The Road to Egalitaria: Sex Differences in Employment for Parents of Young Children*

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Abstract: In 1985, Gary Becker predicted employment and childcare sex gaps may “disappear or be greatly attenuated in the near future.” In this paper, I examine trends in the employment gap between mothers and fathers of young children over the last forty years. I review theoretical explanations for the gap, then proceed to analyze the gap empirically in data for Canada, the United States, the United Kingdom, and Germany. Substantial closing of the gap in the 1970s and 1980s was followed by stability since then. Evidence from Canada finds childcare subsidies have a bigger impact on the gap than parental leave.

JEL codes: J13, J16, J18, J21.

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Introduction

In the conclusion to a seminal paper on the economics of the family, Gary Becker looks to a future where childcare responsibilities might no longer be dominated by women.

“The persistence of [childcare] responsibilities in all advanced societies may only be a legacy of powerful forces from the past and may disappear or be greatly attenuated in the near future...a person’s sex would no longer be a good predictor of earnings and household activities. It is still too early to tell how far Western societies will move in this direction”


For the purposes of this paper, I will refer to Becker’s hypothesized future as ‘Egalitaria.’ In Egalitaria, childcare responsibilities are no longer sexually asymmetric and employment among those with young children does not differ systematically for mothers and fathers.¹ Importantly, Becker’s theory does not suggest that childcare would be split evenly within any particular household; his model features a knife’s edge result in which one parent or the other would still have a comparative advantage in home production and that parent would specialize in home production. However, if the comparative advantages were distributed independently of sex, then on average across households in Egalitaria the employment rates of mothers and fathers would be equal.

¹ Of course, one could easily envision many other characteristics an idealized gender-balanced world might equalize. The definition of Egalitaria here is admittedly more narrow.
In this paper I explore one of the features of Becker’s Egalitaria—the patterns in employment rates for parents of young children. I begin with a review of explanations for sexual asymmetries in the work of parents; why we do not today live in Egalitaria. I then ponder how far down the road to Egalitaria we have traveled in the years since Becker’s speculation, bringing evidence from Canada, the United States, the United Kingdom, and Germany. Finally, I use Canadian evidence to assess the success of some common policies that might be used to accelerate the trip to Egalitaria.

I find a substantial gap between the employment of men and women with younger children in all four countries. This gap has more than halved over the last forty years, but remains at a level of three to four years of work between the time a child is born and when the child reaches age 10. The evidence suggests that while maternity leave policies have a short-run impact while the child is very young, this impact fades away very quickly. In contrast, childcare subsidies appear to have a more permanent impact on the labour supply of mothers, and consequently on the gap in work between mothers and fathers.

**Sources of sex differences in parental labour supply**

There are vast differences through time and across countries in the labour market outcomes of mothers and fathers. In this section I discuss some potential sources of these differences; barriers blocking the road to Egalitaria. I start with a basic economic story involving relative productivities in housework and market work. Next, I discuss preferences, culture, and discrimination. Finally, some insights from biology are brought to bear on the question.
**Marginal productivities**

In a basic model of the division of labour in a household, Becker (1991) features couples who make choices about work inside and outside the home, given their accumulated human capital and given prices for selling labour to the market and prices for market-purchased goods. A key prediction of the model is specialization of one spouse inside and one spouse outside the home, resulting from the comparative advantage of one member of the couple in household production. The determinant of who specializes where is the ratio of productivities in the home and outside the home. These productivities are expressed as the amount of consumption afforded by a marginal hour applied to work. In this framework, various shocks to productivities can be imagined that would lead to differences in the employment of mothers and fathers.

For example, Cutler, Glaeser, and Shapiro (2003) argue that changes in the technology used within households—such as refrigeration and microwaves—have had a very large impact on the time needed for food preparation. This change in productivity within the home may lead to different decisions made by mothers and fathers about specialization. As another example, Cortes and Tessada (2011) find changes in household vs. market work decisions in the United States when low-wage immigrant childcare workers are more readily available. Moreover, technology shocks in the workplace can also affect choices. Håkanson (2013) develops the theoretical implications of continued technical improvement in the flexibility of the workplace (such as email; video conferencing) on labour supply decisions, and in particular on the intensive margin of how many hours to work and whether to take ‘career’ or less intensive jobs.
All of these technical improvements have tended to diminish the gap in the costs of work for mothers and fathers. If these costs of work act as a wedge between the marginal productivity and the wage received from market work, then decreases in costs would affect marginal conditions.\(^2\) Shocks to relative productivities for work in and out of the household could contribute to how much and how quickly countries move in the direction of Egalitaria.

