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Effects Of Paid Maternity Leave On The Gender Wage Gap

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EFFECTS OF PAID MATERNITY LEAVE ON THE GENDER WAGE GAP

by

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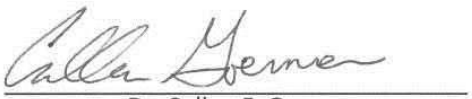

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Rachel D. Baxter
July 16, 2013

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ABSTRACT

The persistence of the gender wage gap in countries throughout the world has sparked several theories as to its cause and possible solutions. One theory centers on the decisions faced by a woman regarding children and fertility throughout her career. Typically, as the primary caregivers for children, women are more likely to interrupt their careers or leave the labor force entirely as a result. This thesis uses a fixed-effects model using a panel dataset of 18 countries with observations from 2000 to 2010 to evaluate whether paid maternity leave has an effect on the breadth of the gender wage gap. The effects of paid maternity leave on the gender wage gap has some policy implications, particularly for those countries like Australia, Denmark, and the United States which have not implemented paid maternity leave legislation.

CHAPTER I.

INTRODUCTION

The difference between wages earned by men and women, termed the gender wage gap, is a fact recognized at various levels world-wide. In the United States, despite the increased involvement of women in the labor force, the share of women pursuing advanced degrees, and the non-discrimination legal requirements for employers, the female-to-male ratio of wages for similar work was 0.67 in 2012 (Hausmann, et al., 2012). This measure of the gender wage gap ranks the United States as 61st out of 135 countries in wage equality, near the nations of Indonesia, Madagascar, and Mozambique. The most highly ranked countries in 2012 wage equality were Egypt, Malaysia, and Singapore with female-to-male ratio of wages of 0.82 for Egypt and Malaysia and 0.81 for Singapore (Hausmann, et al., 2012).

My thesis seeks to contribute to this body of study by providing a cross-country comparison which will first review the effects of maternity leave on the gender wage gap and secondly, will consider the question of whether a paid maternity leave policy in the United States would either narrow or widen the current gender wage gap. Currently, the United States is one of the few countries that does not legislatively provide some percentage of wages during maternity leave. My theory is that the effect of paid maternity leave could have one of two effects. The paid maternity leave could narrow the gender gap by encouraging women to return to the labor force after their

leave is complete which would allow women to continue gaining the specific human capital necessary for their employers. The second possible effect is a potential disincentive for employers to hire women or promote them into higher positions on the possibility that a paid maternity leave benefit would be required in addition to adjusting the distribution of work to other employees during a woman's absence.

The analysis was conducted through a fixed-effects regression across several countries and observation years. The fixed-effects model minimizes any omitted variable bias that may be time invariant. The magnitude and sign of the coefficients for the maternity leave benefit variables will reveal which effect predominates. Knowing if the effect of paid maternity leave is significant and whether it works to narrow or widen the gender wage gap would provide insight into the type of policies which could help to narrow the gender wage gap.

CHAPTER II.

LITERATURE REVIEW

Gender Wage Gap

The cause of the gender wage gap and its persistence in spite of widely recognized advancements in gender equality is an issue economists have scrutinized from multiple vantages. A common approach among several studies has been to conduct a multivariate regression analysis to determine male and female wages. Independent variables such as age, education, fertility rates, labor force participation, occupation, and job experience are included to explain the full composition of male and female wages. The residual factor of the multivariate regressions are considered to be a measure of omitted variables which could include a measure of discrimination against women in spite of laws in most countries against gender discrimination.

One substantial difference recognized between men and women's labor force experience is the amount of job interruptions experienced by women as compared to men as a result of family decisions such as child birth and childcare. One study evaluated the effects of women's labor force interruptions on job tenure and experience (Munasinghe et al., 2007). As part of this study, a survey was conducted on the expectations of future labor force participation. The survey found that a substantial fraction of women at the beginning of their careers did not expect to be in the labor force at the age of 35 due to family reasons. For women with a high school education or less, 26.7 percent of the women surveyed did not expect to be in the labor force at age

35 for family reasons compared to only 1.7 percent of men with the same education. For women with more than a high school education, 16.5 percent of the women surveyed did not expect to be in the labor force compared to only 1.1 percent of men (Munasinghe et al., 2007). These expectations illustrate that women, in general, are less attached to the labor force.

