

"Income Splitting Among the Self-Employed"

Herbert J. Schuetze
Department of Economics,
University of Victoria
Victoria, BC
E-Mail: hschuetz@uvic.ca

Abstract:

Whether the individual or the household should be the unit of taxation is a long-running debate in the economics literature. One potentially important cost associated with a switch to individual taxation, which has been overlooked in this debate, is the impact of such a move on tax non-compliance. In particular, under individual taxation with progressive marginal tax rates households in which the distribution of income among household members is unequal benefit from attributing income from the higher to the lower income household member. The absence of a third party reporting income enables self-employed households to "split" income among family members to reduce income tax liabilities. Using the Canadian experience as a case study this paper sheds light on the magnitude and nature of this activity by developing a unique estimator of the incidence of illegal income splitting among couples. These estimates provide evidence that the occurrence of income splitting is likely non-trivial and suggest that the costs associated with this activity are potentially significant.

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1. Introduction

There is a long running debate in the economics literature surrounding the appropriate tax treatment of the family. A number of researchers (Boskin, 1975, Boskin and Sheshinski, 1983, and Apps and Rees, 1997) argue in favour of a system of individual taxation. The primary impetus behind this recommendation is the view that joint taxation discourages labour market participation by secondary workers; typically married women. One cost associated with a switch to individual taxation, which has been overlooked to this point in this debate¹, is the impact of such a change on tax non-compliance. In particular, under individual taxation with progressive marginal tax rates, households in which the distribution of income among household members is unequal benefit from attributing income to the lower income household member. The absence of a third party reporting income and labour market activity enables self-employed households to "split" income among family members to reduce income tax liabilities; an option which broadens the opportunities and appeal of non-compliance over simply not reporting income².

This paper uses the experiences of Canada and the United States, two countries which are very similar in many respects but with different systems of taxation, to develop an estimator of illegal income splitting between the adult members of Canadian households and to characterize the pattern of this activity. Characterizing the extent of income splitting is of significant importance for a number of reasons. First, it will provide information about one potential cost associated with a switch to individual taxation; the revenues forgone from tax non-compliance. In turn, these estimates will provide clues to the likely magnitude of the various indirect costs associated with income splitting. For example, to the extent that individuals are attracted to self-employment by this unintentional tax advantage, income splitting is economically distortionary and leads to an inequitable distribution of the tax burden. Perhaps even more disconcerting is that, in turn, individuals' perceptions of unfairness of the tax system may destroy their willingness to comply. Second, understanding the observed patterns of this activity may help to identify ways in which to reduce non-compliance in countries with tax systems characterized by individual taxation.

Finally, there is a broader motivation for attempting to identify this activity. There is a great deal of evidence in the empirical economics literature which suggests that individuals respond to exogenous changes in the tax code and other factors across legal dimensions. While it would be interesting to know whether or not individuals also respond in terms of illegal activity, there is little research examining this in the literature. This is clearly because measuring the extent of illegal or concealed behaviour poses a difficult empirical challenge. To do so requires the adoption of non-standard approaches. Recently, a small number of empirical studies have adopted unique approaches to identify hidden behaviors; examples include corruption in wrestling (Duggan and Levitt, 2002), cheating among teachers (Jacob and Levitt, 2003) and, more directly related to the current study, tax evasion (Fisman and Wei, 2004).

A number of previous studies (including Fisman and Wei, 2004) attempt to measure evasion³. However, the various sources of information used to identify this activity are not helpful in identifying income splitting⁴. Thus, a new approach in the same spirit as the studies identified above is adopted here. The method developed in this study is based on the expectation that income splitting will show up in the reported labour market "activities" of spouses of self-employed individuals. In particular, when illegal income splitting is occurring, the number of individuals indicating that they are employed will be higher than the actual number among spouses of the self-employed if individuals with income attributed to them for tax purposes report being employed. Therefore, the difference between reported and actual employment rates (if it can be identified) provides some insight into the extent of income splitting.

While actual employment is not observed, exogenous variation in the tax code across Canada and the United States provides a natural experiment in which to identify this difference. The current US tax code, which primarily treats the household as the unit of observation, is such that the distribution of income within the household does not affect household tax liabilities. Thus, I use a quasi-experimental empirical strategy and micro-data on the labour force activities of couples in the two countries for various years from 1988 to 1998 to compare the reported employment rates of spouses of self-employed individuals. With spouses of wage employees as a comparator group I use a difference in difference approach to account for country specific factors that influence the joint employment decision in the

estimation strategy along with direct controls for differences in the characteristics of Canadian and US wives (husbands), and husband's (wife's) income. I argue that, controlling for these factors, differences in reported employment rates across the two countries provide estimates of the extent of income splitting in Canada. This interpretation is supported indirectly by the fact that the characteristics of the difference in difference estimator across various dimensions match a-priori expectations of the pattern of income splitting. More direct support is provided by a number of informal "tests" specifically designed to evaluate whether or not this measure is capturing income splitting.

My main findings are as follows. First, I find that the raw reported employment rates of wives of self-employed men in Canada are significantly higher than those of their US counterparts. This differential remains after netting out differences across the two countries in the reported employment rates of wives of wage employed men. No similar difference is observed in men's employment rates. Second, in a regression setting that controls for individual and country specific factors that likely influence the employment decision, the relatively higher employment rates among Canadian wives of self-employed men remains and no significant difference in employment rates are observed among husbands. Third, I find strong supporting evidence that the employment differential found among wives is indicative of Canadian self-employed men attributing income to their wives. This includes the fact that these Canadian wives are more likely to work in the same industry as their husbands than their US counterparts. Fourth, the estimates suggest that over the eleven year period examined between 1988 and 1998 the incidence of income splitting likely fell. Finally, while the evidence suggests that income splitting among Canadian couples in which the husband is self-employed may have been primarily achieved through the attribution of income to wives in the form of wages and salaries, the method used likely varies by incorporation status of the couple's business.

The remainder of this paper is organized as follows. Section 2 provides the background and estimation strategy employed. In Section 3 the data and sample characteristics are described. Section 4 includes a discussion of regression results while section 5 provides supporting evidence for the interpretation of the results. Finally, Section 6 concludes the paper.

2. Estimation Approach

The method adopted here to measure income splitting is to examine reports of employment in the Canadian Survey of Consumer Finances (SCF) by individuals whose spouses are self-employed. As noted above, one would expect reported employment among individuals whose spouses are self-employed in Canada to be higher with income splitting than without. Individuals who would not work in the absence of income splitting may have labour market income attributed to them if income splitting is occurring. This labour market income could be in the form of wages and salaries if the household is splitting income by attributing employment hours in the business to a spouse who may or may not be providing actual labour services. Alternatively, this labour market income could take the form of self-employment income if the household is splitting income by attributing ownership of the business to a spouse. In either case, if it can be assumed that individuals with earnings attributed to them will also report being employed or self-employed (depending on how the income is attributed) in the SCF whether or not any legitimate labour market activity is being performed, employment rates will be higher⁵.