**Preferences, discrimination, and culture**

Another source of sex differences in the employment of parents is tastes and attitudes about work inside and outside the home. Beyond women’s own ideas of what they might like to do, the tastes and attitudes of others may intrude on the choices of women in the form of discrimination. Of course, all of these tastes and attitudes develop in the context of a society with a given history and set of economic institutions, which raises the potential role of culture.

Fortin (2005) documents and investigates the importance of gender attitudes in explaining cross-country patterns in the work of women. Using data from the World Values Survey, Fortin finds a substantial relationship between attitudes on the role of women in the workplace and in the home, and labour market outcomes such as employment rates and the gender pay gap.

The World Values Survey also contains a question on attitudes toward child-raising and work. The survey asks whether “A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.” In Figure 1, I plot the country-wide proportion of respondents who agree or strongly agree with the statement and compare it to the

\(^2\) In a similar way, relative shocks to market and household productivity could affect parental employment decisions through their impact on the intrahousehold bargaining position of men and women, in the style of Chiappori (1992).
proportion employed (including self-employed). I select only married women between the ages of 20 and 40; a group for whom questions of work and children are most salient. There is a clear positive relationship between positive beliefs about children and working mothers and the proportion of married females age 20-40 who work. Of course, it is possible that many things underlie this relationship but it does suggest that attitudes about raising children may play a role in the division of work.

However formed, the tenacity of these attitudes toward family and work may run deep. Fernandez and Fogli (2009) find that the work and fertility of American women whose parents were immigrants can be predicted by labour market patterns in the country of origin. This evidence suggests that attitudes may be set early in life and don’t respond quickly to new experiences and environments.

There is evidence of some evolution in attitudes through time, however, across cohorts. Using the General Social Survey from the United States, some long time-series on questions about work and family may be formed. I use the pooled 1972-2010 version of the GSS and select married women between the ages of 20 and 40. In Figure 2, I show the proportion agreeing, disagreeing, or approving with a series of statements. Not all the variables are available for all years, but the pattern is clear. Through time, attitudes towards women working have grown more favourable. For example, one question asked in the GSS is very similar to the question analyzed above in the World Values Survey. GSS respondents are asked to agree or disagree with the statement, “A preschool child is likely to suffer if his or her mother works.” Figure 2 shows this

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proportion disagreeing or strongly disagreeing with that statement growing from 31.8 percent in 1977 to 64.9 percent in 2010.

How the future evolution of preferences and discrimination, and their expression through culture, continues is not an easy question to answer. Moreover, one can speculate that attitudes may reflect experience, making it very hard to tease causation out of any analysis of differences in preferences and work. However, reaching Egalitaria would likely be difficult in the absence of work and family attitudes converging toward sexual symmetry.

**Biology**

Biology contributes some part of the explanation for sexual asymmetry in work in and outside the home. Two channels through which biology matters are direct constraints on women’s time and through evolutionary biological influences on behaviour.

Women are biologically different than men in ways directly related to the care of children. First, after fertilization the woman has sole responsibility to carry the fertilized egg through to birth. The difficulties of pregnancy increase the effort required to stay in the labour market. Second, the circumstances of birth require time both in the act of birth and in the recovery period. Again, this detracts from time available for market work. Finally, the feeding of the child through breast milk is biologically assigned to women.

Beyond the original biological assignment to women, the degree to which women devote effort to these tasks does vary. Nathoo and Ostry (2009) demonstrate this variance with the case of
breastfeeding in Canada. Through the 20\textsuperscript{th} century, breastfeeding moved from being very common (with over 80 percent initiation rates in the 1920s) to falling out of fashion (with rates below 50 percent in the 1950s) to again becoming very common (with initiation rates of 85 percent in the 1990s). These trends were driven in part by the technological innovation of formula-feeding. However, in the latter half of the 20\textsuperscript{th} century, attitudes and practices around breastfeeding rebounded. In part, this may have been driven by medical evidence such as that summarized in an editorial in the journal *Pediatrics* in 1997 recommending at least 6 months of exclusive breastfeeding. (See American Academy of Pediatrics 1997.) In addition to medical motivations, Nathoo and Ostry argue that women today foregoing breastfeeding suffer social sanction in failing to be seen as a ‘good mother’, in addition to any negative health impact that may occur. In this way, Nathoo and Ostry emphasize that the degree of effort devoted to breastfeeding is more than just biological; it is also a socially-determined practice. In this way, biology should not be taken as completely determinative.