The 2007 Munasinghe study used the National Longitudinal Surveys of Youth (NLSY) from 1979 to 1994 which tracked the first decade and a half of men and women's careers. During the selected timeframe the NLSY tracked individuals from age 14 to 22 years in 1979 and interviewed them annually until 1994. Beginning in 1994 the NLSY began collecting information every two years which limits the availability of that survey for any up-to-date research or confirmation of this study's results. The sample used in the 2007 Munasinghe study is also limited to white males and white females who are not self-employed or government workers. Observations of individuals with either less than 9 years of schooling or more than 16 years of schooling and outlier values of hourly wages as well as real and nominal changes in wages are excluded from the sample. The restrictions in the sample could eliminate some white noise in the model created by outlier values but it also has the potential of eliminating groups who, historically, have experienced higher values of wage gaps or wage discrimination such as minorities. The sample restrictions also remove the most highly educated individuals with more than a bachelor's degree which could reveal a different return to education in determining a wage gap than those individuals included in the sample.

Using a Topel two-step estimator (Topel-2S), Topel instrumental variable model (Topel-IV), and an instrumental variable model developed by labor economists Joseph Altonji and Robert Shakotko (AS)[1] to evaluate return to firm-specific experience known as tenure and general job experience reveals that the return to tenure for women is smaller than for men but the return to general experience is greater for women than for men (Munasinghe et al. 2007). This effect is consistent between those with a high school education or greater than a high school education. The overall wage return, however, for one additional year of labor experience is higher for men than women. The implications drawn from these results are that women are less attached to their employers than their male counterparts due to the expectation of career interruptions for families or childbirth and, therefore, women concentrated on developing experience or skills that could be used across different employers or industries. This study also found that men tend to receive more company-provided training than women.

While these results seem to be consistent with the qualitative data regarding women's attachment to the labor force and return to tenure and experience, the study seems to ignore possible explanatory variables or considerations. For example, the study notes that men receive more company-provided training but it does not provide information on whether this training is requested by the men or if the training is

[1] The Topel models were developed by Robert Topel in his 1991 work "Specific Capital, Mobility, and Wages: Wages Rise with Job Seniority." Journal of Political Economy 9(1), 145-176. The Altonji and Shakotko model was developed in the study Altonji, Joseph, Shakotko, Robert, 1987. "Do Wages Rise with Job Seniority?" Review of Economic Studies 54, 437-459 (July). All three of these models attempt to determine the returns to tenure and general experience while addressing potential biases in the coefficients from job match heterogeneity and individual heterogeneity. These models are used extensively in the field of labor economics and are thought to provide more realistic results than Ordinary Least Squares estimation.

required as part of their position. The study also does not control for the types of industries or occupations in which men and women are working. Some positions, by their nature, lend themselves to developing more general experience as opposed to job or firm-specific experience. Nursing, construction, and teaching are some examples of industries which are more dependent on broader skillsets which could be transferred among several firms. Another weakness in the 2007 Munasinghe study is that despite the NLSY's data on the percentage of women who expect to experience career interruptions for childbirth or other family situations, the models do not whether the individuals' surveyed ever experienced career interruptions due to childbirth. A variable such as the fertility rate from the sample could be an important explanatory variable and could be related to the return to tenure and experience for women and men.

Another study seeking to explain the gender wage gap used quantile regression to decompose the gender wage gap in Spain into observable and unobservable components (Garcia et al. 2001). Information cited in the Garcia study indicated that, on average, women in Spain earn about 70 percent as much as men and the unemployment rate for Spanish women is double the unemployment rate for men (Garcia et al. 2001). This study hypothesizes that the wage gap is divided into two components: the observable components which are comprised of characteristics of men and women such as education, years of experience, and sector of employment, and the unobservable components such as different returns to skills which the authors consider a component of discrimination. The authors do note, however, that a number of

different studies are still able to detect that a substantial portion of the gender wage gap is due to higher returns to men of observable characteristics (Garcia et al. 2001).

