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Are there Gaps in Swedish Gender Wage Gap Research? A Meta-Analytical Approach

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Abstract: The persistence of "unexplained" gender wage differentials has necessitated an expanding body of research attempting to explain their lasting continuity. This is true of research conducted on the Scandinavian country of Sweden, which is widely regarded for a social and institutional commitment to gender equality. This paper empirically probes the existing body of gender specific wage research asking: How can research findings on the gender wage gap in Sweden be assessed and brought into a dialogue on an empirical level? The paper addresses this question by employing a meta-analytical framework using data extracted from studies which present a regression based estimation of the national gender wage gap in Sweden. This allows for an empirical analysis of how research parameters, the presence of specific variables and possible biases may be reflected in national gender wage gap estimates as well as illustrating whether research generally promotes the idea of a falling wage gap. The constructed dataset includes thirty two wage gap observations derived from studies conducted on national data from 1968 to 2013, with the inclusion of moderator variables indicative of research specifications. Empirical analysis suggests that controlling for occupational composition as well as work type, the type of wage gap decomposition, and the presence of limiting proxies all have strong effects in shaping Swedish wage gap estimates.

Key Words: Gender Wage Gap, Meta-Analysis, Research Methods, Discrimination, Occupational Segregation.

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1. Introduction, Aim and Outline

"In one case out of a hundred a point is excessively discussed because it is obscure; in the ninety-nine remaining it is obscure because it is excessively discussed." — *Edgar Allan Poe* [1]

When economic and social science researchers address and discuss gender wage differentials by utilizing established measurement frameworks, they aim to understand how and why a level of inequality continues to exist within a country. Moving beyond the application of this direct method, the approach taken by this thesis may appear alternative at first glance, but the paper's ultimate aim is directly at the heart of gender wage research. Rather than adding another study to the collective annals of Swedish or international gender wage gap estimates, this thesis aims to analyze and synthesize an existing body of research surrounding gender based wage inequality in Sweden, breaking previous studies down beyond a classic narrative analysis and instead extracting study data into a directly comparable framework.

With this in mind, the thesis will work as a theoretically grounded quantitative analysis, rather than as a traditional research or a literature review, with the goal of taking the wealth of existing research and situating it within a structure of quantifiable assessment. Using established methods of quantitative assessment in harmony with a diligently researched and coded original dataset, as well as knowledge of the theoretical explanations researchers have utilized when accounting for gender wage differentials, this paper attempts to build a layered perspective on an evolving field. The expected outcome of this study is the disentangling of a body of existing research as well as the possibility of informing the direction of the research of gender wage differentials in Sweden. In this way, while not exploring national data directly, or attempting to influence public policy implicitly, the paper can still serve as a refocusing of existing research and provide a jumping off point when thinking about new studies of national gender wage differentials in Sweden in the future.

Specifically, there are a number of questions about the research of gender wage differentials in Sweden that this thesis aims to answer: Are there specific characteristics and measurement specifications common to gender wage studies that may have a noticeable effect on research outcomes? Have predictions of decreasing or stagnating wage gaps been substantiated in the eyes of researchers? Can patterns be seen in the gender composition of researchers and the

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[1] Edgar Allan Poe, "The Rationale of Verse", *Southern Literary Messenger*, October 1848, 14:577-585

outcomes of research findings? The primary mode for the paper's investigation will be meta-regression analysis (MRA), often called the research of research, which is a method that attempts to break down previously established findings in a specific field of study and use them for their power in explaining variation within previous research.

On a basic level, meta-analysis works under the condition that its "dependent variable is a summary statistic . . . drawn from each study," in this case a regression based estimations of the national gender wage gap in Sweden, "while the independent variables may include characteristics of the method, design and data used," extracted and constructed from the same studies (Stanley, 2001, p.132). This will be achieved by running a multivariate linear regression on the estimated wage gaps that have been reported in previous studies on representative samples of the Swedish national population, excluding estimates regarding individual firms and regions for their narrow focus. In this meta-analysis the question of why gap estimates differ from study to study is explained by measurement techniques, independent variable and model choices, while a time trend is included to answer whether the research climate promotes the view of decreasing gender wage gap findings. Whether the gender composition of researchers exerts any significant effect on the estimated gap is also explored and considered within the model, as it may suggest a common bias in research.

Before discussing the results of the meta-analysis, the paper will begin by presenting a background on both the history of gender wage differentials and female labor participation in Sweden as well as exploring the development of theories seeking to explain differences in pay between men and women. The paper will then go on to illustrate how meta-analysis has worked as a tool for answering economic questions regarding inequality in the past. This will be followed by an illustration of the particular meta-analytical framework adopted by this study and its unique adaptation to Swedish wage gap research. This framework will lead directly into the paper's methodology, which includes justifications and an in depth discussion of the research selection process as well as the use of specific moderating variables included in the empirical model. The final step will be an empirical exploration and discussion of Swedish gender wage gap research using meta-regression analysis. With the aims and approach of the thesis established, it is essential begin by providing some background and context.

2. Background and Previous Research

The investigation of the background and research that informs this study works as a two stage process. Initially, it is essential to break down the shape and character of existing research on gender wage differentials on a general level. Further, this section will also reflect on the adaptation of this research by studies carried out on Sweden, noting the specific characteristics which make the Swedish labor force a uniquely attractive point of study for researchers. Beyond a descriptive presentation, an overview of the field of study will allow for an illustration of the theoretical framework that researchers rely on when performing wage calculations, which works to highlight explanations for alternate measurement techniques and helps motivate the explanatory potential of a meta-analysis. Additionally, it is important to break down previous research done in the field of meta-analysis, including previous studies conducted on gender wage gap research findings internationally, which will lead directly into the paper's larger theoretical framework. These two pieces work to set the contextual and theoretical groundwork and make clear the ultimate aims of this line of research.

2.1 Swedish Gender Wage Gap Estimates in Perspective

"In general men and women are not and never have been paid the same wages." - Stanfors et al., 2013, p. 48.

A wealth of historical research has been conducted on the persistence of a gender wage gap across the globe. Even so, as unexplained gender wage differentials have not gone away, this field continues to promote new research and innovation. While wage discrepancies only make up one part of the larger study of historical inequalities between men and women, the notable persistence of pay differences suggests that the topic remains a relevant point of study for researchers. Sweden, with its internationally recognized policies on worker solidarity as well as gender equality, has no doubt served as an area of particular interest for economic researchers in the past and present, stemming from both attempts to look at its successes with wage equality as well as a part of a direct focus on policy. Indeed, American economist Francine Blau (1998) has highlighted an international perception of "Sweden's long-term commitment to attacking traditional gender roles" throughout the twentieth and twenty first century (p.22). In this way, a number of formative factors have led Sweden to be an attractive nation for scholars to explore the role of gender in wage comparisons.