There are a number of reasons to believe that individuals who report some form of earnings on their income tax form will also report working in the SCF. Individuals with income attributed to them report this income when filing taxes and the SCF is purposefully conducted close in time to the filing of income tax returns in Canada to elicit similar responses; increasing the likelihood that the assumption is valid. Certainly, the fact that my approach requires only that individuals report something as coarse as whether or not they worked consistently across data sources helps to ensure consistency. Further, the best available statistical evidence, obtained by comparing income data from the SCF and administrative tax file data for Canada, generally supports the validity of the assumption. While conclusive evidence is illusive because of differences in sample bases⁶ across the two data sources which make direct comparisons difficult, estimates of the number of persons with income and (more specifically) earnings are remarkably similar across the data sources. For example, the ratio of the estimated number of individuals with any income from the Small Area and Administrative Data (a 100% sample of tax filers) to a similar estimate from the SCF contained in Statistics Canada (1997) in 1993 is 0.98. Using the same

data sources but updating for 1997, I estimate this ratio to be 0.97. Further, to get a more appropriate comparison I estimate an analogous ratio for the number of individuals with labour market earnings in 1997 and find similar results (the ratio is estimated to be 0.94). Finally, even if some individuals who falsely claim earnings income on their income tax return correctly claim not to have worked in the survey this would simply result in estimates that are skewed downward.

To characterize the approach more specifically, consider a couple (n,s) who are subject to individual taxation. Where self-employed households are able to split income or where the *costs* are sufficiently low define the choice variable θ - the amount of income directly transferred (“attributed”) to individual n from spouse s. Because the presence of a third party reporting income greatly limits the ability of wage workers to attribute income to a spouse, it is assumed that only those who choose self-employment are able to attribute income. Focusing on households in which the spouse is self-employed (se) the conditional probability of observing positive reported hours worked can be written:

$$(1) \quad \text{Prob}(H_n^{\text{RI}} > 0 \mid s \text{ is se}, X_n, Y_s^{\text{RI}}) = \text{Prob}(H_n^{\text{I}} > 0 \mid s \text{ is se}, X_n, Y_s^{\text{I}}) + (\text{Prob}(\theta > 0 \mid H_n^{\text{I}} = 0))$$

where X_n is a vector of individual productivity characteristics, Y_s is the spouse’s gross income, superscript RI indexes *reported* outcomes with income splitting under a system of individual taxation and superscript I indexes outcomes in a hypothetical comparative labour market under *individual taxation* without income splitting. Thus, for example, reported employment by wives of self-employed men equals employment in the absence of income splitting plus the probability that the couple is attributing income to a wife who would not have “worked” in the absence of income splitting.

It is the second term on the right-hand side of equation 1 that I attempt to isolate as a measure of income splitting. This measure captures many of the possible scenarios under which income may be attributed to a spouse but does not capture all cases. It identifies the number of spouses of self-employed individuals who would not have worked in the absence of income splitting but report being employed because they have income attributed to them. This includes spouses who either fictively work for their spouse’s firm or actually work in response to the reduction in realized marginal tax rates that arises from

illegally splitting (achieved by paying excessive wages)⁷. Both of these cases are appropriately included as incidences of income splitting because they necessarily involve the illegal attribution of income⁸. On the other hand, this measure does not capture cases in which income is attributed to spouses who would have worked with or without the opportunity to split income and whose actual earnings are low enough to yield benefits from splitting. However, the incidence of this latter case is likely low, given the limited scope of such income splitting.

One typically observes only the sum of the two right-hand side terms in equation 1 (the rate of actual employment among spouses of the self-employed combined with the rate of income splitting). However, if an appropriate baseline comparison group can be identified this proposed measure of income splitting can be identified by differencing out the first term. Given the difficulties of income splitting for wage and salary workers, discussed above, an obvious potential control group might be the spouses of wage workers. I assume that the reported rate of employment among spouses of wage workers (w_s) equals their actual employment rate:

$$(2) \quad \text{Prob}(H_n^{RI} > 0 \mid s \text{ is } w_s, X_n, Y_s^{RI}) = \text{Prob}(H_n^I > 0 \mid s \text{ is } w_s, X_n, Y_s^I)$$

Given equation 2, it follows that income splitting is identified by differencing if it can be further assumed that the employment rate among spouses of wage workers equals the actual employment rate among spouses of the self-employed. However, the employment-status and sector choices of spouses are jointly determined. This identification strategy fails when the sector choice of the spouse impacts the individual's probability of working positive hours. This is quite plausible given that the risk sharing arrangement and costs of job search, as examples, vary depending on whether or not the spouse is self-employed. Concrete evidence of the impact of sector choice of one spouse on employment of the other is found in Devine (1992). She finds higher rates of wage employment among spouses of the self-employed and attributes this finding to the fact that self-employment lacks the non-wage benefits of wage employment. All of this suggests that spouses of wage workers do not constitute an appropriate control group to identify illegal income splitting in Canada.

As an alternative, the approach taken here utilizes exogenous variation in the tax code between Canada and the United States. The current US tax code is such that tax liabilities are calculated primarily on family income. Individuals have the option of filing separate income tax returns, but, married individuals "will generally pay more combined tax on separate returns than [they] would on a joint return because the tax rate is higher for married persons filing separately"⁹. Further, because individual income enters the after-tax income function only indirectly through household income under "joint taxation", the distribution of income within the household does not affect the household's tax liability and there is no advantage to splitting income¹⁰. One obvious caveat in using cross jurisdictional differences in the tax code for identification is that, while joint taxation provides no incentive for income splitting, it also alters the employment decision. Research on the employment impacts of tax revenue neutral changes to the unit of taxation suggests that joint taxation likely reduces employment among "marginal" workers¹¹. Indeed, employment rates will differ across Canada and the US because of differences in the two tax regimes (other than the ability to split income) and because country specific factors that influence the labour supply decision differ across the jurisdictions. Thus, one can not assume that employment rates among spouses of the self-employed across the two tax jurisdictions would be the same in the absence of income splitting and spouses of the self-employed in the US do not constitute an appropriate comparison group to isolate income splitting in equation 1.

Instead, I make the much weaker assumption that the *difference* in actual employment rates between individuals whose spouses are self-employed and individuals with wage employed spouses is the same across the two tax treatments, after conditioning on the individual's productivity characteristics (X_n) and their spouse's income level (Y_s). This assumption can be written as follows:

$$(3) \quad \{ \text{Prob}(H_n^I > 0 \mid s \text{ is se}, X_n, Y_s^I) - \text{Prob}(H_n^I > 0 \mid s \text{ is ws}, X_n, Y_s^I) \}$$

$$= \{ \text{Prob}(H_n^J > 0 \mid s \text{ is se}, X_n, Y_s^J) - \text{Prob}(H_n^J > 0 \mid s \text{ is ws}, X_n, Y_s^J) \}$$

where superscript J references the system of *joint* taxation. This assumption neither requires that the probability of employment nor the relative attractiveness of wage versus self-employment be the same under the two sets of conditions. It suggests that differences in the relative incentives to work arising

from the spouse's sector through factors such as, for example, the fixed costs associated with working (including job search, child care and commute time, which may be lower if the spouse is self-employed) are the same in the two tax jurisdictions¹². One obvious difference between Canada and the US that may directly affect the employment of spouses of self versus wage employees differently is access to health care. Canadian couples have access to universal health care while American couples gain access to health insurance through employer provided healthcare or by privately purchasing insurance, which tends to be costly. This difference is likely to result in employment rates among spouses of the self-employed which are higher in the United States than Canada, however, which implies that my estimates of illegal income splitting may be biased downwards.

It should also be noted that a number of important control variables are included in the empirical estimation that follows, which help to ensure the validity of this assumption. First, the estimation procedure accounts for possible differences in the income level of spouses across the two countries, which could bias the results. Second, the inclusion of characteristics typically thought to impact labour supply in the estimated employment equations below reduces the possibility that differences in country specific factors other than the tax code will lead to a violation of the assumption in equation 3. Only potential factors that do not operate through the usual labour supply paths (the existence of which I am unaware) will bias the results. Finally, the analysis conducted below includes a number of informal tests to identify whether or not this measure is capturing income splitting. In order to be consistent with the results of these tests even more stringent restrictions on the nature of any such country specific factors would be required.