Since decomposing the gender wage gap into explained and unexplained parts relies on the availability of unbiased estimates of returns to observable characteristics, the authors chose to use instrumental variables techniques to estimate the conditional quantile functions. The years of schooling variable is included in the function as an instrumental variable for education. The results indicate that the gender wage gap in Spain seem to be related to job characteristics such as whether it is a directing position, a public sector position, and the amount of autonomy to set working methods and pace. Characteristics of the worker such as the return to education seem to be less important based on the strength of the t-statistics in the quantile regression and the magnitude of the respective coefficients. The study also indicated that the wage gap increased with the pay scale. The wage floor of half of the best paid men in the sample was twelve percent greater than wage floor of half of the best paid women (Garcia et al. 2001). The wage floor for the best paid ten percent of men in the sample was about fifteen percent greater than the wage floor of the best paid ten percent of women. Another measure of an increasing wage gap along the pay scale is that the different returns to worker and job characteristics for the first quartile of the wage distribution resulted in wage gap of eight percent and these different returns explained about two-thirds of the full wage gap. For the ninth decile of the sample the different returns to characteristics generated a wage gap of thirteen percent and the different returns accounted for ninety percent of the entire gender wage gap (Garcia et al. 2001).

The results of the 2001 Garcia et al. study are consistent with the results of the 2007 Munasinghe study and do include more information on how the gender wage gap is influenced at different levels of the pay scale. The shortcomings of the 2001 Garcia et al. study for addressing the issue of the gender wage gap is that it does not factor in variables of labor force participation, fertility, or other worker characteristics that typically differentiate men and women. The study also depends on a survey conducted by the Spanish census which has a large sample of workers but appears to cover only one year of activity. Therefore, the study does not include any measure of change in the variables over time providing a static analysis. Around the world, the acceptance and prevalence of women in the workplace has increased over time and attitudes associated with women in the workplace have also changed. A static analysis would not gain any perspectives on the effects of time.

The final study reviewed to explain the gender wage gap used a simulated population to evaluate the decisions women make in regards to their families and their careers. The authors of this study note that fertility decisions generate differences between men and women as it relates to labor turnover rates and stipulate that it is these differences which account for almost all of the gender wage gap in the United States attributed to labor market experience (Erosa et al. 2002). Information cited in the study confirm that women have substantially more job interruptions and of longer duration as compared to men. Approximately 80 percent of female job interruptions were related to maternity while only one percent of male job interruptions were due to family conditions (Erosa et al. 2002). The hypothesis is that labor productivity develops

stochastically for men and women, and that individuals accumulate specific experience defined as tenure and general experience. These terms are considered different aspects of human capital. The difference between men and women is found in labor market decisions. When a woman leaves the labor force for fertility decisions, she loses all tenure and maintains the same level of general experience. As she remains out of the labor force, the woman does not gain any further general experience. There is also evidence that a female worker who interrupted her career in the past for fertility decisions have a higher probability of being separated from their job as compared to the average male worker.

In the creation of the simulated economy, the 2002 Erosa et al. study assumes that women make fertility decisions in three stages. The first stage is whether to give birth or not; the second stage is whether to work or not particularly after the child is born; and the third stage is for the women who chose to work the probability of upgrading job quality by changing jobs. Each stage has a utility value attached to it. Within the simulated economy, women are likely to go through fertility-related career interruptions as they age. As a result, female tenure and general experience are lower than that for their male counterparts. The authors also hypothesize that female labor productivity is lower from the beginning due to factors such as less effort when working, discrimination in hiring, promotion, or a firm's training policies. As women go through each fertility decision process and career interruption, the authors theorize that with each additional child, female labor productivity decreases. It is also noted that gender wage differences grow with age. In the simulated economy, the impact of interruptions

in a woman's career on tenure, general experience, and the quality of jobs the woman would likely hold reduces the female wage rate by 7.6 percent of the average male wage.

The conclusion of the 2002 Erosa et al. study is that fertility decisions generate gender differences with long-lasting implications on a woman's employment and wages and can account for almost the entire gender wage gap attributed to labor force experience. The study also shows that tenure has a small role on female labor force experience. This result could be a result of the preference shown in the 2007 Munasinghe study for women to develop general experience which could be transferred from one firm to another. One omission of the Erosa et al. study is that the simulated economy does not model any parental leave policies. The authors note that since fertility decreases with education, a parental leave policy could have redistributive effects for women across different education levels (Erosa et al. 2002).