One of the primary factors that have made Sweden a vital site for gender and wage studies is an institutional tradition of labor representation, which exists in addition to the country's widely acknowledged attention towards gender role equality. Indeed, solidaristic wage policies notably appeared from the efforts of the Swedish Trade Union Confederation in the 1950's. Even beyond a culture of solidarity, the northern nation has seen the passing of an Equal Pay Act passed in 1979 as well as an Equal Opportunity Act in 1980 in addition to the elimination of gender specific wage setting by 1960 (Rosén & Lindblom, 2007; Svensson, 1995). In addition, interaction between unions and the pervasiveness of collective bargaining as well as direct expectations of high labor force commitment across gender have helped insure wage gap reductions with a far more public commitment and effectiveness than with implementation of similarly motivated social policies in many other developed countries (Andersson 1995; Polachek, 2014; Svensson, 1995). When looking at the reduction of the gender wage gap in Sweden it is important to look beyond public policy to see how change may have emerged as a reaction to institutional conditions.

Aside than the influence of public policy, researchers have suggested that the institutional expectation of high levels of women's labor participation in Sweden has been a force in reducing the gender wage gap. Historically, women and men both contributed productive activity and labor participation, but the initial arrival of industrialization and more standardized paid labor in countries like the United States and Sweden in the late nineteenth century saw a divergence between men and women in both work and compensation (Stanfors, 2014). In the early part of the twentieth century shifts in female employment may have had a significant impact on reducing the gender wage gap as Svensson (2003) argues wage gap reductions have followed periods increasing participation rates. This is particularly true of young women beginning in the 1920's, who along with receiving expanded access to public education often opted instead of remaining in the domestic center, to enter jobs in public positions such as education and healthcare and within the service sector. Even as labor force participation increased and gender wage differentials began to compress there were, and continue to be, distinctions between the work of men and women, as by the 1960's there was a clear segregation between the public and private sectors (p. 379). The large concentration of women in the specific occupations and sectors is addressed in section *2.3*, which examines the specific considerations researchers address when exploring the wage gap in Sweden.

Even with long standing policies of equality as well as a strong labor market presence for women in place, there is still evidence of a persistent gender based pay differential, as Sweden's National Mediation Office, Medlingsinstitutet, has estimated that in 2013 that there continued to be an 11.5% wage differential between men and women with at least 5% of this differential remaining unexplained when standardizing and decomposing for differences in the extent of work, whether in the public and private sector, industrial and occupational categories as well as measurement issues (p.21). While this estimation might be one of the most publically available wage gap findings, academic empirical wage gap analysis continues to produce wildly volatile results under divergent methods of calculation.

Table 1: Swedish Mediation Office Results of regression based report of unexplained national female to male wage differentials by occupation and sector (in percentages).

Wage Differential:	2008	2009	2010	2011	2012	2013
All Sectors	-5.8	-5.5	-5.5	-5.3	-5	-5
Private Sector	-6.9	-6.8	-6.9	-6.5	-6.1	-6.2
Manual Laborers	-3.1	-3.4	-3.5	-3	-2.3	-3.2
Professionals	-9.3	-8.9	-8.9	-8.6	-8.6	-8
Public Sector	-3.1	-2.9	-2.7	-2.7	-2.6	-2.4
Municipalities	-0.9	-0.5	-0.4	-0.5	-0.6	-0.4
County Councils	-5.7	-5.5	-5.3	-5.1	-4.9	-4.4
State	-5	-5	-4.7	-4.5	-4.2	-4

2013: Swedish Mediation Office: Data from Mediation Office National Wage Statistics

While researchers largely agree that there remains a noticeable gender wage gap even in Sweden, calculations vary quite widely from study to study. Compared to the "unexplained" gap presented by the Swedish Mediation Office, academic estimates published in journals and books vary along a percentage spectrum from above 30% to percentages in the low single digits, as there is a tendency for percentages to change over time and vary across the sectors they are measured within (Johansson et al., 1998; Kumlin, 2007; Grand, 1991; Rosenfeld & Kalleberg 1990). Even further, Blau (1998) points out that there have been periods of upwards and downward fluctuations in overall gender wage gaps, particularly in the early 1990's, owing at least partially to the breakdown of solidarity wage bargaining policies going into the 1980's and 1990's (p. 21). This is further substantiated by Andersson (1995), who suggests that "since the

eighties there has been a general tendency to decentralize wage bargaining and contracts to the branch, and even to the firm, level," which may have worked in tandem to harm overall worker protection against general inequality, as well as directly reducing momentum towards gender specific wage equality (p. 3). In this way, instances of social upheaval or the slowing of change prevent or, at least, complicate the path towards equality and can tie researcher findings to their historical time period.

With this national and academic interest in mind, consistent variation in the calculated gap as well as the differing methods from which the gap is derived works to motivate this study's meta-analytical approach. It must be remembered that the primary data that will be addressed within this thesis is likely not the "true gap" itself, under the assumption that it could be never fully extracted or quantified, but the methods and results uncovered by researchers which have been reported in academic studies, reports, books or published in academic journals. Research in the field continues to evolve, but this thesis, at its most stripped down level, provides a strong outline and introduction to the collective efforts within the field to date. With this in mind, it is still essential to break down previous Swedish and international research which seeks to explain gender wage differentials, while it is also critical to examine the theoretical factors which are taken as indications of gender wage discrepancies. Understanding the basic framework with which estimates are derived helps determine the types of variables that will be motivated in the paper's meta-analysis.

2.2 Wage Gap Studies and their Theoretical Considerations

"Real differences in productivity and pure wage discrimination can exist simultaneously" – Johansson et al., 2005, p. 34.

While many economic and social science researchers as well as social commentators argue that the persistence of a gender wage gap remains inarguably visible and, even further, attributable to specific institutional and individual factors, it is essential to understand how researchers have attempted to uncover where portions of estimated wage differentials can emerge from. Beyond discrimination there is a complex set of processes, expectations and selections both on the side of the female workforce as well as its sources of employment. After all, social as well as economic upheaval has been a common theme of the twentieth century and has continued at an even more rapid rate over the last fifty years. Attempting to uncover the effects of individual, social and

institutional "residuals," a considerable body of research has gone into making the "hidden" forces in pay differentials more transparent, breaking down the wage gap into explainable and unexplainable factors. Even with the gender wage gap an obvious and widely acknowledged phenomenon, discrepancies in overall wages are only one angle of understanding the differences that men and women experience on a day to day basis.