Together equation 1 and the assumptions given by equations 2 and 3 yield the following difference in difference estimator for the probability of income splitting by misreporting employment status, $(\text{Prob}(\theta > 0 \mid H_n^I = 0))$, equal to:

$$(4) \quad \{ \text{Prob}(H_n^{RI} > 0 \mid s \text{ is se}, X_n, Y_s^{RI}) - \text{Prob}(H_n^{RI} > 0 \mid s \text{ is ws}, X_n, Y_s^{RI}) \} - \\ \{ \text{Prob}(H_n^J > 0 \mid s \text{ is se}, X_n, Y_s^J) - \text{Prob}(H_n^J > 0 \mid s \text{ is ws}, X_n, Y_s^J) \}$$

This is simply the difference between the reported differences in employment rate probabilities between spouses of the self-employed and spouses of the wage employed in Canada and the US.

Operating on pooled data containing information on individuals and their spouses from Canada and the US, estimates of the difference in differences in employment probabilities in equation 4 are derived by estimating the following employment probability equation using multiple regression analysis, for men and women separately:

$$(5) \quad \text{Employed}_n = \beta_0 + \beta_1 X_n + \beta_2 X_n \bullet C_n + \beta_3 \text{Income}_s + \beta_4 \text{Income}_s \bullet C_n \\ + \beta_5 \text{SE}_s + \beta_6 \text{SE}_s \bullet C_n + \sum_r^R \delta_r \text{Region}_n + \mu_n$$

Subscripts indicate whether the variable is associated with the individual (n) or the individual's spouse (s). This is a linear probability model¹³ where the dependent variable in the equation, Employed_n , is an indicator variable for whether or not the individual reported being employed at the survey date. X_n is a vector of variables on the individual's demographic characteristics. These include age, age squared, indicator variables for the level of education achieved, number of younger children (aged less than 7) and number of older children (aged 7 to 17). Income_s is total income of the spouse, including labour and non-labour sources. r indexes a series of region indicator variables pertaining to the state or province of residence, which are included to control for country/regional fixed effects. An indicator variable for country (C_n ; equal to one if the individual resides in Canada) is crossed with the demographic characteristics of the individual. The country indicator is also crossed with an indicator variable for whether or not the spouse is self-employed (SE_s). The base category includes spouses who were wage employed during the week of the survey. Of interest in determining whether there is any indication of income splitting is the value of β_6 . This value identifies the difference in differences described above in equation 4.

3. Data and Summary Statistics

The primary data used in this analysis are taken from the 1998 (1997 income year) Canadian Survey of Consumer Finances - Census Family file (SCF) and the 1998 US Current Population Survey

(CPS). However, the primary analysis is replicated using data from selected years between 1988 and 1998. I match individuals in the CPS to their census families using family identification numbers provided in the CPS data files. The SCF and CPS are similar surveys taken at similar months in the year that provide information on labour market as well as demographic information on individuals and families. In both surveys self-employment status is self-reported. Also, for both surveys the definition of a “self-employed” individual is similar. Self-employed individuals are those who report working for themselves for pay.¹⁴ These individuals may or may not have a business or professional practice. Those who do have a business could have complete ownership or a partnership in the business and the business can be incorporated or unincorporated. In addition, the definition of a census family in the SCF is very similar to the definition of a family in the CPS. Both define families as a group related by blood, marriage or adoption that shares a common dwelling. Both definitions include common law marriages and exclude own married children from the family.

The SCF and CPS data files are pooled and the sample is restricted to attached individuals (married or common law). From the pooled sample of individuals two separate data files are created – one sample of “wives” to examine the attribution of income to wives from self-employed husbands and one sample of “husbands” to look at income redistribution to husbands from self-employed wives. Further restrictions on the two samples are imposed which are based on the characteristics of the “spouse”. Observations for which the “spouse” works in an agricultural occupation are dropped from the sample. This is done primarily because household and labour market activities are typically confounded in agricultural households and agricultural workers are typically classified as self-employed. This is also done to be consistent with previous studies examining the self-employed. In addition, the samples are restricted to observations for which the “spouse” is aged 25-54 (prime aged) and is either wage employed or self-employed. This yields samples of 10,925 Canadian and 15,431 American wives and 9,947 Canadian and 12,483 American husbands.

Table 1 presents sample characteristics for wives and husbands separately by country. The characteristics of the Canadian wives (column 2) are very similar to those from the United States.

However, there are a few notable differences. US wives tend to be slightly more educated than their Canadian counterparts. Interestingly, while total employment rates of US and Canadian wives are quite similar (74 percent versus 73 percent), self-employment rates of Canadian wives are higher than their US counterparts. US husbands are also slightly more educated than Canadian husbands (column 3). Despite higher overall employment rates among US husbands, the rate of self-employment among Canadian husbands in my sample is higher than that of US husbands. Finally, while the fractions of US households with younger children (those aged less than 7) are similar in the samples to those same fractions of Canadian households it appears that US households are more likely to have older children present.

Table 2 presents raw employment rates of wives and husbands, separately, by the labour force status of the spouse. The raw employment rates presented in table 2 are consistent with the notion that Canadian households are splitting income and suggest that any splitting that may be occurring is likely a result of families attributing self-employment income to the wife. The employment rate of wives of self-employed men in Canada is nearly 7 percentage points higher than the same rate for wives of wage employed men. In the US there is less than a 2 percentage point difference in the employment rates of wives of self-employed men compared to wives of wage employed men. However, the difference in total employment rates for husbands of self versus wage employed wives is the same for Canadian and US men.

4. Empirical Results

The raw employment rates presented in the previous section of the paper revealed differences in the reported employment rates of wives of self-employed men compared to those of wage employed men between Canada and the United States but no similar differences among husbands. In this section regression results from the estimation of equation 5 are presented for the sample of wives and husbands. Estimates of the difference in difference described above are generated to determine whether or not there is evidence of income splitting after accounting for differences in individual productivity characteristics, household economic factors and region specific fixed effects. The results are consistent with a significant

proportion of Canadian husbands attributing income to their wives in 1998, but there is no evidence that Canadian wives attributed income to their husbands.

Table 3 provides OLS estimates of equation 5 for the samples of wives and husbands. Due to the likelihood of violating the homoskedasticity assumption in this model the standard errors provided are White's heteroskedastic robust standard errors. For the reader's convenience, columns a and c of the table give estimates of the various marginal effects for Canadian wives and husbands, respectively. Thus, for example, the estimated difference between employment rates of wives of self versus wage employed men in Canada controlling for husband's income and wife's characteristics is given the coefficient on "s self-employed" in column a. Because the model is fully interacted with a country indicator equal to one for Canada, comparable estimates for US households are contained in the upper portions of columns b and d. The coefficients on the spouse's self-employment indicator variables crossed by country, which are located in the lower portions of columns b and d, provide estimates of the difference in differences from equation 5.

The results suggest that, once differences in the characteristics of wives across husband's employment sector are controlled for, there is still an unexplained positive and significant differential in the employment rates of wives of self-employed versus wage employed men in Canada. This differential is estimated to be 6.2 percentage points according to my model. Thus, differences in the characteristics of wives across husband's labour force status do not explain the employment rate differences in Canada. In comparison, among US wives the two employment rates are similar in magnitude and not statistically different from one another (the point estimate is 0.006 with a standard error 0.01). Looking across the jurisdictions, the difference in differences among wives is estimated to be approximately 5.6 percentage points and statistically significant at the 1 percent level of significance. If the interpretation given above for these differences is correct, the estimate suggests that nearly 1 out of 18 Canadian self-employed males attributed income to his wife in 1998. However, as in the raw data, there is no indication that Canadian wives are attributing income to their husbands in this same year. The difference in differences estimate from the data on husbands is statistically indistinguishable from zero. It is likely that the net

advantage to attributing income to Canadian husbands is low given their greater labour force attachment¹⁵. It is, therefore, reassuring that my estimation strategy finds that wives are less likely to split income with their husbands.