Maternity Leave Benefits

The economic literature on maternity leave benefits primarily seeks to understand how the provision or lack of maternity leave benefits affect fertility decisions and labor force participation for women throughout their careers. In the United States, a national policy on maternity leave was developed much later than most countries. Family leave in the United States was formalized into law through the 1993 Family and Medical Leave Act. This act stipulates that employees, both men and women, are allotted a maximum of 12 weeks of unpaid leave to address family issues which can include maternity, extended illness, or caretaking of ill family members. Other countries such as Germany implemented maternity leave policies shortly after

World War II to improve infant mortality and the health of mothers, particularly in light of women's increasing participation in the labor force. As previously mentioned, most countries also provide some percentage of wages during maternity leave.

Paula M. Bracy and C.R. Winegarden (1995) evaluate the effects of maternal leave programs on infant mortality, labor force participation, and fertility rates. The sample used in this study includes 17 OECD countries with data over four time periods: 1959, 1969, 1979, and 1989. The ten-year gaps in the sample are due to data constraints but still allow for the variables to change over time. The analysis used a fixed-effects estimation with the demeaned variables of the length of maternal leave benefits, labor force participation of women in child-bearing years, infant mortality, as well as controlling variables for demographic differences, differences in religious observances, and the status of women in each country. The fixed-effects regression was selected in order to minimize omitted variable biases across countries.

The results of this study indicate that the marginal effect of an added week of maternity leave contributes to between 0.60 and 0.75 percentage points in the labor force participation rate of women between the ages of 20 to 34 (Bracy et al. 1995). It may appear to be contradictory that maternity leave increases labor force participation; however, the hypothesis is that the provision of maternity leave benefits allow women the choice of returning to work after childbirth rather than leaving the work force entirely because maternity leave also protects the woman's job while she is on leave. The 1995 Bracy study also notes that an additional week of maternity leave improves infant mortality through a decrease of 0.5 deaths per 1,000 live births. An added week

of maternity leave increases general fertility from 1.1 to 1.4 births possibly as a result of the positive relationship between maternity leave and labor force participation lowering the opportunity costs of women having additional children.

The shortcomings of the 1995 Bracy et al. study are similar to those shortcomings stated for the other studies considered. The latest time period is 1989 so that the analysis does not include the continuing progress of women in labor force. In addition, the study only uses four time periods with ten-year gaps between each time period. While this approach allows time to have some affect it does not provide a more consistent time trend which could capture more subtle shifts in the explanatory variables.

CHAPTER III.

DATA AND METHODOLOGY

Data

One of the goals of this thesis is to analyze the possible causes and the effects of maternity leave benefits on the gender wage gap using the most recent data available. As noted in Chapter II, previous studies sacrificed recent data for data completeness resulting in analyses which did not account for the progression of female participation in the labor force and social attitudes regarding that participation. A cohesive dataset from one source could not be found so a variety of data sources were used to construct a sample of 18 countries with observations from 2000 to 2010. All 18 countries are members of the Organization of Economic Cooperation and Development (OECD) and primarily represent middle to high-income countries in Europe, North America, Japan, and South Korea. These countries were selected because they had the most complete data available for all of the independent variables.

Table 1 lists all of the countries in the sample with the amount of maternity leave legislated, amount of pay provided during maternity leave, and the gender wage gap as of 2010. Information on maternity leave benefits was received from the International Labour Organization (ILO). Data on the gender wage gap was received from the OECD Employment Database and is defined as the difference between male median wages and female median wages divided by male median wages in the form of a

percent[1] which can be thought of as the percentage by which median male wages are greater than median female wages. In Austria, as an example, a gender wage gap of 19.2 percent indicates that the median male wage is 19.2 percent greater than the median female wage.

The remaining independent variables considered include female and male labor force participation, the number of females in non-agricultural employment, ratio of females to total enrollment of primary, secondary, and tertiary schools, fertility and mortality rates, real gross domestic product (GDP), the unemployment rate, population change, and the number of females in parliamentary positions. These variables were received from a variety of sources including the World Bank, the International Monetary Fund's World Economic Outlook, and the United Nations Educational, Scientific, and Cultural Organization (UNESCO). These data sources are cited in detail in the References section. Chapter V, Table 2 lists the independent variables included in the final model. Some of the independent variables discussed above were considered but eliminated due to their lack of significance in the fixed-effects model.