The other channel where biology matters is through evolutionary influences. Trivers (1972) defines parental investment as “any investment by the parent in an individual offspring that increases the offspring’s chance of surviving (and hence reproductive success) at the cost of the parent's ability to invest in other offspring.” Women make large biological investments in ovulation, gestation, and giving birth. These biological efforts also involve large amounts of time. Men, on the other hand, are almost unlimited biologically in the number of offspring they can produce. Because women are much more limited in the number of chances they have to successfully produce an offspring, Trivers and others argued that the parental investment by mothers is higher in order to improve the likelihood that their ‘rare’ offspring survive.
Again, as with breastfeeding, biology should be considered a starting point and not a complete explanation of human behaviour. That is, finding a way to reach Egalitaria would likely require innovations both in technology and society that allow the existing difference in biological burdens to be minimized. However, even with small remaining biological differences, Becker’s model can lead to a strong division of labour, since it relies on a knife’s edge comparative advantage result. For this reason, even small persistent differences in biology present a strong barrier to reaching Egalitaria in the world of Becker’s model.

**Magnitudes of sex differences in parental labour supply**

From his vantage point in 1985, Becker saw that changes were afoot in the factors influencing the sexual division of labour. The 1970s saw a great leap in the labour market participation of women in many industrial economies. Projecting those trends forward, it is not hard to see how Becker may have thought the end of the employment gap between mothers and fathers could be on the horizon. In the quarter century since Becker’s observation, how much has the employment gap between mother and fathers closed? In this section I define a particular measurement of the parental employment gap and implement it for Canada, the United States, the United Kingdom, and Germany through time.

Empirically distinguishing between the three mechanisms discussed in the previous section would be interesting, but also challenging. Relative productivities in the home and in the market present some measurement problems. Indications of market productivity can be picked up by observed wages, but the lack of market prices for home production makes home productivity difficult to measure. Preferences, on the other hand, are fairly well documented in surveys. But, preferences are difficult to distinguish from relative productivities because investments in home
or workplace productivity may be influenced by attitudes and preferences in society. Finally, while biology changes only slowly through evolution, technology that relaxes biological constraints might be used to measure the impact of biology. However, this might be hard to distinguish from technological change that affects relative productivities as well.

In the empirical analysis here, I aim to compare simple employment rates across a set of countries. By calculating the gap between male and female employment rates across the ages of their children, an interesting view on the sex differences in employment emerges. I then aggregate these differences across ages to form a single summary measure of the employment gap between mothers and fathers.

**Measurement**

To construct employment rates for parents, I start by taking parents of sex \( \theta \in \{\text{male}, \text{female}\} \) with children of age \( a \). I define \( E_\theta^a \) as the proportion employed for sex \( \theta \) with at least one child of age \( a \). Subtracting the female rate from the male rate gives \( \delta_a \), the difference in the employment rate for that age \( a \):

\[
\delta_a \equiv E_{a}^{male} - E_{a}^{female}
\]

I then take the \( \delta_a \) terms and add them up over some values of \( a \) from 0 up to \( A \) to arrive at a measure I call the parental employment gap \( \Delta_A \).

\[
\Delta_A = \sum_{0}^{A} \delta_a
\]
In the mythical land of Egalitaria, the difference $\delta_a = 0 \ \forall a$.

This measure has the advantage of being able to difference away any common cyclical aspect of employment rates that are common to men and women. That is, if a recession or a boom hits the labour market and affects men and women equally, it should have no impact on $\delta_a$. Evidence on recessions, however, indicates that male employment is more volatile. Hoynes, Miller, and Schaller (2012) find for the United States that male concentration in certain more volatile industries leads to higher employment volatility. This means that some cyclical trend in the parental employment gap may persist even after differencing.