While these findings are consistent with income splitting by self-employed husbands, as noted in section 2 above, this interpretation relies on the validity of the assumption given by equation 3. The analysis presented in the next section of the paper will directly address this issue by providing a number of informal “tests” of the income splitting interpretation given to the primary finding. However, before getting to this, the remainder of this section will investigate the characteristics of the difference in difference measure to characterize the extent and method of any potential income splitting, and also, to see whether the characteristics are consistent with priors on the income splitting interpretation (indirectly testing my interpretation of the findings). Given that the results provide no evidence that Canadian households illegally attribute wives’ self-employment income to husbands, the remainder of this section will focus on the possible attribution of income from husbands to wives.

To begin with, a decomposition of the total employment rates of wives into self and wage-and-salary employment rates might be helpful as a way to distinguish between the various methods used to split income. For households that claim the wife is active in the operation of the business there are several ways in which income, as compensation for alleged work, may be attributed to the wife. The income may be in the form of wages and salaries, profits, or both. If income is being split in Canada in the form of wages and salaries alone one would expect reported wage employment rates of wives of self-employed men in Canada to be higher than those in the US, all else equal. However, if the attributed income involves the sharing of profits (on their own or in conjunction with wage and salaries) one might expect reported self-employment rates of wives of self-employed men to be higher in Canada¹⁶. Another possibility is that self-employed men simply share profits with their wives, who do not claim to be active in the business. Because the measure of illegal income splitting used in this study captures mis-reported employment status it does not detect this form of income splitting.

In general, there are a number of reasons why we might expect couples to split income by indicating that the wife works for the family business instead of indicating that the wife is a partner in the business. It appears that Canadian policy makers have been much more active in creating laws to restrict the diversion of business profits to a spouse through a partnership for the purposes of avoiding income tax than they have been to reduce the distribution of such income to spouses through salaries.¹⁷ In fact, Canadian tax law with respect to hiring family members is sufficiently vague that enforcement is quite difficult. Essentially, all that is required is that the family member has designated duties and that her/his pay be commensurate with the job performed. In addition, while attributing income in the form of wages and salaries would require such businesses to pay payroll taxes on the income that is split it also provides these households with access to employment benefits such as employment insurance and national pension.

Despite the overall advantages of attributing income through wages, however, the method used to split income may depend on the incorporation status of the firm. The unincorporated self-employed can avoid business liabilities in the event of failure by attributing household assets other than the business to a spouse. Thus, those self-employed in unincorporated businesses may prefer to attribute income to a spouse through salaries alone rather than ownership. Limited liability laws with respect to incorporated businesses likely reduce the incidence of this type of asset sheltering. Further, there are more numerous, less detectable, opportunities to attribute income through ownership in incorporated firms. Thus, we would expect to find more of this type of income splitting by husbands of incorporated businesses.

The upper third of table 4 decomposes the raw total employment rates of wives into self and wage employment rates by husband's employment status for Canada and the US, separately. To look for evidence of differences in the method used by self-employed husbands of incorporated versus unincorporated firms, similar decompositions are reported in the lower portions of table 4 for samples that drop households in which the husband is unincorporated and incorporated self-employed, respectively. Looking across all business types, almost all of the difference between the total employment rate differential between wives of self-employed and wage employed men across the two countries is a result

of differences in wage employment rates. In both countries, wives of self-employed husbands are more likely to be self-employed than wives of wage employed men. The difference in these self-employment rates across the two countries is small, however, which is inconsistent with self-employed husbands in Canada attributing income to their wives through ownership of the business. On the other hand, the rates of wage employment among wives in the two countries are higher for wives of wage employed men than wives of self-employed men. The difference in these wage employment rates is significant across the two countries. The wage employment rate of wives of self-employed men is much closer to the same rate for wives of wage employed men in Canada than in the United States. This is consistent with Canadian couples splitting self-employment income by attributing income to the wife solely in the form of wage income.

The bottom two thirds of table 4 suggest that there might be differences in the methods used to shelter income across incorporation status. The overall raw difference in differences across the samples of households in which the husband runs an incorporated business is 7.6 percentage points. This is equally split between differences across the two countries in self employment and wage employment rates. On the other hand, the overall raw difference in differences across the samples in which the husband runs an unincorporated business of 3.4 percentage points is completely attributable to differences in wage employment rates across the countries.

To test these results more formally employment probability equations, similar to equation 5, are estimated for self and wage employment along with total employment for the various samples. The resulting difference in differences estimates are summarized in table 5. To a certain extent, the results echo what was observed in the raw data. After controlling for husband's income and the characteristics of wives in the sample the results point towards income splitting through the attribution of wage income to the wife instead of some form of partial ownership of the firm. The estimated difference in differences in the self-employment rates of wives across the two countries is 1.5 percentage points and statistically insignificant at standard levels. In contrast, the estimated difference in differences in the wage employment rates of wives across the two countries is 4.1 percentage points and is statistically different

from zero. This overall result is consistent with the expectation that attributing wage income provides the greatest benefits to households splitting income.

However, the results combining all types of firms mask some interesting differences across incorporation status. First, the estimated difference in differences in total employment for the sample focusing on male owners of incorporated businesses is somewhat larger than that for the unincorporated business sample; 7.1 versus 4.5 percentage points, respectively. Second, the results of the decomposition of the difference in differences vary across incorporation status of the husband's firm. The estimated difference in differences in *self-employment* for the incorporated business sample is 4.1 percentage points and statistically significant while the estimated difference in differences in *wage* employment for this sample is somewhat smaller at 3.0 percentage points and not statistically significant. Therefore, wives of incorporated self-employed men in Canada are more likely to report being self-employed than their US counterparts. In fact, I am able to be more convincing that this result is driven by illegal income splitting. For this result to be consistent with splitting the income of a single business, Canadian wives of self-employed men in incorporated businesses must also report being self-employed in an incorporated business. I test this by examining rates of incorporated and unincorporated self-employment among wives, separately, and find that wives of incorporated self-employed men in Canada are more likely to report being incorporated self-employed and are just as likely as US wives to report being self-employed in an unincorporated business¹⁸. Finally, table 5 suggests that almost all of the difference in total employment rates across the two countries observed in the unincorporated business sample is attributable to differences in wage employment rates. Thus, the results are consistent with male owners of unincorporated firms attributing wages and salaries to their wives and owners of incorporated firms attributing some fraction of income in the form of profits from ownership. Again, this pattern matches my expectation that liability laws, the income tax system, and enforcement create an environment in which unincorporated (incorporated) business owners are more (less) likely to attribute income in the form of wages to a spouse.

To ensure that my primary finding is not an artifact of the year chosen and to identify trends in my measure I repeat the primary analysis using SCF and CPS data pertaining to several years between 1988 and 1997¹⁹. Table 6 presents both raw and estimated employment, self-employment and wage employment differentials for wives of self versus wage employed men in three year intervals over this period. Similar to the results for 1998, in all years examined in table 6, I observe a positive and significant difference in differences in employment rates of wives across the two countries that are primarily attributable higher wage employment rates of wives of Canadian self-employed men. There appears to be a slight downward trend in these estimates through time (falling from a high of around 8.5 percentage points in 1988 and 1991 to 5.6 percentage points in 1998), which is consistent with a decline in the incidence of income splitting over this period. This result is interesting in light of the fact that, while the differential between the top and bottom marginal tax rates was constant, average wages and participation rates of women in Canada continued to rise relative to Canadian men over this period. Thus, despite reductions in the net advantage to splitting, which resulted from improvements in labour market outcomes for women, the difference in differences measure of income splitting remained significant.