Hungary was initially included in the sample; however, the values for the gender wage gap widely varied such that the validity of the values were suspect. For example, in 2000 the gender wage gap in Hungary was 14.1 percent and in 2003 the gender wage gap fell to 1.5 percent. By 2010, Hungary's gender wage gap was 6.4 percent. The large variation of values in this cross-section over the course of only ten years provided

[1] Some countries had one year gaps in the gender wage gap data. A weighted average of the previous year's gender wage gap and female labor force participation was used to estimate the missing years. This method was used because it would provide estimates that were within range of the previous and future years' gender wage gap data.

several outliers which were skewing the modeling results. Therefore, Hungary was removed from the sample.

Australia, Denmark, and the United States were also removed from the sample. While these countries do have legislation allowing for maternity leave the maternity leave is unpaid. Therefore, these countries could not provide any additional information by being included in the sample. In Chapter V of this thesis, the possible effects of implementing a paid maternity leave for these countries is discussed and noted as an opportunity for further study.

Table 1. Sample Maternity Leave Benefits and Gender Wage Gap

Country	**Length of Maternity Leave**[1]	**Pay Received During Maternity Leave (Percent)**[2]	**Gender Wage Gap (Percent), 2010**
Austria	16 weeks	100	19.2
Belgium	15 weeks	79	7.0
Canada	17 weeks	55	18.8
Czech Republic	28 weeks	60	19.4
Finland	105 working days	70	18.9
France	16 weeks	100	11.2
Germany	14 weeks	100	20.8
Ireland	26 weeks	80	10.7
Israel	14 weeks	100	20.7
Italy	5 months	80	10.6
Japan	14 weeks	30	28.7
New Zealand	14 weeks	100	6.8
Norway	52 weeks	90	8.1
Republic of Korea	90 days	100	39.0
Slovakia	28 weeks	55	14.8
Sweden	480 days	80	14.3
Switzerland	14 weeks	80	18.5
United Kingdom	52 weeks	90	19.2

[1] For analysis, the length of maternity leave was converted into weeks for every country.
[2] Some countries provided two levels of pay during maternity leave. One level could be received prior to the birth and the next level provided after the birth or one level could be provided after the birth for some duration and the next level could be received for the last several weeks of maternity leave.

Methodology

A fixed-effects model was selected to analyze the effects of maternity leave benefits as well as the other independent variables described in the previous section on the gender wage gap. The fixed-effects is an appropriate model for this dataset because it has the ability to evaluate the relationships between the independent variables while holding the unobserved variables among either the time periods or the cross-section fixed. It was determined that given the short time period included in the sample that the unobserved variables would be relatively time invariant because changes in attitudes and customs regarding gender typically evolve more slowly than the sample time period would be able to detect. The unobserved variables across the countries or the cross-section would have a more immediate effect on the results of the model and could include factors of each country's culture and social conditions that are not included in the independent variables. Given these considerations, the analysis in this thesis uses a fixed-effects model which holds the period effects fixed.

The dependent variable of the gender wage gap and most of the independent variables were transformed into natural logs to linearize the data and to express the results of the model in terms of elasticities. The fertility rate and the unemployment rate were included in the model in levels because these variables are already expressed as rates.

Equation 1 is the equation estimated by the fixed-effects model. The equation was estimated with period weighted robust standard errors and the variables names listed for each β are included in Table 2.

Equation 1. Fixed-Effects Model

LOG(Gender Wage Gap) = -7.15542202323 + 2.1215977793* β1 - 0.0056988404933*(B2*β3)
+ 0.151890907681* β4 + 0.537238761213* β5 + 1.24178788371* β6 + 1.26237508134* β7
- 3.14083741992* β8 - 0.00147325614483*(β9*β10) + 0.0178177941367* β11 + 0.0227681686744* β12
- 0.10262378153* β13 + 0.00296158145137*β14 - 0.010128899322*β15+ Period Fixed Effects

The model uses two interaction terms. One interaction term is the product of the natural log of the female labor force participation and the natural log of female employment in non-agricultural sectors. These variables are interacted because the level of female labor force participation has a conditional effect on the number of female employees in that the number of female employees will be higher with higher levels of female labor force participation. These variables were demeaned in that the mean of the variable was subtracted from each value. Demeaning the interaction variables does not substantially change the overall results of the model; however, it eases the interpretation of the interaction and reduces the possibility of multicollinearity. The interpretation of the coefficient on demeaned interaction variable is now shown as the effect of female employment conditional on the average level of female labor force participation.