**Parental employment rates and gaps in four countries**

I implement this parental employment gap measurement for Canada, the United States, the United Kingdom, and Germany using labour force data. These countries were chosen in part out of convenience—the calculations require precise information on family relationships and child age that are not always easily available in public-use datasets. The countries also span different policy environments and have historical differences in the employment patterns of women.

I use microdata on the labour force for all four countries. For Canada, I use the monthly Labour Force Survey, from which data are available monthly from 1976 to 2011. I form a dataset of the ‘incoming rotation group’ by keeping only those observations observed for the first month in their 6 month rotation in the survey. For the United States, I use the March Current Population Survey going back to 1968. In the United Kingdom, I use the Spring (April-June) waves of the
quarterly Labour Force Survey and its antecedents, going back to 1975. Finally, in Germany I use data from the German Socio-Economic Panel.

I take a sample of all parents (married or single) and find the proportion of parents at each child age who are employed (or self-employed) and at work. Because of parental leave, some people can be employed but not at work. My focus is on employed at work because I am interested in the actual time allocation with children rather than the legal status of employment. For Germany, the data do not allow employed and working to be distinguished from employed and on leave. So, this means the employment rates for mothers in Germany may be overstated relative to the other countries. If a person has children of different ages, that person will appear in the age ‘bins’ corresponding to each of the children’s ages. The sample sizes vary by country. In Canada, the United States, and the UK, the number of observations varies a bit by year, but lies mostly within the range of 15,000 to 20,000 per year for fathers and 20,000 to 25,000 per year for mothers. The German sample size is much smaller, at around 1,800 fathers per year and 2,000 mothers. There are more mothers because the number of single mothers is greater than the number of single fathers.

The employment rates $E_{a}^{male}$ and $E_{a}^{female}$ are graphed for Canada in Figure 3 for the years 1980, 1990, 2000, and 2010. In all years, the gap $\delta_{a}$ is positive at all values of $a$, meaning fathers work

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4 The source of the UK data is: Office of Population Censuses and Surveys, Social Survey Division (various years).
5 I thank Michele Battisti for his assistance with assembling and analyzing the German data. The sample sizes in the German data are much smaller than in the other countries, resulting in more variance in the graphs than observed for the other countries.
6 In Canada, I use the labour force status question for the reference week, which distinguishes between employed at work and employed but absent. For the US, the CPS also provides a clear distinction for employment at work and absent for the reference week. In the UK Labour Force Survey, I use the question asking whether the respondent was working in the previous week. Finally, the German data do not allow me to consistently identify those who are employed and at work vs. not at work. So, for the case of Germany I analyze employment without distinguishing between those who are at work and those who are not.
more than mothers. Across ages, $E_{a}^{male}$ is quite flat, while $E_{a}^{female}$ increases with $a$. There are two notable differences across the four time periods. First, there is a distinct ‘hook’ at age 0 that emerges through time and becomes quite sharp in 2010. This likely is a result of Canada’s parental leave policies, as studied in Baker and Milligan (2008ab, 2010, 2011). The provisions for job-protected maternity leave entitlements (which vary by province) moved from an average of 15.3 weeks in 1980 to 19.8 weeks in 1990; 34.9 weeks in 2000; 54.2 weeks in 2010. I will return to analysis of this policy in the next section, but the evidence here in Figure 3 is certainly suggestive. The second notable trend in Canada is an overall closing of the gap (with the exception of age 0, which moves in the opposite direction). The employment rate for mothers of six year olds $E_{6}^{female}$ is 38.2 percent in 1980, 53.0 percent in 1990, 58.3 in 2000, and 60.8 percent in 2010.

The same graph appears for the United States in Figure 4. A similar flatness as seen for Canada for $E_{a}^{male}$ is evident, as the employment participation of men seems invariant to the presence of young children. Women also show an upward slope of $E_{a}^{female}$ with $a$, as in Canada. In contrast to Canada, however, there is no emerging dip at age 0—which is not surprising given the different policy development on maternity leave in the United States.\(^7\) There is also little further closing of the gap after 1990. The employment rate for mothers of six year olds $E_{6}^{female}$ in the US is 44.5 percent in 1980, 54.4 percent in 1990, 60.0 percent in 2000, and 58.9 percent in 2010.