5. Supporting Evidence

This section provides a number of informal “tests” intended to provide additional evidence that supports the income splitting interpretation of the primary findings. The primary set of tests relies on the fact that the working wives of self-employed men in Canada must work for the same firms as their husbands if these couples are indeed income splitting. These first tests attempt to identify whether or not there is evidence of a correlation between working in the same firm and the measure of income splitting developed above. An ideal test of this would require observation of the employers of husbands and wives in both countries. Unfortunately, comparable data for the two countries with such information is not available²⁰. The available data do allow me, however, to identify whether or not the individual and the spouse work in the same industry²¹. Therefore, employment in the same industry is used as a proxy for working in the same firm in what follows.

For the initial test of this hypothesis I examine the probability that an individual works in the same industry as their spouse across employment status of the spouse. If Canadian husbands are splitting self-employment income with their wives we would expect to find that the probability of working in the same industry among couples in which the husband is self-employed is higher in Canada than in the United States, all else equal. To account for the fact that industrial concentration varies across the two countries, and therefore the overall probability of working in the same industry, I utilize a difference in differences approach similar to that used above to compare employment probabilities across the two countries. Thus, for example, I compare the differences in the probabilities of working in the same industry between households in which the husband is self and wage-employed across the two countries.

The results of this difference in differences exercise are presented in table 7. The evidence in section 4 suggests that Canadian self-employed husbands may attribute income to their wives but that wives do not likely attribute income to their husbands and that the income attributed to wives takes the form of wages and salaries. To look for consistency with these previous results, table 7 presents results for both wives and husbands employed in either sector of the labour market (column 1) and for individuals with wage and self-employed spouses, separately, (columns 2 and 3). Focusing first on individuals employed in all sectors, in both countries and for both wives and husbands, spouses of the self-employed are more likely to work in the same industry compared to spouses of wage employed individuals. However, consistent with husbands in Canada attributing income to their wives, the wives of self-employed men in Canada are significantly more likely to work in the same industry as their husbands compared to their US counterparts (this difference in differences is 5 percentage points according to my estimates). Also as expected, there is no significant difference in these probabilities among husbands across the two tax jurisdictions. Consistent with husbands attributing income through wages in Canada, the breakdown by employment sector of wives in columns 2 and 3 shows that the positive difference in differences in the probability of working in the same industry is driven by a higher than expected reported probability of working in the same industry among *wage employed* wives of self-employed men in Canada. While there is a positive and significant difference in the probability of working in the same

industry for wage employed wives of self-employed husbands across the two jurisdictions of 5.5 percentage points, the difference is not statistically significant among self-employed wives. Therefore, not only are wives of self-employed men in Canada more likely to report having wage employment they are also more likely to work in the same industry as their husbands²².

A second test, which also examines the association between working in the same industry and income splitting, provides what is likely the strongest supporting evidence of the income splitting interpretation of the primary finding. Given the necessity that income splitting spouses work in the same firm, one would expect that the difference in differences measure of the extent of income splitting developed above would be higher among the sample of individuals who work in the same industry. Using data from 1998 I test this hypothesis for wives by estimating the difference in differences in employment dropping wives with husbands working in different industries. For this sub-sample the difference in differences estimate is a statistically significant 11.4 percentage points (0.114 with standard error equal to 0.022), which is more than twice the magnitude of the estimate for this year using the full sample (see table 5, column 1). Conversely, I find no statistically significant difference in the probability of employment among wives of self employed men and wives of wage employed men in Canada when I drop the sample of couples in which both individuals are employed in the same industry, instead. For this sample the point estimate is 0.005 with standard error equal to 0.013. This suggests that the positive difference in differences in reported employment across the two tax jurisdictions found among wives in the full sample is a result of higher than expected reported employment among Canadian wives who work in the same industry/firm as their husbands. That the results of both of these tests are consistent with the fact that employment in the same industry is a prerequisite for income splitting is strong evidence that the difference in difference measure is capturing illegal income splitting activity.

A final test relies on the fact that the net return to income splitting is higher among couples in which the wife has low potential income (a low probability of genuine employment) than among couples in which the wife has high potential income (a high probability of genuine employment). To test this I split the sample of wives into four separate sub-samples (one for each education category) and estimate

equation 5, separately, for each of the groups. Interpreting the woman's education level as a proxy for potential income, comparison of the resulting difference in difference estimates allows me to test whether (controlling for the husbands income) my measure of the extent of income splitting declines with the wife's potential income. The results are consistent with this hypothesis. The estimates capture a higher incidence of income splitting among couples in my sample that gain the most from doing so.

Table 8 presents summary results from the regressions described above. The difference in the employment rates of wives of self versus wage employed husbands in Canada compared to the same employment rate differential in the US is higher across all education categories. As expected, the difference in differences estimates decrease monotonically with the potential income of the wife. The difference in differences estimates are more than four times as high when I restrict the sample to wives in the lowest education category (those with less than 9 years of education) compared to the results when the sample is restricted to wives in the highest education category (those with post secondary education). The estimates range from 18.1 to 4.1 percentage points. This suggests that this measure of illegal income splitting is likely capturing more than just spurious correlation.

Taken together, these informal tests along with the patterns observed in the previous section strongly support the income splitting interpretation given to the difference in differences estimates in section 4. Further, because the results in this and the previous section place very stringent restrictions on the nature of any country specific factors that could possibly lead to a violation of the primary assumption given by equation 3 (which states that the difference in actual employment rates between individuals whose spouses are self-employed and wage employed is the same across the two tax treatments), it is highly probable that this assumption is valid. Any such factor(s) would have to systematically result in differences in employment rates across gender, incorporation status, education and whether or not the couple worked in the same industry; the existence of which is unlikely.

6. Conclusions

Using the Canadian experience as a case study, this paper attempts to shed light on the magnitude and nature of illegal income splitting among self-employed couples. The unique approach which is

developed in this study represents the first attempt to measure this type of income tax non-compliance; a task which is made difficult by the fact that this activity is purposefully hidden. While more work is needed to improve upon these estimates, the preponderance of evidence presented throughout the paper suggests that the estimates are indeed capturing income splitting activity. Given the large empirical literature showing that individual's legal activities change in response to the income tax system, it is somewhat reassuring that the results suggest that individual's responses, in terms of illegal activities, are also consistent with the incentives created by the tax system.

The estimates provide evidence that a number of Canadian self-employed men attribute income to their wives, but no evidence is found that suggests self-employed women attribute income to their husbands. Further, it appears that income splitting among couples in which the husband is self-employed is achieved primarily through the attribution of income to the wife in the form of wages and salaries. However, as one might expect, the method used likely differs by the incorporation status of the firm. The attribution of income involving partial ownership of the business by wives looks to be more prevalent among incorporated businesses in Canada. Likely due to a decline in the number of single income couples over the period examined, the incidence of income splitting in Canada appears to have decreased. The estimates of the incidence of income splitting among self-employed males range from nearly one in ten in the late 1980's and early 1990's to one in eighteen by 1998.