When looking into traditional explanations for the persistence of gender based wage differentials the most fundamental and often repeated explanation is that women are expected to lose productive time training and working along their career paths because of time spent outside of the workforce, which may lead to a reduction in initial investment in human capital or personal productivity and promote occupational discrimination or even voluntary efforts to find lower paying but more flexible jobs (Hartmann, 1981; Mincer & Polacheck 1974). Gender wage gap studies have attempted different methods to standardize for expected differences in the factors of human capital accumulation, but generally end up with some remaining unexplained residual. At the basic level, many researchers agree that, "wage discrimination is the wage differential that remains when all factors that determine wage have been controlled for," though it is likely that other systematic and occupational as well as measurement factors contribute to this residual as well (Rosén & Lindblom, 2007, p. 6). While wage gaps can be standardized for better understanding, it would be a fool's errand to claim a full explanation as the persistence of study to study variation reveals.

While discrimination and segregation as broad terms give a sense of intentional, if not directly enforced exclusion, these forces can also indirectly emerge from the existing social and institutional climate that individuals live under. In this way, there is a question of how to separate the forces which work to enforce discrimination and those which are being further exerted because of attitudes enforced by existing segregation and discrimination. For example, the persistence of wage gaps might be attributed to the composition of workplace, as a number of studies suggest that a woman is far more likely to earn more if she works in a "male" dominated field (Albrecht et al., 2003; Medlingsinstitutet, 2013). Even so, the occupational "sorting" process continues to steer many men and women into specific fields of study early on and down specific career and lifestyle paths. This is reflective both of the directly inhibiting forces of discrimination, but also institutional factors such as expectations about educational attainment as

well as expectations about future domestic duties. In attempting to account for these different intricacies, it must be noted that not every study is in agreement in determining the factors they utilize to help explain the gender wage gap.

With the constant theorizing about the roots of the gender wage gap, many studies look to favor a specific explanatory angle which fits into a constructed framework. Looking at wage gap perspectives from a human capital angle, it might be suggested that there would be no wage gap if all factors that could limit productivity differences were accounted for, though this ignores the presence of segregation and discrimination (Jacobsen, 1988, p. 322). There may also be direct interaction between the overall national states of income inequality which can systematically expand gender wage gaps (Blau 1998; Andersson 1995). This helps affirm the choice of Sweden as a point of study as the income inequality within the country has been internationally recognized as lower than many other leading economies, particularly the United States, which has been the focused of previous meta-analyses. In contrast to productivity and policy based explanations, the central sociological argument has been that there continues to be obvious and observable instances of job segregation which prevent women from achieving high status positions and therefore lower the overall wage balance (Johansson et al., 2005). The products of these disagreements can be seen as different frameworks are adopted. With these disagreements as to the nature of the gap, it is important to take stock of the methods common to researchers working in this evolving field of study.

Discovering how to control for different potential variables has formed a major part of discrimination and wage gap investigations. One of the most well-known elements of traditional gender wage gap studies is the presence of an Oaxaca-Blinder decomposition technique. This technique is used to decompose a differential factor like a wage gap between two groups by estimating separate equations for each group into those parts which can be explained by differences in characteristics between the groups and the parts which cannot be explained by these differences (Oaxaca, 1973; Blinder, 1973). Emerging in the 1970's, conceived separately by economists Ronald Oaxaca and Alan Blinder as a general way to address and qualitatively express inequality, the decomposition has been applied to issues of racial and gender inequality as well as discrimination, having even been accepted as evidence in court cases the United States (Ashenfelter and Oaxaca, 1987). This method has become the standard decomposition in gender

wage studies, though alternatives and expansions have appeared in the intervening years. By factoring in job characteristics, such as type of occupation and industry as well as variables for human capital accumulation like experience or education, a wage gap decomposition attempts to explain the difference in wages between men and women through that can be explained by differences in these variables and the wage gap that would remain even if they were corrected for (Stanley & Jarrell, 1998, p. 949). Through these separate male and female equations they "explainable" wage gap is presented in a standardized form, but there usually remains a residual which cannot be explained by the wage variables factored in by researchers. This is presented as the unexplained wage gap, and while it is often associated with discrimination, it likely represents a complex set of processes.

It has been difficult for researchers to conclusively pin down whether the residual of the wage gap stems from direct discrimination, or is a result of indirect social, economic and institutional "preferences." Indeed, even with major human capital factors thought to be accounted for in empirical models there often remains a substantial residual highlighting that there is clearly still an "unequal" labor market, or that at the very least market systems continue work with a disadvantage towards women. In addition to factors faced within the labor market, Johansson and Katz (2003), argue "the acquisition of human capital that accounts for part of the gender wage differential" can "itself influenced by experience or expectation of discrimination," affecting the choices individuals choose to make when determining future labor market participation (p. 343). Indeed, the development of human capital for any individual is informed by factors which include education, experience, occupational selection age and other factors which contribute to an individual's perceived labor market value. Alternatively, if an individual feels they will not earn or get the full potential return on their investment they may choose not to make that investment (higher education, training and other forms of human capital accumulation) in the first place. In this way, the residual represents more than just discriminatory factors, but a more interconnected and pervasive process. It is essential to further explore how particular interconnected processes continue to affect wage differentials in Sweden, and how this might be reflected in gender wage gap estimations.

2.3 Occupational Considerations in Swedish Gender Wage Differentials

There are a number of considerations to make when addressing gender wage differentials in Sweden. One factor increasingly prevalent in studies on gender wage differentials, particularly in Swedish research, is the impact of gender composition within occupations and how this affects the overall distribution of pay.

If men are more likely to be concentrated in higher paying positions, which appears to be the case unilaterally, it is clear that this promotes an extension of wage differentials as well as inhibiting entry for future female participants. Beyond just a barrier of entry, Albrecht et al. (2003) argue that the persistence of glass ceiling effects is a contributor and extender of Sweden's private sector income differences. This suggests that in addition to difficulties entering a field, the higher up the status grade women make their way in male dominated jobs the larger the wage differential they will see with their peers. The Swedish Mediation Office (2013) reports, that professional women working in the private sector remain the highest earners within their gender, while alternatively experiencing the highest wage gap, as displayed in *Table 1*, suggesting that women likely must enter a non-equitable employment situation if they hope to be well paid comparatively (p. 13). In this way, studies looking to provide an accurate picture of the gender wage gap, particularly in Sweden, would likely find it essential to attempt to control for differences in occupational composition.

When examining the persistence of occupational segregation it is essential to note that Sweden's workplace gender division actually remains more pronounced than in many other industrialized countries (Melkas and Anker, 2007). Further, in comparison to other countries Sweden's "female" occupations appear even more radically "feminized," with women making up over 90% specific of occupations like nurses, home helps and dental assistants, often concentrated in lower status positions within a workplace (p. 354). In addition to being steered away from sectors with the most pay potential, in Sweden "women are much more likely to be concentrated in low-status occupations," within fields that have gender variation (p. 357). With this in mind, it is very much the case that interconnected processes and expectations of female labor force participation can help to determine wage gap residuals far more than just the presence of employer discrimination. While wage gaps may fall and occupational composition may shift, this is likely to happen generationally, and not as an outcome of immediate policy changes. The

question of differing occupational categories for women and men also leads to a discussion of work status differences between men and women.