\(^7\) The Family and Medical Leave Act of 1993 does provide 12 weeks of job-protected but unpaid leave. However, eligibility requires a year of full-time employment at a large employer, meaning not all working mothers are eligible. Private employers often exceed this minimum in their compensation agreements with their employees. As well, several states have their own initiatives—such as New Jersey and California which have short paid leave programs. See National Partnership for Women and Families (2012) for more detail.
At most ages, American women were working more in 1980 than Canadian women; by 2010 this had reversed.

The analysis is repeated for the United Kingdom in Figure 5. Compared to Canada and the US, the slope of the employment rate for women is much steeper in each of the years displayed. The now-familiar dip at age 0 becomes more evident through time. By 2010 it is quite pronounced, more like Canada than the US. This reflects the continued expansion of maternity leave starting in 1999 and carried out through the 2000s.

The German data in Figure 6 show several distinctions relative to the other countries. To start, sampling variability makes the lines less stable, with sample sizes in Germany about one tenth that seen for the other countries. In the 1980s and 1990s, there was substantially less employment of women among those with older children than was the case in the other countries. As mentioned earlier, the inability to exclude those employed and on leave from this measure for Germany means that, if anything, these low employment rates are overstated compared to the other countries. The overall gap between the employment of men and women with children has closed in Germany, but most of the change has happened among mothers of children age 5-10, with less change for those with younger children. Leitner (2010) reviews and analyzes the development of policy in Germany, suggesting that in the 2000s there was a shift from a ‘sequential model’ of female employment toward a ‘continuous employment’ model. This manifested itself through large expansions of childcare in Germany in the 2000s and a reduced emphasis on parental leave.

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8 I use 1979 instead of 1980 because there is no Labour Force Survey for 1980; it was biannual in those years.
The trends uncovered here permit a preliminary analysis, but further work could yield more insight. In particular, the changes in the employment rate gap through time likely vary across sub-groups within each country. As one example, the growth in female employment for women with young children in the United States has been stronger among high education women than for lower education women. Such analysis, while interesting, is left for future work.

**Parental employment gap**

The final calculation to assess the magnitude of the sex differences in parental employment is to add up the $\delta_a$ gaps across ages to find a summary number for the parental employment gap for each year up to age 10, $\Delta_{10}$. The $\Delta_{10}$ for each year are graphed in Figure 7 for each of the four countries. The parental employment gap in the US in 1968 was 6.97. This measure fell steadily until reaching 3.96 in 1987, for a drop of about 3 years of work. Over the next 20 years, however, it dropped only another 0.5. In contrast, the gap in Canada in the 1970s was higher than the US, but crossed over in 1988. In the 2000s, the difference between Canada and the US remained. The time path of the parental employment gap in the UK is quite similar to the US and Canada. There was a steady downtrend until around 1990 when the gap flattened out around the level of 4 years of work. The country showing the biggest difference from the others is Germany, with the gap staying around 6 until breaking decisively downward in the 2000s. In all four countries, there appears to be some cyclical shifts in the gap relating to the financial crisis in 2009, as male employment fell more than female employment during this recent period of labour market upset. However, the cyclical trend is not strong in the earlier years.
Looking back at the prediction from Becker (1985) quoted at the beginning of this paper, it is clear that from the vantage point of 1985 the gap between men and women seemed to be improving at a very steady pace. Somewhat ironically, this pace flattened considerably just a few years after Becker’s musings.

**Effect of policy on parental employment gaps**

If a country wished to hasten its pace along the road to Egalitaria, the earlier discussion on the sources of sex differences provides several possible levers for policy. A list of options might include:

- discouraging discrimination with pay that matches productivity
- job-protected and/or paid maternity leave to ensure job continuity
- lowering the price of childcare through subsidies, tax credits, or low-wage immigration
- attempting to change attitudes about gender roles in the household and workplace.

While I cannot evaluate each of these policy options, I do have available two policy reforms in Canada that prove useful to get a sense of how policy might influence the parental employment gap. In this section I estimate the impact of parental leave expansions and subsidized childcare on the parental employment gap.