To give a sense for what these estimates imply in terms of the magnitude of the problem I estimate the dollar value of the income tax avoided based on the estimated incidence of income splitting for 1998 (the most recent year studied). Because of the nature of the incentives, it is assumed that couples who income split are in the upper quartile of the distribution of husband's self-employment income²³. Based on calculations using the SCF of average self-employment income of husbands in the upper quartile I use 1998 tax tables to calculate the average amount of income these couples can avoid by optimally splitting²⁴. Estimates of the number of incorporated and unincorporated self-employed males splitting income in Canada in 1998 are generated using SCF weights and the estimated fractions by incorporation status provided in table 5. The product of these two approximations yields an estimate of

the total amount of income tax avoided through this type of income splitting²⁵. The estimate is intended to provide context to help evaluate the income splitting problem, but for obvious reasons, should be interpreted with caution. With this caveat in mind, the estimate suggests that approximately one half of a billion dollars in taxes were avoided in 1998 by more than 90,000 businesses. This dollar figure represents one half of one percent of total personal and corporate tax revenues or nearly six percent of total expenditures on defense in that year²⁶.

Whether wage workers and the self-employed that pay their share of taxes suffer reductions in government expenditures or increased taxes to make up for the tax revenue short-fall this burden is shifted to these workers. In addition, the estimated half billion dollars in revenue that is shifted between workers represents only the tip of the iceberg. The prevalence of income attribution in the form of wages and salaries may exacerbate the problem if income splitting is used to qualify for employment programs such as employment insurance. Perhaps the most damaging aspect of this problem is its impact on horizontal equity. The inequities caused by this activity can destroy individuals' perceptions of fairness of the tax system and in turn their feelings of duty with respect to paying taxes. Increasing numbers of noncompliant individuals will further increase the distortions started by the flow of capital into the self-employment sector.

Finally, these results are also relevant to the long running debate on whether the individual or the household should be the unit of taxation²⁷. If it is in fact the case that illegal income splitting represents a substantial non-compliance cost, this is *one more* factor that must be taken into account in that debate. A thorough evaluation of the two tax systems must also account for the potential that joint taxation may also create incentives for non-compliance (for example, through the misreporting of marital status to avoid marriage penalties) and the positive effect individual taxation has on labour market participation of secondary earners, among other things. Such an analysis is beyond the scope of this paper. However, the results presented in this paper provide some insight into what policy makers should consider when choosing the unit of taxation. The results suggest that the optimal tax system likely varies by country depending on labour market and tax conditions. Indeed, the pattern of income splitting found above

suggest that countries that have high marginal tax rates, unequal wages across men and women and high rates of self-employment may find a system of joint taxation optimal, while for those with low incentives for income splitting individual taxation may be more appropriate.

Endnotes:

¹ One paper by Macnaughton and Matthews (2000) finds evidence of income splitting through the attribution of income to children in Canadian self-employed households. Section 120.4 of the Canadian Tax Code, taxes certain types of income by individuals aged 17 and under at the top marginal rate; effectively closing this tax “loophole”.

² Compared to the non-reporting of income, income splitting offers a number of advantages. It is less detectable, because it is difficult to identify whether or not a spouse is actually working and being paid appropriately. Income splitting also provides the opportunity to collect employment insurance and public pensions and acts as a way to make income “legitimate”, which is valuable in many circumstances such as applying for a loan. In addition, non-reporting may not be an option for all businesses. Those not involving cash transactions have few opportunities to underreport income but still have the option of income splitting.

³ For a good review of this literature see Andreoni, Erard, and Feinstein (1998).

⁴ The most common approaches include indirect methods to infer tax evasion based on measurable factors, such as the difference between national income and national product or currency demand (see Slemrod and Yitzhaki, 2000, for a review), and more direct approaches which rely on tax audit data (e.g. Clotfelter, 1983, and Feinstein, 1991). The indirect approaches estimate aggregate evasion and do not allow one to distinguish between “types” of evasion. Tax audits are unlikely to be very successful in identifying many cases of income splitting and such data is only collected in the United States and New Zealand to my knowledge. The approach of Fisman and Wei (2004) uniquely identifies one particular form of evasion; the under-reporting of imports to China from Hong Kong.

⁵ Ideally one would like to use administrative data. However, administrative data at the family level is not available in Canada.

⁶ The tax filer universe is broader geographically and includes residents of institutions, while the SCF likely contains non-tax-filers.

⁷ While the income tax liability of the spouse is the same with or without income splitting (assuming that productivity is the same in the family firm as in alternative employment), the family’s tax liability is reduced. As long as these tax benefits are shared among household members it is as if the net tax rate of the spouse is reduced.

⁸ Clearly, distinguishing between actually working and not working and actually investing and not investing is difficult because spouses naturally have a stake in a family business. Public policy makers have taken the stance that income over and above what the market would pay for the same services represents unlawful attribution (see Donnelly, Magee and Young 2000 for an overview). Given this criteria it is clear that the case in which the spouse fictively works in the firm is illegal. The case in which the spouse is coaxed into the labour market must also involve illegal activity. This is because the extra benefit to working is only realized if the spouse is paid at a rate above his/her productivity.

⁹ Internal Revenue Service web page (www.irs.gov) tax tips.

¹⁰ Two major social programs, unemployment insurance and public pensions, create similar incentives in the U.S. and Canada to attribute income. In both countries, income received through self-employment activity is qualified to count towards public pension eligibility but not towards unemployment insurance, while wage income is legitimate for both programs.

¹¹ Although the direction of the impact on employment cannot be theoretically determined, empirical simulation methods have been used to estimate the likely impacts of the two tax regimes on labour supply (Feenberg and Rosen 1980, and Piggot and Whalley 1996).

¹² As pointed out by an anonymous referee, even if the relative incentives to work remain the same it may be the case that secondary workers who would not work under joint taxation, because of the higher marginal tax rates, but choose to work under a system of individual taxation are more likely to be selected from the group of individuals

whose spouses are self-employed. This type of selection, which is driven by the lower fixed costs of working among spouses of the self-employed, if it is occurring, would result in an upward bias of the estimate of income splitting. However, the supporting evidence provided in sections 4 and 5 below suggest that this explanation is not driving the results.

¹³ Multiple regression analysis was used rather than probit or logit analysis because of the difficulties that arise in interpreting the difference in differences in a non-linear model.

¹⁴ The definitions exclude "unpaid family workers" - those who work on a farm or in a business owned or operated by a related member of the same household without pay.

¹⁵ Extending the samples of wives and husbands to include the non-employed, I find that nearly 95% of Canadian husbands with self-employed wives participated (were employed or unemployed) in the labour market. This compares to 83% of wives with self-employed husbands; a number which is inflated if (as the evidence suggests) these couples are income splitting.

¹⁶ The "self-employed" in the SCF are those individuals who report working for pay for themselves. Presumably, those that report being self-employed either actually or fictively have a stake in the ownership (profits) of the firm.

¹⁷ See Donnelly, Magee and Young 2000 for a discussion.

¹⁸ Focusing on incorporated self-employment among wives of incorporated self-employed men the difference in difference estimate is 0.0539 with standard error 0.019. In contrast, and as one would expect if indeed this estimator is capturing illegal income splitting, the difference in differences estimate is close to zero and statistically insignificant (-0.012 with a standard error equal to 0.011).

¹⁹ Data restrictions prevent the analysis being carried out on data prior to 1988.

²⁰ Matched employer-employee data such as the Canadian Workplace Employee Survey do not treat the family or household as the primary sampling unit (typically it is the workplace). As a result, it is not possible to identify family relationships between individuals (employees or employers) in such samples.

²¹ Industry is reported in the SCF at the three-digit level of aggregation. Similar industry categories are reported in the CPS. Some minor aggregation was done so that the codes conform across data sources resulting in a total of eleven separate industries.

²² Results not included in the paper but available from the author also show that the pattern in employment probabilities across the education level of the wife (found earlier in this section) also holds for the probability of working in the same industry.