In addition to the occupational and sectorial split between men and women in the private and public sectors, it is also essential for modern researchers to consider the split between full and part time work in Sweden. While Sweden has been noted for its generous parental leave policies, this has not eradicated working differentials between men and women. Stanfors (2014) notes the tendency for Swedish women to opt for part-time work after the birth of children, especially after the 1960's when a "massive breakthrough in part time work and an increase in temporary absence from work" shifted the direction of female labor force participation (p. 526). In this way, the period which saw the largest labor market participation increase for women, did not see an evening out of the total market work of women, owing at least partially to continued expectations of domestic work. Indeed, Melkas and Anker (1997) argue that even in the late 1990's women in Sweden were still reported as being responsible for two thirds of all unpaid domestic work, making the incentive for part time work a relevant choice (p. 341). In this way, when thinking about these obvious choices individuals face when considering career paths, previous studies have attempted to control for this in their analysis.

Controlling for labor market "selection bias," as it is often referred to, is the attempt at adjusting for how an inherently unequal labor market affects the sample population in gender wage studies (Stanley and Jarrell, 1998, p. 963). This can be reflected in market labor non-participation as suggested by Heckman (1979), who influentially argued for the addition of controls for non- market work when formulating wage equations. This may seem less relevant in the Swedish case, as labor market participation is expected unilaterally, but it does highlight the need for studies to understand how a particular sample might be not be fully illustrative of the larger picture. The prevalence of part time work and occupational segregation ensure that general reporting, even with human capital differences, of the gap are not fully illustrative. With this in mind, this thesis will include independent variables to examine how the addition of these controls might have an influence on wage gap calculations. Before this, it is important to look at the development of the framework that aims to illustrate this effect.

2.4 Meta-Regression Analysis

While this study will attempt to reveal the great synergy that can be drawn between the fields of meta-analysis and economic research, the meta-analytical technique actually has roots that stretch across any single academic discipline. Indeed, regression based meta-analysis initially rose to prominence primarily in the fields of medical research as the extent of diverging studies necessitated the creation of a system to get to raw data when published results seemed completely disparate. In recent decades meta-analysis has become an expanding fixture of not only the medical profession, but in social sciences as well, with an emphasis in economic issues becoming more pronounced and visible (Hunt, 1997). In fields like economics and the social sciences, where studies continue to build off of one another, it makes sense that such an organizational and conceivably enlightening practice would take favor.

The flexibility of meta-analytical application in economics has been noted by previous researchers working directly within modern and historical economic research. Early economic applications of meta-analysis included a breaking down of research on minimum wage, returns to education and union wage premiums (Ashenfelter et al., 1999.Card & Krueger, 1995, & Jarrell & Stanley, 1990). Recent studies have been published in reputable journals such as the *Journal of Human Resources,* as well as The American Economic Association's *The Journal of Economic Perspectives* and *American Economic Review,* in addition to a number of other peer reviewed academic sources and books. Even further, organizations like the American Statistical Organization recommend the use of meta-analysis, even for studies more limited in scope than broad medical trials (Hunt, 1997, p. 96). With this in mind, links have already been established by meta-analysts looking at issues of wage inequality. In fact, the analysis conducted in this thesis is in direct conversation with previous meta-studies run on gender wage gap research in other countries. Other studies have laid a groundwork including a 1998 study and a 2004 follow up by T.D Stanley & Stephen Jarrell on United States gender wage gap estimates, as well as a 2005 international meta-analysis by Weichselbaumer and Winter-Ebmer on global gender wage gap estimates. These studies have proved fruitful in their attempts at getting to the heart of gender wage research and provide inspiration that such a study on Sweden could yield informative results about the outcomes of gender wage gap studies.

In the case of the United States, Stanley & Jarrell (1998) found that gender wage research in the U.S. indicted a steady fall in the overall gap, while it highlighted the importance of specific controls in research, such as level of workers experience and specifics of wage measurement metrics (p. 967). While these conclusions speak directly to the shape of gender wage research, serving as a critical reevaluation of the field, the study also gave a strong descriptive picture of gender wage research in the United States. Weichselbaumer and Winter-Ebmer's (2005) paper concluded that there remain a number of reporting errors that can do harm to internal gender wage gap calculations including the inability or non-attempt to account for specific characteristics like reported education level, as well as finding that while gender wage gaps appeared to be dropping, worldwide discrimination residuals remain high (p. 508). With the ability to create a narrative for research as well as acting as a research prescriptive, the meta-analytical method seems ripe for further exploration in a new context. In this way, the field of study is not only justified against an expanding field of economic research, but wage gap research has already proven an important point of application.

One criticism of the meta-analytical approach to data collection has been dubbed "the file drawer problem," otherwise referred to as "publication bias" (Hunt, 1997 p.199). This is seen in the motivation for journals to produce significant studies, which suggests that there may be a number of alternate studies with widely varying results that are never seen and cannot be accounted for in the analysis. On a wide scale, this bias is one that inflicts all levels of social science studies which deal with previous reports, whether narrative or analytical. Even so, this may be less of a direct problem with this analysis as Stanley & Jarrell (2001) have suggested that because gender wage gaps are largely calculated using the Oaxaca-Blinder decomposition, which "does not depend on a single significance test," it is less likely that studies will be shuttered for this reason (p. 954). Even further there may be motivation by authors to produce high impact studies not simply conforming to wage gap expectations, which break against the tradition of decreasing wage gap estimates and ensure the persistence of study to study variation. In this way, publication bias does not appear to be a specifically severe factor counteracting this paper's data collection process. This data collection process will be detailed along with a discussion of the interaction of the paper's framework and data in the next section.