The two policy changes I consider are an expansion of parental leave in 2000/2001 across Canada, and the introduction of heavily subsidized childcare in Quebec in the late 1990s. I describe each in turn. More detail on parental leave in Canada can be found in Baker and
Milligan (2008ab, 2010, 2011), while details on the Quebec childcare program are available in Baker, Gruber, and Milligan (2008). This time period in the late 1990s and early 2000s also saw the expansion of cash transfers to lower income families. Milligan and Stabile (2007) show this had a strong impact on employment for single-parent families, but was less important for two parent families. Still, the cash transfers are a potentially confounding factor that may inhibit the causal interpretations of the parameters estimated here.

**Parental leave reforms**

Working conditions in Canada are regulated in most instances by provincial governments, with the exception of a few federally regulated industries. Job protection for maternity leaves comes under this mostly provincial jurisdiction. Leaves of 17 to 18 weeks were introduced in many provinces in the 1970s and 1980s. Many provinces expanded these leaves to the range of 29 to 35 in the early 1990s. Quebec stuck out with a jump to 52 weeks in 1991 and then to 70 weeks in 1997. In 2000 all remaining provinces jumped up to 52-54 weeks of job-protected leave.

In addition to the job-protection, there is also a paid-leave element. The paid leave was organized through the federal Unemployment Insurance program, which was renamed Employment Insurance in the mid-1990s. The number of weeks of paid leave was expanded from 15 to 25 in 1990, with the extra 10 weeks also available to men for the first time. In 2001, the portion sharable between mothers and fathers moved from 10 weeks to 35 weeks, bringing total paid leave to 50 weeks.
The compensation under the Employment Insurance parental leave program is limited. The program replaces at most 55 percent of earnings, subject to a cap. The cap is set at a level of $45,900 in 2012, which is near the median full time earnings level. Quebec launched its own expanded leave program in 2006 that allows for a higher replacement rate and a higher earnings cap, as well as dedicated leave for fathers.

Extended parental leave might be expected to have a negative impact in the short run on being employed and at work. More women on leave implies there are fewer at work. The leave no longer has a direct effect after the child turns age 1, as the mother would no longer qualify for leave. The enduring impact after the child turns 1 year old could go either way—women may have difficulty or less desire to re-enter the labour market after a more extended absence so they may stay out longer than the one year provided for by leave coverage. On the other hand, the guarantee of their job being held for them might facilitate a return to the labour market and allow women to re-enter their career where they left off.

For the purposes of the exercise conducted here, I will consider only the 2000-2001 reform, which almost simultaneously changed paid leave and job protection in most provinces to around 52 weeks. Children born on or after December 31, 2000 were eligible for the extended leave. I follow Baker and Milligan (2010) in removing Quebec from the analysis and focusing on two-parent families. As with Baker and Milligan (2010), I compare across year-of-birth cohorts born before the reform (1997 up to 2000) and those born after it (from 2001 to 2003). I implement the policy as a year-of-birth reform, assigning those born before 2001 a ‘0’ for the policy variable POST and those born after a ‘1’. As I am interested in the difference between male and female
employment, I include males with a 0 treatment and infer the impact of policy by an interaction between dummies for being female and treatment. I do this using the following specification:

\[ Emp_{ica} = \beta_0 + FEMALE_{ica} \beta_1 + POST_c \beta_2 + POST_c \ast FEMALE_{ica} \beta_3 + X_{ica} \beta_4 + e_{ica}. \]

Here, individuals are indexed by \( i \), cohorts are indexed by \( c \), and the current age of the child is indexed by \( a \). \( Emp_{ica} \) is a binary variable for being employed and at work, \( FEMALE_{ica} \) is a binary variable for being female, \( POST_c \) is an indicator for being a member of a cohort born from 2001 onward, and \( X_{ica} \) is a vector of control variables for mother and father education and age.

The estimation is implemented as an ordinary least squares model, which for a binary dependent variable makes it a linear probability model. Standard errors are adjusted using the robust adjustment, which accounts for the heteroskedasticity inherent in the linear probability model errors. The parameter of interest is \( \beta_3 \), the interaction of \( POST_c \) and \( FEMALE_{ica} \), which picks up the differential effect of parental leave expansion on mothers.