²³ This assumption is not that strong given that the net benefit to income splitting increases with husband's income. It also appears that most households below the upper quartile would not benefit from income splitting.

²⁴ I allow for basic personal exemptions on personal income but no other tax credits are assumed.

²⁵ This estimate is likely biased downward because my measure only includes husbands that split income with wives that would otherwise report not being employed and my estimates of male self-employment incomes are attenuated by income splitting. On the other hand, the estimate may be biased upwards if couples are not able to equally split income or are lower in the income distribution than assumed. Thus, these biases wash each other out to some extent.

²⁶ Total tax revenues and defense expenditures are derived from Department of Finance Canada "Fiscal Reference Tables 1998".

²⁷ See, for example Boskin (1975), Rosen (1977), Brazer (1980), Munnell (1980), Boskin and Sheshinski (1983), Piggott and Whalley (1996) and Apps and Rees (1997).

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Tables:

Table 1

Sample Characteristics

Canada				
Variable	Wives		Husbands	
Age	38.404	(7.967)	41.953	(8.651)
less than grade 9	0.032	(0.177)	0.055	(0.229)
grade 9-10	0.079	(0.270)	0.114	(0.318)
grade 11 - hs diploma	0.387	(0.487)	0.407	(0.491)
post secondary degree	0.501	(0.500)	0.423	(0.494)
presence young children	0.317	(0.465)	0.266	(0.442)
presence older children	0.471	(0.499)	0.455	(0.497)
employment rate	0.742	(0.438)	0.871	(0.335)
self employment rate	0.099	(0.299)	0.199	(0.399)
wage employment rate	0.642	(0.479)	0.672	(0.469)
spouse's total income*	43380	(25478)	25046	(15763)
# observations	10925		9947	

United States				
Variable	Wives		Husbands	
age	38.459	(8.255)	42.341	(8.979)
less than grade 9	0.038	(0.192)	0.035	(0.183)
grades 9-10	0.031	(0.173)	0.033	(0.180)
grade 11 – hs diploma	0.354	(0.478)	0.345	(0.475)
post secondary degree	0.577	(0.494)	0.587	(0.492)
presence young children	0.316	(0.465)	0.238	(0.425)
presence older children	0.517	(0.499)	0.494	(0.499)
employment rate	0.728	(0.445)	0.901	(0.298)
self employment rate	0.071	(0.257)	0.147	(0.355)
wage employment rate	0.657	(0.475)	0.754	(0.431)
spouse's total income*	48530	(49060)	26202	(26716)
# observations	15431		12483	

Sample of wives (husbands) consists of attached individuals whose spouse is aged 25-54 and, if employed, is not employed in primary occupations (farming, fishing, forestry and logging).

* Total income is reported in nominal own country dollars and includes wages and salaries, net income from self-employment, investment income, government transfers and retirement pensions, superannuation and annuities.

Table 2

Raw Employment Rates: by Spouse's Labour Force Status

Employment Rate of Wives

	Husband Wage Employed	Husband Self Employed	Difference
Canada:	0.729 (0.005)	0.796 (0.009)	0.067 (0.010)
United States:	0.726 (0.004)	0.742 0..009	0.016 (0.010)

Employment Rate of Husbands

	Wife Wage Employed	Wife Self Employed	Difference
Canada:	0.866 (0.004)	0.904 (0.008)	0.038 (0.009)
United States:	0.898 (0.003)	0.936 (0.007)	0.038 (0.008)

Note: Entries are raw employment rates.
Standard errors are in parentheses.

Table 3
Regression Results:
Employment Probability as a Function of Spouse's Labour Force Status

Variables	Wives				Husbands			
	(a) Marginal Effect Canada		(b) Coefficient Estimates		(c) Marginal Effect Canada		(d) Coefficient Estimates	
Constant	-0.355	(0.097)	0.142	(0.078)	-0.086	(0.079)	0.234	(0.072)
n's Age	0.049	(0.005)	0.027	(0.004)	0.035	(0.004)	0.033	(0.003)
n's Age Squared/100	-0.001	(0.000)	-0.038	(0.005)	-0.004	(0.004)	-0.004	(0.004)
9-10 years of ed.	0.041	(0.031)	0.056	(0.030)	0.088	(0.023)	0.021	(0.028)
11-13 years of ed.	0.185	(0.027)	0.219	(0.021)	0.157	(0.021)	0.121	(0.021)
any post-secondary	0.285	(0.027)	0.321	(0.021)	0.198	(0.020)	0.172	(0.021)
# of children aged < 7	-0.113	(0.006)	-0.129	(0.006)	-0.003	(0.005)	-0.015	(0.004)
# of children aged 7-17	-0.041	(0.005)	-0.033	(0.004)	-0.002	(0.003)	-0.004	(0.003)
total income j /10,000	-0.007	(0.002)	-0.010	(0.001)	0.002	(0.002)	-0.001	(0.001)
s self-employed	0.062	(0.009)	0.006	(0.010)	0.039	(0.009)	0.042	(0.008)
Variables Interacted with Canada Indicator								
n's Age	-		0.022	(0.006)	-		0.002	(0.005)
n's Age Squared/100	-		-0.031	(0.008)	-		0.000	(0.000)
9-10 years of ed.	-		-0.015	(0.043)	-		0.067	(0.037)
11-13 years of ed.	-		-0.034	(0.034)	-		0.035	(0.029)
any post-secondary	-		-0.035	(0.034)	-		0.026	(0.029)
# of children aged < 7	-		0.015	(0.009)	-		0.012	(0.007)
# of children aged 7-17	-		-0.008	(0.006)	-		0.002	(0.005)
total income j /10,000	-		0.003	(0.002)	-		0.003	(0.002)
s self-employed	-		0.056	(0.014)	-		-0.003	(0.012)
R-Squared	0.081		0.091		0.077		0.080	
Number of Observations	10925		26356		9947		22430	

Notes:

Entries are ordinary least squares regression coefficients with White's heteroskedastic robust standard errors in parentheses.

The dependent variable is an indicator variable for whether or not the individual was employed at the survey date.

State/Province indicator variables are included in the regression but coefficients are not reported.

Table 4**Raw Employment Rates of Wives: by Husband's Labour Force Status**

	Husband Wage Employed		Husband Self Employed		Difference	
Employment Rate of Wives						
All Businesses						
Canada						
Total Employment Rate	0.729	(0.005)	0.796	(0.009)	0.067	(0.010)
Self Employment Rate	0.072	(0.003)	0.224	(0.009)	0.152	(0.009)
Wage Employment Rate	0.658	(0.005)	0.573	(0.011)	-0.085	(0.012)
United States						
Total Employment Rate	0.726	(0.004)	0.742	(0.009)	0.016	(0.010)
Self Employment Rate	0.052	(0.002)	0.190	(0.008)	0.138	(0.009)
Wage Employment Rate	0.674	(0.004)	0.552	(0.011)	-0.122	(0.011)
Incorporated Businesses						
Canada						
Total Employment Rate	0.729	(0.005)	0.805	(0.013)	0.076	(0.014)
Self Employment Rate	0.072	(0.003)	0.264	(0.015)	0.192	(0.015)
Wage Employment Rate	0.658	(0.005)	0.541	(0.017)	-0.117	(0.018)
United States						
Total Employment Rate	0.726	(0.004)	0.726	(0.015)	0.000	(0.016)
Self Employment Rate	0.052	(0.002)	0.205	(0.014)	0.153	(0.014)
Wage Employment Rate	0.674	(0.004)	0.521	(0.017)	-0.153	(0.017)
Unincorporated Businesses						
Canada						
Total Employment Rate	0.729	(0.005)	0.790	(0.012)	0.061	(0.013)
Self Employment Rate	0.072	(0.003)	0.192	(0.012)	0.120	(0.012)
Wage Employment Rate	0.658	(0.005)	0.598	(0.015)	-0.060	(0.016)
United States						
Total Employment Rate	0.726	(0.004)	0.753	(0.012)	0.027	(0.013)
Self Employment Rate	0.052	(0.002)	0.179	(0.011)	0.127	(0.011)
Wage Employment Rate	0.674	(0.004)	0.574	(0.014)	-0.100	(0.014)

Notes:

Entries are raw employment rates.