The second interaction term is the product of the demeaned duration of maternity leave and the demeaned percentage of pay received during maternity leave. As with female labor force participation and female employment, these two variables are conditional on each other so that the coefficient of the interaction term indicates the effect of maternity pay conditional on the average duration of maternity leave.

All of the independent variables with the exception of the fertility rate and the three education variables are kept in their current time periods. The fertility rate and

the education variables are lagged by one period in the model because these variables have a longer lead time before affecting the dependent variable. For example, a woman who has had a child in the previous year would be taking that decision into consideration when deciding whether to participate in the labor force and search for employment. In the same way, an individual's level of education in previous years would have an effect on the current time period's wage and employment. The variables contained in the current time period are effects that could immediately effect an individual's employment and wage decisions. A lower unemployment rate in the current time period could serve as a signal to an individual considering a return to the labor force as could the number of female employees in non-agricultural industries.

CHAPTER IV.

RESULTS

Table 2 lists the independent variables, their coefficients, standard errors, and the t-statistics. Table 3 lists the values for the R-squared, adjusted R-squared, F-statistic, and other measures used to diagnose the validity of the model.

The variables of primary concern are the employment interaction variable and the maternity leave interaction variable. As noted in the literature in Chapter II, a female's participation in the labor force and the availability of employment for that female is suspected to be one of the main drivers of the gender wage gap. The employment interaction variable in the model is statistically significant at the one percent level. The negative sign of the coefficient on the employment interaction variable indicates that the combination of the female labor force participation and female employment has an inverse relationship with the gender wage gap. This means that as the literature expected, an increase in female labor force participation and female employment would result in a decrease or narrowing of the gender wage gap.

The maternity leave interaction variable is also estimated to be significant at the one percent level. As with the employment interaction variable, the negative sign on the coefficient of the maternity leave interaction variable indicates an inverse relationship between the combination of maternity leave and maternity pay with the

gender wage gap. This suggests that an increase in the duration or amount of pay provided during maternity leave would result in a narrowing of the gender wage gap.

Table 2. Fixed-Effects Modeling Results

Dependent Variable: LOG(GAP)
Method: Panel Least Squares
Sample (adjusted): 2001- 2010
Periods included: 10
Cross-sections included: 14
Total panel (unbalanced) observations: 131
Period weights (PCSE) standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.155422	13.93150	-0.513615	0.6086
β1 = LOG(Male Labor Force Participation)	2.121598	1.618771	1.310622	0.1928
β2*β3 = Demeaned Female Labor Force Participation*Demeaned Female Employment	-0.005699	0.001507	-3.782015	0.0003
β4 = LOG(Percent of Females in Parliament)	0.151891	0.124790	1.217169	0.2262
β5 = Lagged Fertility Rate	0.537239	0.180419	2.977731	0.0036
β6 = LOG(Lagged Female Primary Education)	1.241788	2.814814	0.441162	0.6600
β7 = LOG(Lagged Female Secondary Education)	1.262375	0.790833	1.596260	0.1134
β8 = LOG(Lagged Female Tertiary Education)	-3.140837	6.114072	-0.513706	0.6085
β9*β10 = Demeaned Maternity Leave*Demeaned Maternity Pay	-0.001473	0.000423	-3.480485	0.0007
β11 = Unemployment Rate	0.017818	0.016366	1.088717	0.2787
β12 = Demeaned Female Labor Force Participation	0.022768	0.013466	1.690766	0.0938
β13 = Demeaned Female Employment	-0.102624	0.037226	-2.756769	0.0069
β14 = Demeaned Maternity Leave Duration	0.002962	0.004129	0.717279	0.4748
β15 = Demeaned Maternity Pay	-0.010129	0.003459	-2.928190	0.0042