3. Meta-Analytical Framework & Data

When exploring the research questions posed in this thesis, it is essential to first clarify how exactly this study can lead to their answer. While meta-analysis is a procedure that attempts to corral a significant amount of research findings in order to draw conclusions from them, the framework for such a study is not so deeply complicated. At the same time it requires a dedication to ensuring an uncompromised data set as well as logical and well defined explanatory variables. Studies conducted on gender research in the past provide a strong roadmap to follow when applying this mode of analysis to a Swedish body of literature. The basic framework for a gender wage gap meta-analysis study proceeds as a series of steps, taking direct inspiration from Stanley's (2001) paper on meta-analytical method in economics:

1. Take all relevant studies from a Standard Database
2. Decide a summary measurement and common metric
3. Determine independent variables
4. Conduct Meta-Regression Analysis
5. Subject Results to Specification Testing

As has been stated, the essential starting point for this thesis is in the data that will be extracted from previous gender wage gap studies on Sweden. Standard data collection in the meta-analytical framework comes from inspecting and drawing out all relevant studies from a standard academic database (Stanley, 2001). There may be some contention about what constitutes a "proper analysis" of the gender wage gap, but for the sake of this thesis, all studies which fulfill the required parameters are taken regardless of their perceived "quality," in the researchers eyes. The reasoning behind this openness to studies regardless of anticipated quality is argued by Stanley (2001), who suggests that a "function of meta-analysis is to obtain estimates of how different research choices influence results," meaning that remaining open allows this thesis to keep an objective eye towards determining what variable choices may lead to the strongest distortions of results, not just accepting gender wage gap calculations within a certain threshold (p. 135). This is further highlighted by Weichselbaumer and Winter-Ebmer (2005), who argue that this framework allows for a movement away from "personal assessment" differing instead to direct empirical assessment of research (p. 480). In this way, the addition of moderator variables will allow insight into the possible effects omitted or misused variables

might cause in research, rather than scholarly biases. Essentially, explanatory power comes from the "ability to investigate how variation in characteristics of studies is related to the size of the effect," to illustrate the importance of these characteristics within the wider picture (Kulinskaya et al., 2008, p. 381). The source and parameters of the data coded and entered into this framework are explored next.

3.1 Data Specifications

In the case of this study, the central database utilized is the full extent of Lund University's Library catalog access capabilities. This includes important journal databases such as the Economic Literature Index, "the most comprehensive database for economic research papers," which has been used as the central database previous meta-analyses, as well as providing direct access to related books as well as material published in exclusively for Swedish audiences (Stanley & Jarrell, 1998; Weichselbaumer & Winter-Ebmer, 2005, p. 482). In this way, the database is more representative than a single publication aggregator, essentially acting as a representative picture of what a gender researcher, or curious spectator, would have access to at a major university like Lund. At a basic level, this will insure that studies are not being taken from complete obscurity, but a place of some "implied" academic significance. Of course, for a thesis like this to work, there needs to be a significant body of research available to be explored, and in place of the United States, which has already been studied, Sweden is a prime target. With this in mind, the data that are included in this paper will:

- Be an empirical estimate of the unexplained gender wage gap,
- Be based on the gender wage gap specifically within Sweden,
- Be the result of regression analysis

There is no upper or lower limit of estimate observations that has been set as a strict starting point for meta-analysis, with previous studies ranging from fifteen, to forty six to two hundred sixty three in their respective observations (Card & Krueger, 1995; Stanley & Jarrell, 1998; Weichselbaumer and Winter-Ebmer 2005). Even so, the highest amount of observations possible would be expected to reveal the most sophisticated and possibly varied results. Further, some studies contain multiple estimates when applying a model to a number of available years in the dataset. When this is the case, the individual estimates most endorsed by the specific study's researcher for a specific year is coded in the dataset and a thorough review is done to make sure

any measurement differences occurring within the specific article are taken into account to avoid unwarranted correlation. This may be the case as data sets can expand, altering the year to year decomposition capabilities for a study.

Additionally, the possibility of gender based researcher bias has served as a common variable to previous wage gap meta-analyses and can fit into this study as well. Stanley and Jarrell (1998) found an upward wage gap bias in reports by male researchers in the United States (p. 966). Seeking such results in the Swedish case will add an interesting additional layer to the study and further allow for an additional dialogue to be established with previous papers in the field. Alternatively if the results comply with previous findings, this may also illustrate how women have gained a larger presence in the field of economics as higher differentials may be linked towards studies conducted primarily by men in the past. Based on direct observation, this study finds strong variance in the gender composition of study participants, though in a large number of instances studies are done collaboratively. While there is no inherent suggestion of intentional data manipulation, gender may inform the angle taken by researchers when approaching a wage gap study, which may be observable in this model.

3.2 Data Limitations

With this research collection process in mind, the study faced a final complication before it could proceed forward. A final parameter for a gender wage gap study to be included in the analysis conducted in this thesis is that its calculations are based on some set of nationally representative data. While this creates a data and measurement standard, it is also a limiting force. In contrast, Weichselbaumer and Winter-Ebmer (2005) chose to include regional, sectorial and inter-industry gender wage gap calculations in their study. Following their example might open this study up for a much wider range of observations, while also serving as a point to expand on with the initial national framework being established. For this study's initial analysis national studies allow for a more generalizable result, but a further study into regional or sectorial gaps could make for enlightening study expansion.

An additional note about the data collection framework in meta-analysis concerns time and chronology. No specific cutoff date has been set for this study at this time. Generally speaking, the available studies which fit under the parameters for our exploration have all been developed after the mid 1970's, but can apply methods to data which was collected before this

time. This limitation is the case as this marks the development Blinder and Oaxaca gender decompositions, which subsequently developed into the standard discrimination and gender wage differential decomposition method, as well as the appearance earnings function breakthroughs (Ashenfelter and Oaxaca, 1987; Mincer, 1974). More recent studies might use decompositions that build off of the Oaxaca Blinder framework, but in other cases a simpler dummy based decomposition is used. With this established timeline for the data used, there will be the chance to examine the trend and whether gender wage gap researchers suggest that the gap is dropping or possibly stagnating over time in Sweden.

One final criticism of meta-analytical method and data may be that it hollows any single examined study of its significant descriptive and narrative elements, making an argument appear purely as set of numbers. This is far from the case as it more than anything else serves to re-contextualize studies into a larger conversation rather than decontextualize them of their basic explanation. A future solution to this problem might be to analyze the number of citations each individual article has received, helping to illuminate on a more narrative level, which studies have been given the greatest influence and academic significance. If anything, this study helps to encourage a push for a deeper exploration of research relevance. In another way, the problem of "choosing" also illustrates the possible selection bias that is inherent to a study like this. While all relevant studies are included in this analysis, the moderating variables must necessarily be selected for their expected importance. It is possible when determining the independent variables that there may be contributors being ignored, and because the database search is limited, there also may be studies that are missed. With large amounts of research done by hand by a single individual this may be a concern, but efforts were taken to make the research and coding was as diligent and accurate as possible. Regardless, the estimations included in the analysis serve as a strong representation of the type of data that is filtered into academic communities. With the framework and data set introduced, specified and defended, the study must move forward in order to reveal its methodological structure.