Standard errors are in parentheses.

Table 5**Summary of Estimated Differences in Employment Rates of Wives:****By Employment Type and Incorporation Status of Husband's Business**

	Total Employment Rate Difference		Self Employment Rate Difference		Wage Employment Rate Difference	
All Businesses						
Canada	0.062	(0.010)	0.146	(0.009)	-0.084	(0.012)
United States	0.006	(0.010)	0.131	(0.009)	-0.125	(0.011)
Canada-United States	0.056	(0.014)	0.015	(0.013)	0.041	(0.016)
Incorporated Businesses						
Canada	0.072	(0.014)	0.185	(0.015)	-0.113	(0.017)
United States	0.001	(0.015)	0.144	(0.014)	-0.143	(0.017)
Canada-United States	0.071	(0.020)	0.041	(0.021)	0.030	(0.025)
Unincorporated Businesses						
Canada	0.055	(0.013)	0.118	(0.012)	-0.063	(0.015)
United States	0.010	(0.012)	0.123	(0.011)	-0.113	(0.014)
Canada-United States	0.045	(0.018)	-0.005	(0.016)	0.050	(0.021)

Notes:

Entries are estimated differences in employment rates of wives of self versus wage employed husbands.
White's heteroskedastic robust standard errors in parentheses.

Table 6
Raw and Estimated Employment Differences for Wives: Various Years

Raw Differences	1988		1991		1994		1997	
Canada	0.110	(0.010)	0.080	(0.009)	0.084	(0.010)	0.084	(0.010)
United States	0.016	(0.010)	-0.006	(0.009)	0.018	(0.009)	0.005	(0.009)
Canada-United States	0.094	(0.011)	0.086	(0.010)	0.066	(0.011)	0.079	(0.010)
Estimated Differences								
Canada	0.090	(0.010)	0.075	(0.009)	0.074	(0.010)	0.070	(0.010)
United States	0.007	(0.009)	-0.011	(0.009)	0.016	(0.009)	0.004	(0.009)
Canada-United States	0.083	(0.014)	0.086	(0.013)	0.058	(0.013)	0.066	(0.014)
Self-Employment Differences								
Canada	0.112	(0.008)	0.132	(0.008)	0.142	(0.009)	0.156	(0.010)
United States	0.149	(0.008)	0.151	(0.008)	0.197	(0.008)	0.165	(0.009)
Canada-United States	-0.038	(0.011)	-0.019	(0.011)	-0.054	(0.012)	-0.009	(0.013)
Wage-Employment Differences								
Canada	-0.021	(0.011)	-0.058	(0.011)	-0.068	(0.012)	-0.086	(0.011)
United States	-0.139	(0.010)	-0.163	(0.010)	-0.181	(0.010)	-0.161	(0.011)
Canada-United States	0.118	(0.015)	0.105	(0.015)	0.112	(0.016)	0.075	(0.016)

Notes:

Entries are raw or estimated differences in employment rates.

Standard errors (rows 1-3) and White's heteroskedastic robust standard errors (rows 4-12) in parentheses.

Table 7
Differences in the Probability of Working in the Same Industry:
by Individual's Employment Sector

Wives			
Wife's Employment Sector:	All Sectors	Wage Employed	Self Employed
Canada	0.215 (0.014)	0.103 (0.015)	0.550 (0.026)
United States	0.166 (0.013)	0.048 (0.014)	0.560 (0.026)
Canada – United States	0.050 (0.019)	0.055 (0.021)	-0.010 (0.037)
Husbands			
Husband's Employment Sector:	All Sectors	Wage Employed	Self Employed
Canada	0.157 (0.016)	-0.072 (0.016)	0.409 (0.023)
United States	0.162 (0.016)	-0.059 (0.017)	0.455 (0.024)
Canada – United States	-0.006 (0.022)	-0.013 (0.023)	0.047 (0.033)

Notes:

Entries are estimated differences in the probability of working in the same industry between individuals whose spouses are self-employed and those whose spouses are wage employed. Standard errors are in parentheses.

Table 8**Differences in Total Employment Rates of Wives by Education Category of Wife**

Years of Education	0-8 years		9-10 years		11-13 years		Post-Secondary	
Canada	0.160	(0.068)	0.054	(0.042)	0.063	(0.017)	0.056	(0.012)
United States	-0.021	(0.082)	-0.074	(0.073)	-0.000	(0.019)	0.015	(0.011)
Canada-United States	0.181	(0.107)	0.128	(0.083)	0.063	(0.026)	0.041	(0.017)

Notes:

Entries are estimated differences in employment.

White's heteroskedastic robust standard errors in parentheses.

Appendix Table

Appendix Table 1						
Regression Results:						
Wife's Employment Probability as a function of Husband's Labour Force Status						
Variables	(a) Total Employment		(b) Self Employment		(c) Wage Employment	
Constant	0.142	(0.078)	-0.162	(0.033)	0.305	(0.079)
Wifes's Age	0.027	(0.004)	0.007	(0.002)	0.021	(0.004)
Wife's Age Squared/100	-0.038	(0.005)	-0.007	(0.002)	-0.031	(0.005)
9-10 years of ed.	0.056	(0.030)	0.012	(0.012)	0.044	(0.029)
11-13 years of ed.	0.219	(0.021)	0.030	(0.008)	0.189	(0.021)
any post-secondary	0.321	(0.021)	0.037	(0.008)	0.284	(0.021)
# of children aged < 7	-0.129	(0.006)	0.015	(0.003)	-0.144	(0.006)
# of children aged 7-17	-0.033	(0.004)	0.002	(0.002)	-0.035	(0.004)
total income head/10,000	-0.010	(0.001)	0.001	(0.001)	0.010	(0.000)
Husband self-employed	0.006	(0.010)	0.131	(0.009)	-0.125	(0.011)
Variables Interacted with Canada Indicator						
Wifes's Age	0.022	(0.006)	0.002	(0.003)	0.019	(0.006)
Wife's Age Squared/100	-0.031	(0.008)	0.003	(0.004)	-0.028	(0.008)
9-10 years of ed.	-0.015	(0.043)	0.027	(0.019)	-0.042	(0.043)
11-13 years of ed.	-0.034	(0.034)	0.007	(0.015)	-0.041	(0.035)
any post-secondary	-0.035	(0.034)	-0.006	(0.015)	-0.029	(0.034)
# of children aged < 7	0.015	(0.009)	-0.007	(0.006)	0.022	(0.009)
# of children aged 7-17	-0.008	(0.006)	0.005	(0.004)	-0.012	(0.006)
total income head/10,000	0.003	(0.002)	0.001	(0.001)	0.002	(0.002)
Husband self-employed	0.056	(0.014)	0.015	(0.013)	0.041	(0.019)
R-Squared Value	0.091		0.049		0.084	
Number of Observations	26356		26356		26356	

Notes:

Entries are ordinary least squares regression coefficients

White's heteroskedastic robust standard errors are in parentheses.

The dependent variable is an indicator variable for whether or not the wife was employed (column a), self-employed (column b) or wage employed (column c) at the survey date.

State/Province indicator variables are included but coefficients are not reported.