The regression is run separately for each age from 0 to 10. If someone has multiple children in this age range, they appear in each of the corresponding regressions. The data employed are from the Labour Force Survey, as described earlier. Using the estimated coefficient \( \beta_3 \) for each age, a counterfactual path for female employment in 1999 can be constructed when the policy impact is added to the prevailing employment rates in the last year before the reform, 1999.
The results are presented graphically in Figure 8, which shows a line for men, another for women without the parental leave, and another for women with the predicted policy impact (and associated 95 percent confidence interval). The 1999 employment rates for mothers and fathers are graphed, along with the predicted impact of policy. The impact at age 0 is negative for employment, as was expected. More women taking leave means fewer employed and at work. In subsequent years, however, there is little strong impact. It is slightly negative over the first few years, then switches to slightly positive. This is consistent with the findings in Baker and Milligan (2011) where little long-run impact of leave expansion was found.

This analysis of extended parental leave suggests that, whatever its other merits during the first year of the child’s life, there appears to be little lingering labour market impact. These regression results are consistent with the cross-country graphs for the UK which also show a kink developing at age 0 when maternity leave entitlement was expanded in the late 1990s and 2000s. Because of the short period in which it has impact, parental leave appears to have little effect on the parental employment gap measured over ages up to 10.

**Subsidized Childcare**

In September of 1997, the province of Quebec began to implement a novel policy experiment. A new system of childcare centres featuring tightened regulatory guidelines, a new curriculum, and heavy subsidies from the province became available for four-year olds. Parents paid about one seventh of the price of the care--$5 a day. The program was not means-tested in any way and proved very popular. There were previously subsidies for lower income families, so the program has its biggest impact on those with middle incomes. Over the next 3 years to 2000 the program
was expanded first to 3 year olds, then 2 year olds, then finally to 0 and 1 year olds. There was no corresponding program in Canada outside Quebec.

As a first cut at the impact of the policy, a simple comparison of Quebec with Canada outside Quebec is shown in Figure 9. The parental employment gap for ages 0-10 was higher in Quebec than Canada outside Quebec until the mid-1990s. After 2000, Quebec takes a clear jump downward, coincident with the timing of the full implementation of the childcare program.

To look more carefully at the long-run impact of the Quebec childcare program on female employment, I compare birth cohorts in Quebec and Canada outside Quebec in a difference-in-differences format. Birth cohorts varied in their exposure to the program, with those born in the mid-90s and earlier having no exposure while those born from 2000 onward were eligible for all of their preschool years.

The empirical implementation uses the following equation:

\[ Emp_{icqa} = \beta_0 + \text{FEMALE}_{icqa}\beta_1 + \text{QUE}_q\beta_2 + POST_c\beta_3 + POST_c \times \text{QUE}_q \times \text{FEMALE}_{icqa}\beta_4 + POST_c \times \text{QUE}_q \beta_5 + POST_c \times \text{FEMALE}_{icqa}\beta_6 + \text{QUE}_q \times \text{FEMALE}_{icqa}\beta_7 + X_{icqa}\beta_8 + e_{icqa}. \]

As with maternity leave, individuals are indexed by \(i\), cohorts are indexed by \(c\), and the current age of the child is indexed by \(a\). In addition, observations are indexed for province of residence by \(q\). The variables are the same as for maternity leave with the addition of a binary variable for
Quebec residence, and its interaction with several variables. The policy parameter of interest is \( \beta_4 \) which picks up the differential impact of the policy on females for affected cohorts in Quebec. I also include a full set of ‘second order interactions’ between Quebec residence, year of birth cohort, and being female. I again use the Labour Force Survey for the estimation. I exclude observations for the 1997-1999 transition years. Regressions are run separately by age of the child and the set of parameters recorded.

Figure 10 shows the results by graphing the actual 1996 employment rates for mothers and fathers and the predicted policy impact. Again, the shaded area represents the 95 percent confidence interval. The impact varies a bit by age, but the point estimates lie mostly in the range of 3 to 7 percentage points. The statistical significance for many of the individual points is questionable, but the pattern of positive impacts is consistent across the ages. Interestingly, the impact of the policy is sustained after the children graduate out of the program at age 5 and enter school. Mothers of 10 year old children who were exposed to the program show a 4.1 percentage point increase in being employed compared to those mothers who were not exposed.\(^9\) When aggregated over the ages 0 to 10, the impact is about 0.46 years of work compared to untreated birth cohorts.

While not completely closing the gap between the employment of mothers and fathers, the Quebec childcare reform uncovers evidence that childcare subsidies may have a continued impact on maternal work even after the child graduates into regular school. This sustained and continued impact suggests that childcare subsidies may do more to close the parent employment gap than parental leave policies.