4. Methodology

With attempts made at theoretical justification, relevance, and an overall framework, a section on methods will illustrate this paper's application of the meta-analytical process. As detailed in the previous section, the study began with a database search based on the Lund University catalogue web resource. A cursory search led to over two hundred initial results when terms like "gender, sex, wage, income, earnings, gap, differen*, Sweden, international and European" were entered, as well as "lön, sex, kön, skillnader, män and kvinnor" in order to also pick up studies written for a Swedish readership and using national data, but also relevant to the meta-analysis. It would be unsuitable to the spirit of this meta-analysis to not include studies which sit at the heart of the subject especially those done on a national level with a stronger awareness of institutional conditions and greater access to nationally sourced datasets.

Estimates entered into the meta-analysis came from both standalone journal articles, longer individual studies and as distinct chapters of edited books on the subject appearing in both digital and physical formats. Of the initially collected batch of studies over two thirds were either irrelevant to the subject, or were on the other hand too specifically focused on a smaller topic or within specific regions or sectors for the type of national picture this study hopes to explore. Some of the observed studies made brief references to Sweden or reiterated Swedish data, but were largely concerned with estimating a local wage gap within another country. This proved to be a time consuming process, but one done with diligence and attentiveness in order ensure a wide-reaching and legitimate model. There was a strong showing as the total number of usable wage gap estimations available through the use of this method came to <u>thirty two</u>. The twenty studies which produced these estimates comprised research spanning over thirty years as well as data extending back roughly fifty years, while the most recent study accounted for was published in 2014 and the most recent dataset recorded in 2013. As expected, the primary authorship for gender wage gap studies was divided between both sociological and economic researchers in Sweden and internationally.

4.1 Applied Methodology

At the center of this study are the previously calculated regression based estimates of the unexplained gender wage gap, serving as the dependent variable when this is accounted for by the meta-analysis. This dependent variable is the subject of a multivariate linear regression,

which will factor a wide range of independent variables which will be detailed further on in this section. The wage gap estimates regressed in this study are, more specifically, in the form of the OLS regression coefficients given by the previous researchers in the selected studies, which limits the amount of studies used to those which sought to obtain this estimate specifically through a regression based analysis. The current range of estimates varies from 0.049 at the all the way up to 0.469, with a base mean gap of 0.16651 or 18.1% and a standard deviation of 0.0717 respectively. While knowing these values is important for a basic visual comparison, and provide a basis for a time and trend view of the data, the use of explanatory independent variables should be the factor that ensures we can attempt to account for some of the clear variations which are found in gap estimates. The regression equation is given as the coefficient (expressed as *GJ*) for each separate observation as the dependent variable regressed by the independent variables based on their inclusion in each study (∋=error term).

$$Gj = \sum\ Z_j + t_j + \ni;$$

$$J= 1,2\ldots.32 \qquad Z=1,2\ldots14$$

In addition to exploring overall differences against the expected estimated gap, within this framework it is also essential to understand how certain specific measurement techniques or variables might have a marked effect on results. This is extracted with the addition of mediating independent variables meant to explain the differing outcome of each study (expressed as *Z*) with the number of observations also accounted for (expressed as *J*), primarily as binary variables to indicate whether they are present or not within a selected study. Motivation for different covariates comes, in part, from Stanley and Jarrell's 1998 study on gender wage gap research in the United States, of which they suggested "explain[ed] more than 80 percent of the study to study variations . . . with statistical significance" within the parameters of their specific study (p. 955). In this study, the time trend is expressed as the year the estimates are calculated (*t*) and all other variables are taken as binary variables meaning they are given either a binary value of 1 if they are included or controlled for in a study or 0 if not. The independent variables shown below represent the culmination of previous research in determining what factors might lead to gender calculation differences including how wages were measured in a study, if a model used and Oaxaca-Blinder based decomposition, the type of dataset used, and the addition of worker and

workplace specific characteristics and the recorded gender of researchers (Stanley & Jarrell, 1998; Jarrell & Stanley, 1990):

Table 2: List of Independent variables included in the meta-regression model

A. Trend:	Year of Data
B. Measures of Wages:	Binary (=1) for wage calculation: Salary/Weekly or monthly Wage or Hourly constructed
C. Model Specifics:	Binary (=1) for use of Oaxaca-Blinder Based Decomposition, Dummy
D. Data Set:	Binary (=1) for differing data sets, LNU, International
E. Worker Characteristics:	Binary (=1) for study inclusion of variables for Age, Experience, Marital Status , Occupation, Industry, Public or Private Work, Tenure, Workplace Composition
F. Researcher Characteristics:	Binary (=1) if research done by Male

It is important to give an explanation for this study's specific motivations for suggesting why certain variables maybe taken as important illustrators of study to study variation.

4.2 Variable Specification

It is particularly essential to motivate variable inclusion as this thesis omits some variables which were assumed to be relevant in previous meta-analyses in other contexts, but which proved to be too under explored or less relevant for a study of Sweden. Excluded variables in this study include the ethnicity of surveyed individuals as well as union membership. Unlike the United States, ethnicity appears not as readily tracked or reported by Swedish employment or income surveys. Further, in general it seemed that Union membership was rarely questioned in Swedish studies. This may be because unionization is part of a common institutional expectation in

Sweden still covering a majority of the population, while collective agreements in most cases are normative and cover individuals outside of unions (Svensson, 1995). This provides a contrast to the U.S system and helps motivate the separate variable emphasis between this study and previous MRA studies focused on the United States gap, while also highlighting the fundamental differences which may exacerbate the gap in either country.

Going further in the variable breakdown, the specificity with which education levels were explored in different studies made it difficult to create a set of variables that could account for how the overall impact of education was accounted for in gap calculations, and how these may promote study to study variation. As a central pillar of the human capital earnings equations there was little difference in the way basic educational attainment was reported between studies, but some studies relied on specific ties between an individual's education and their employment (Mincer, 1974). This may have to do with the data limitation faced by certain gender wage studies, using educational qualification proxies rather than identifying the actual level of education for individuals factored into the gender wage decomposition equation. With this in mind, the education variable used in this meta-analysis is broken down in order to illustrate not whether a study controlled for reported education, but whether it was taken as a proxy based on expected individual job qualifications. Beyond this, in most countries educational paths, just like their occupational counterparts, remain highly segregated, which would make college major an additionally interesting point of study, unfortunately, as of yet this remains a largely underreported variable in national wage gap estimations.