While the employment interaction variable indicates that the combination of female labor force participation and female employment decreases the gender wage gap, the estimated model indicates that male labor force participation could potentially

increase the gender wage gap. However, male labor force participation is not shown to be statistically significant at the one percent, five percent, or ten percent level. The variable that seems to contribute to the gender wage gap more substantially than the other independent variables is the lagged fertility rate. As shown in Table 2, the lagged fertility rate is statistically significant at the one percent level. The coefficient's sign for the lagged fertility rate indicates that the fertility rate from the previous year contributes to the current year's gender wage gap. As noted in Chapter II, women typically expect to be out of the labor force at some point in their careers for fertility decisions. Part of the fertility decision faced by women is whether to return to work or to leave the labor force completely after having a child. With a higher fertility rate, more women would be considering that decision which could result in a greater number of women choosing to leave the labor force. As shown with the employment interaction variable, female labor force participation and female employment does counteract the change in the gender wage gap. Should more women choose to leave the labor force as an indication of a higher fertility rate, the gender wage gap would be expected to increase.

None of the three education variables included in the model are statistically significant at the one, five, or ten percent significance level. One possibility for this result could be that the education variables measure the percentage of women attending the three levels of schooling. A more accurate measure to use would be educational attainment rather than attendance. The completion of various levels of education would contribute directly to a woman's experience and labor force

participation. The lack of statistical significance of the education variables could also indicate the lower returns to education for women as described in the 2007 Munasinghe study and the 2002 Erosa study.

The adjusted R-squared in Table 3 shows that the independent variables explain about 47.5 percent of the variation in the gender wage gap. The F-statistic of 4.4466 indicates that the null hypothesis of the slope coefficients being equal to zero can be rejected at the one percent significance level.

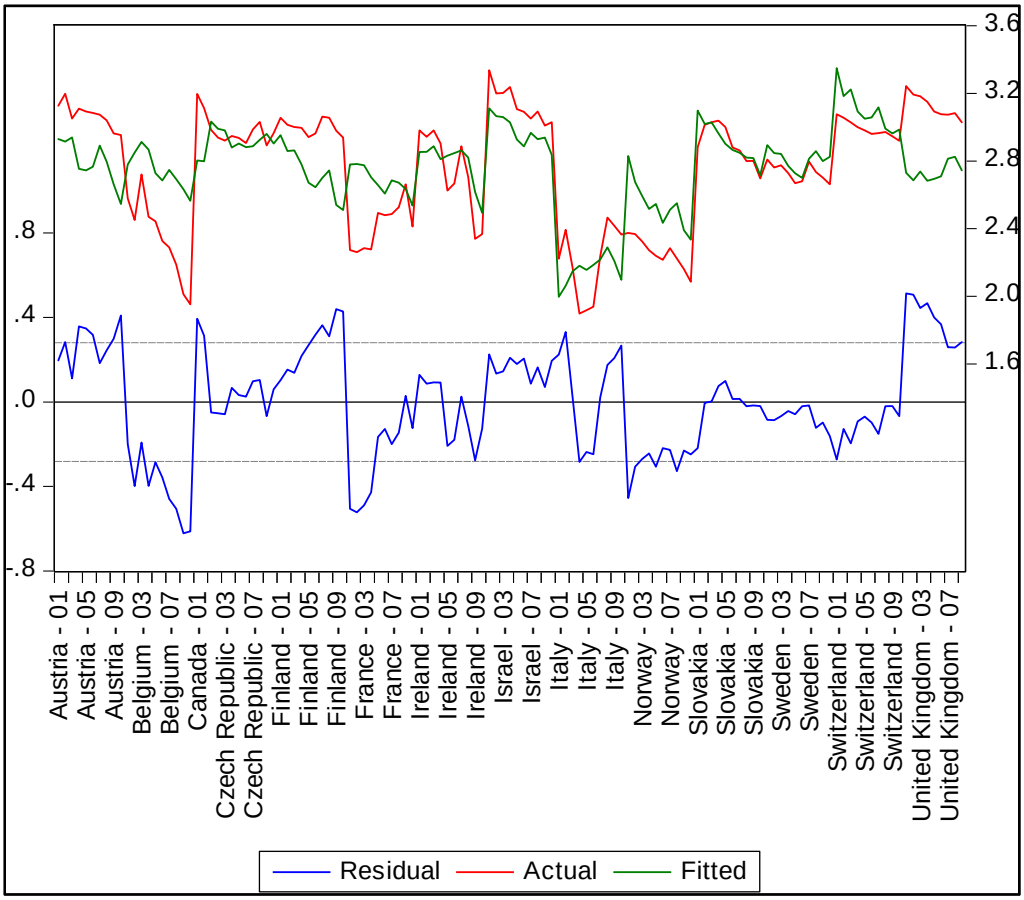
Table 3. Fixed-Effects Modeling Diagnostics