\(^9\) This result is statistically significant with a p-value of 0.041.
Conclusions

This paper has sought to bring evidence to Gary Becker’s future-looking speculation from 1985 about the coming of a time when sex would no longer predict employment or child-raising roles: the land of Egalitaria. After reviewing several barriers that stand in the way of reaching Egalitaria, I provided some descriptive evidence of the trends in the sex differences in employment of parents of younger children from the 1970s to 2011. In the US, the UK, and Canada there was substantial closing of the parental employment gap until the late 1980s, when the gap flattened out. In contrast, the parental employment gap stayed relatively high in Germany until a shift in policy toward childcare in the 2000s. Finally, I provide an empirical investigation of two policies that have been put forward as beneficial to the employment circumstances of mothers. Using Canadian policy variation, I find stronger evidence for a lasting impact of childcare subsidies than for parental leave.

From this work, I draw two primary conclusions. First, Becker’s intuition that the gap in the employment of mothers and fathers was closing was correct—and this gap fell by nearly half in a relatively short twenty year period during the 1970s and 1980s. Parental employment patterns are not biologically fixed; the evidence presented here shows maternal employment can swing strongly in a short time period. Second, policy by itself seems to have a modest impact. Maternity leave makes the gap larger while the leave is underway, but does not seem to be compensated by more work by mothers when the child is older. The evidence from Quebec and from Germany suggests that large childcare subsidies can have a more lasting impact, but a large parental employment gap still remains even with these programs in place.
The technological, social, and policy developments of the 1970s and 1980s that mixed together to generate decreases in the parental employment gap may not be reproducible. It is also possible that the ‘easy gains’ have been exhausted and the parental employment gap has now settled at a level where it is tightly constrained by biology, preferences, and culture. However, it should be acknowledged that a lot has changed in the space of two short generations. It seems prudent to allow more time to pass before closing judgment on the likelihood of reaching the Egalitaria foreseen by Becker (1985).
References


Figure 1: Can working mothers establish warm and secure relationships with their children?

Notes: Data taken from the World Values Survey, waves 3 and 4. The x-axis shows the proportion of respondents agreeing or strongly agreeing with the statement “A working mother can establish just as warm and secure a relationship with her children as a mother who does not work.” The y-axis shows the proportion employed or self-employed. The sample includes all married women, age 20-40.
Figure 2: Attitudes about work and family in the US General Social Survey

Notes: Data taken from the 1972-2010 pooled General Social Survey. Graphed is the proportion of married women agreeing or disagreeing with each statement in each year.
Figure 3: Employment rates of mothers and fathers, Canada

Notes: The source is the Labour Force Survey. Parents with a child at each given age are included in the calculation for that age.
Figure 4: Employment rates of mothers and fathers, United States

Notes: The source is the Current Population Survey. Parents with a child at each given age are included in the calculation for that age.
Figure 5: Employment rates of mothers and fathers, United Kingdom

Notes: The source is the Labour Force Survey. Parents with a child at each given age are included in the calculation for that age.
Figure 6: Employment rates of mothers and fathers, Germany

Notes: The source is the German Socio-Economic Panel. Parents with a child at each given age are included in the calculation for that age.
Figure 7: Parental Employment Gap, Ages 0-10

Notes: The data sources are the same as mentioned in Figure 3 to Figure 6. The parental employment gap presented here sums the age-specific gaps seen in those figures.
Figure 8: Impact of parental leave on employment rates, Canada Excluding Quebec

Notes: The source is the Labour Force Survey and the author’s estimation. Shown are the employment rates for mothers and fathers in 2000, along with the estimated impact of the policy change for mothers. Parents with a child at each given age are included in the calculation for that age. The shaded area represents the 95 percent confidence interval around the estimated impact.
Figure 9: Parental Employment Gap, Quebec and Canada outside Quebec

Notes: The source is the Labour Force Survey.
Notes: The source is the Labour Force Survey and the author’s estimation. Shown are the employment rates for mothers and fathers in 1996, along with the estimated impact of the policy change for mothers. Parents with a child at each given age are included in the calculation for that age. The shaded area represents the 95 percent confidence interval around the estimated impact.