Considering the more domestic and family oriented perspective researchers consider when determining variables to be included, it was also important to account for the role that marriage, cohabitation and family play in determining the shape of wages. Polacheck and Xiang (2014) have suggested that "the wage gap varies by marital status, children, and spacing of children" as "these demographic variables are more important predictors of the gender wage gap than any other explanatory factors," making their inclusion in a gender wage study likely a significant contribution to its outcome (p. 8). The particularly negative phenomenon women's wages experience in relation to familial expectation has been described as a "motherhood effect," and it can contribute to a realigning of human capital within the family expanding an inter-marriage wage gap (Budig & England, 2001; Hartmann, 1981). Even with these previous

findings in mind, these ideas might be counteracted within Sweden, which has one of the most equitable child-care systems in the world and a less notable commitment to the institution of marriage, making it an interesting variable in either case (Granqvist & Regnér, 2006). Even so, the inter-marriage wage gap remains a large source of wage differentials for men and women so including variables to control for whether individuals are in a marriage seems essential to providing a full wage gap picture (Medlingsinstitutet, 2013). Unfortunately, the analysis of marital status and dependents was intrinsically linked in estimates leading to correlation, and this proved the case consistently within studies, which led to the dropping of the meta-independent variable for dependents within the final model.

When considering the persistence of unexplained gender wage gaps it is also important for researchers to understand the systematic ways that wage differences may be promoted. One process, often referred to as "sorting" represents a limitation of overall choices for an individual within society, choosing a path because it is already seemingly associated with a specific gender, alternatively they may "select" careers thought to be more accommodating because of expected time off and other factors (Budig & England, 2001, p. 216). This has led to a further discussion of what constitutes "men's work" or "women's work," both in terms of initial investment as well as expected reward. Even if these seem like outdated ideas, it is quite difficult to ignore that in Sweden a number of workplaces and industries continue to fall squarely towards one particular group. One top of this, the nature of the work individuals perform is something studies take into account in a number of different ways. Some are able to factor in the industry an individual works in while others can also code more specific occupational measurements. Different work may be more attractive to different sexes, but may also reflect higher pay for similar hours worked. Similarly one's advancement within a selected field can be tracked with returns to tenure, which may also reduce or exacerbate a gender wage difference. An individual's age or whether or not they have a high level of experience should not be discounted within a study as one's career ark determines expected wages and might further highlight wage differences experienced between the sexes.

Of course, on top of the personal experiences that individuals face in terms of accounting for received wages, there is also nature and accounting of pay itself, which may make it more or less difficult to fully understand how exactly income is distributed within a population and can easily shape empirical wage gap estimations. Previously, scholars like Stanley and Jarrell (1998) were concerned with whether or not a natural logarithm of wages was in studies which contained wage calculations, but this seemed to have become a standard for studies conducted on wages in Sweden, so its inclusion as a variable would be largely meaningless. On the other hand, whether wages were reported from monthly, yearly or fixed annual sources proved to be a slightly more variable option amongst studies, which leaves room for possible distortions when comparisons are drawn between individuals. Previous studies have suggested that fixed salary estimates are likely to overstate the gap, while using reported hourly wages or constructing hourly wages with the help of data for working time generally reduces the gap (Stanley & Jarrell, 1998).

While wage calculations can certainly be a central cause of study to study variation in wage differential estimation, it must also be remembered that different data sets are being used over time and across studies. Indeed, there have been a number of different data sets which have served as the backbone of Swedish wage research. Sweden can easily be labeled a "data rich" country making the prospect of studies on its inhabitants and their living and working conditions a very manageable task. The most common dataset observed in academic studies has been the Swedish Level of Living survey (LNU), a longitudinal and interview-based dataset, which has been updated since 1968. Studies which use the LNU data have access to hourly pay as well as the ability to transform weekly and monthly wages to hourly with the inclusion of hours worked, allowing these studies to report a credible hourly wage for the gender wage decomposition. More recently Household Market and Non-Market Activities (HUS) panel data has been utilized by scholars like Andersson (1995), which traced individual homes over an eight year period from 1983 to 1991 using interviews as well as income information that is collected through tax registers. Scholars using this data argue that while the sample size may be smaller, with roughly two thousand respondents, its information is more informative and likely more accurate than LNU based studies. Another widely used nationally collected dataset is the Household Income Survey (HEK), which provides cross sectional a sample of up to more than fifteen thousand observations drawn from phone interviews and tax registers. Johansson et al. (2005) suggest that this larger database is reliable, but limited, meaning proxies are used for important variables like

work experience (p. 347). Even with these valuable datasets in place, international studies often source alternate data sources.

Another source has been data taken from Statistics Sweden which has been utilized in studies as well as by scholars within, such as Wahlberg (2010), as well as outside of the country, which while providing a huge cross sectional sample size of tens of thousands of observations, must be measured against impersonal wage estimations. Even further from the insight of the above databases studies which include Sweden as part of a larger pool of countries might take advantage of wider databases like the Luxembourg Wealth Study or the International Social Service Program (ISSP), if the authors were looking to build a level point of comparison between different countries using comparable data (Blau & Khan, 2003; Kumlin, 2006). Whether these external entries in into data collection, as well as extended publication and audience lead to an expansion or minimization of gaps might give another perspective on researcher bias beyond that possibly attributed to gender. In any case, it seems reasonable to assume that the source of data will have some impact on the overall calculations, whether sourced within the country or through the use of an internationally compiled dataset. With the commonality and ubiquity of the LNU database, its inclusion will serve as a part of the model and can be contrasted against the use internationally sourced databases.

With both the dependent as well as the independent variables established in addition to presenting an explanation behind their inclusion in the study, it will be up to the paper's empirical results and subsequent analysis to determine how the inclusion or exclusion of these variables might work to impact the outcomes gender wage research and how these factors might have economically notable effects on the variation between overall calculations. On a descriptive level, the thesis can also work to highlight the changes in methodology that have followed over the last thirty years of research, as well as the direct effects this methodological and, in the best case, strongly explanatory study could provide a prescriptive perspective for the direction of future studies. In this way, while the empirical aims lie in the quantitative sphere its descriptive capabilities may also be of interest to researchers. With the general methodology in place and research approach illustrated, the study must proceed to their outcomes.

5. Results & Analysis

"Whether an untoward wage differential between women and men exists is impossible to answer with the aid of standard weighting or regression analysis" -Medlingsinstitutet, 2013, p. 12.

As the literature produced by the Swedish Mediation Institute suggests in the epigraph above, a complete explanation for the gender wage gap in Sweden is likely inconceivable, even with the aid of regression analysis. This is less of a statement on the fruitlessness of this thesis and its aims and more of an illustration of how such a study might bring researchers closer a better understanding of the volatility of existing research and how the individual pieces that constitute the larger wage gap might be addressed and understood.