Effects Specification
Period fixed (dummy variables)

R-squared	0.475285	Mean dependent var	2.761862
Adjusted R-squared	0.368398	S.D. dependent var	0.353600
S.E. of regression	0.281018	Akaike info criterion	0.457283
Sum squared resid	8.528882	Schwarz criterion	0.962089
Log likelihood	-6.952040	Hannan-Quinn criter.	0.662408
F-statistic	4.446630	Durbin-Watson stat	0.173989
Prob(F-statistic)	0.000000		

A final evaluation of the model's validity is shown in Figure 1 which illustrates the actual values of the gender wage gap, the fitted values of the gender wage gap resulting from the model, and the residuals from the model. The fit of the fixed-effects regression is better for some countries over others; however, the overall fit indicates that the model does have some explanatory value.

Figure 1. Actual Gender Wage Gap Values and Fitted Regression Values



CHAPTER V.

IMPLICATIONS AND FURTHER RESEARCH

The focus of this thesis has been to discover the effect of paid maternity leave on the gender wage gap with the determination that the sign and magnitude of the coefficients on the maternity leave benefit variables would indicate that effect on the gender wage gap. As shown in Table 2, the maternity leave interaction variable is statistically significant and the coefficient is negative. This indicates that paid maternity leave decreases or narrows the gender wage gap; however, the coefficient of the maternity leave interaction variable is so small at -0.001473 that a marginal change in the amount of leave or portion of pay received during maternity leave would narrow the gender wage gap by a negligible amount.

Similarly, the model described in Chapter IV shows that the combined effect of female labor force participation and female employment also narrows the gender wage gap. Despite its statistical significance, the marginal change in the employment interaction variable either through female labor force participation or female employment would also have a negligible effect on narrowing the gender wage gap as indicated by the small coefficient of -0.005699 (see Table 2).

The variable in this fixed-effects model which could have the most impact on the gender wage gap is the fertility rate. The coefficient for the lagged fertility rate

indicates that a decrease in the fertility rate by 0.537 would reduce the gender wage gap by one percent. This finding is consistent with the literature described in Chapter II.

Through the course of a woman's career, fertility decisions will be considered, and depending on a woman's preferences, may result in absences from work and a loss in work experience compared to the woman's male counterparts. Policies which would decrease the fertility rate may not be desirable due to other social repercussions such as a country not being able to maintain a level of replacement population or the problems found when a smaller working population must support a larger elderly dependent population. The alternative to changing the fertility rate would be to encourage and equip all adult women to participate in the labor force and to grow the national economy such that women have employment opportunities.

For those countries without a paid maternity leave, such as Australia, Denmark, and the United States, the results of this fixed-effects model could indicate that providing pay during maternity leave instead of unpaid maternity leave may positively affect the gender wage gap rather than providing employers a disincentive to hire women. As discussed in the literature, paid maternity leave actually reduces the amount of time women spend out of the labor force due to fertility decisions with the guarantee of a job upon return which allows women to maintain their tenure experience or human capital in addition to their general experience. While the overall effect of paid maternity leave in these countries would likely be minimal, the combination of paid maternity leave and other incentives for women to remain in the labor force could bring the gender wage gap closer to zero.

Some considerations for future analysis would be to test these results and variables across a wider variety of countries and time periods. Particularly for countries with a longer history or cultural background of low female labor force participation rates, the effect of paid maternity leave may not be as statistically significant if the cultural values are strong enough to dilute the effects of maternity leave. Another avenue for study could combine the provision of maternity leave and paternal leave. The provision of paternal leave is becoming more common among the developed countries and social acceptance of men leaving the labor force to care for children is also becoming more accepted. As a subset of men become more active caretakers of children, it would be interesting to determine if the wage structure of men who are the primary caretakers of their children differ from the wage structure of those men who more traditionally spend very little time out of the labor force for family reasons. Perhaps a combination of encouraging women to participate in the labor force and encouraging more men to become the primary caretakers in the family could bring the gender wage gap closer to zero.

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