forthcoming working paper.

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