Bringing together the separate pieces which structure this meta-analysis, namely research findings and the presence of specific moderating variables, led to the construction of a unique and individual databank for this thesis (accessible in Appendix A). As suggested previously, the variables used in the meta-analysis were selected a-priori from evidence present in previous studies as well as patterns seen within the reporting of the current dataset. While it is important to consider the strong significance found particularly in Stanley and Jarrell's (1998) and Weichselbaumer & Winter-Ebmer's (2005) studies, it was also important to make sure that the variables which were used would be applicable and important in a study of specifically Swedish wage gap research. This required more than an arbitrary list of expectations based on previous analyses, but a close reading of texts in order to reveal the type of factors previous researchers assumed to be of particular importance in shaping the gap. Some factors like educational attainment evolved in their generalizability, being broken down further into educational requirements set by occupation as limitations in data access or expanding theoretical considerations were taken into account. It is for this reason that the variables must be as wide reaching and representative as possible without overloading the fairly limited scope of the overall empirical model. With explanations provided for their inclusion, the results will be presented directly beginning with a descriptive analysis and exploration researcher estimations along a time trend. This will be followed by a discussion of the individual effects that moderating variables exert on gender wage gap calculations.

5.1 Empirical Analysis

The first step in establishing an understanding how study to study variation is reflected in the meta-analysis can be determined with a descriptive scan of reported wage gaps along with their variation over time. Taking the overall trend for the regression results derived from previous gender wage studies as a sign that the overall wage gap can be said to be falling helps motivate the exploration of the positive and negative effects variables can have when examined through a regression. Based on a cursory examination, the estimations in this study suggest that researcher wage gap estimations have fallen by a thirtieth of a percent (0.00301) annually since 1968. This is, of course, not a perfect reflection of the gender wage gap, as "no one knows the "true" wage equation and . . . every study's estimate of the "true" gender wage discrimination must be considered to suffer from omitted variable bias," but it does help motivate the theses belief that there has been an overall downward wage gap trend (Stanley & Jarrell, 1998, p. 950). With this hypothesis in mind, it allows for the study to seek out variation in relation to the "expected" falling wage gap, but does not force the idea that any single wage gap represents a perfect calculation as residual effects and measurement issues are likely to continue to affect overall wage gap findings. This is reflective of the angle taken by previous studies like Stanley and Jarrell (1998) as some baseline time trend for the gap estimates must be taken into account in order to asses variation.

Table 3: Descriptive statistics for meta-regression variables

N = 32	Mean	Std. Dev.
Gap	.1651163	.0717357
Gender of Researcher	.25	.4399413
LNU Data	.28125	.4568034
Oaxaca-Blinder	.53125	.5070073
Education Qualification	.40625	.4989909
Occupation	.5625	.5040161
Experience	.75	.4399413
Tenure	.28125	.4568034
Age	.625	.4918694
Marital Status	.59375	.4989909
Sector	.5	.5080005
Industry	.5625	.5040161
Comp	.5	.5080005

| Status | .28125 | .4568034 |
| Hourly | .78125 | .4200134 |

Examining estimated gender wage disparities through a time and trend perspective shows an obvious pattern across overall wage gap findings in Sweden. When looking at the data across its historical distribution, the heaviest concentration of variables in this study is seen in the 1990's with twelve observations recorded from data appearing in this period. Additionally, this period does not see the same consistent downward movement reflected in the periods that precede and supersede it. While there is overall downward movement, a visual scan of this period is unsurprising as many studies have suggested wage gap stagnation in the late 1980´s and through the early 1990´s (Andersson, 1995; Edin & Richardson, 2002). Even so, the overall research climate pointing to a decline is in line with previous meta-studies regarding gender wage gaps across western countries (Jarrell & Stanley, 2004; Stanley & Jarrell, 1998; Weichselbaumer & Winter-Ebmer, 2005).

Figure 1: Fitted trend line and scatter plot by year showing a downward trend in the estimated "unexplained" gender wage gaps as calculated by Swedish researchers from data 1968 to 2013
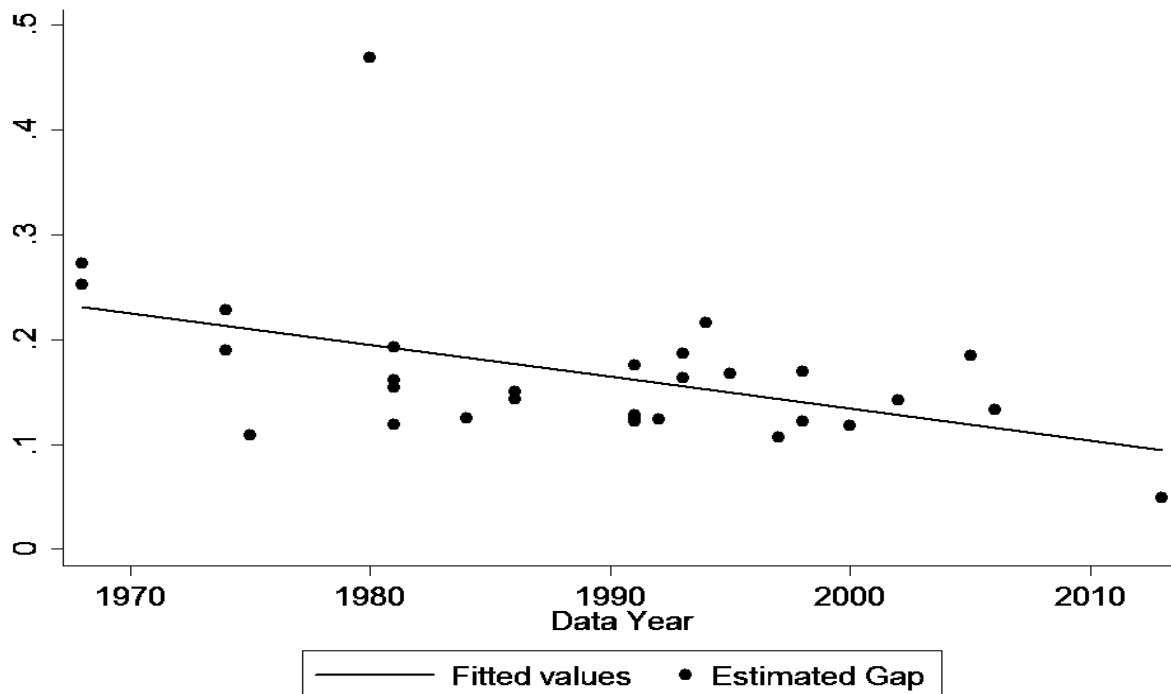
While 1990's data is heavily represented in this study, a number of studies on older data were also carried out in the late 1980's and early 1990's, which suggests a common delay between data collection and the publication of estimates. This may explain the limited amount of reported observations appearing in the 2000's. Alternatively, there might be a suggestion that wage gap studies have become more localized, with a number of more recent studies being focused on specific industrial sectors or occupation types. On a far reaching level, the downward may be both attributed to both active measures through social policy to reduce the gap as well as advancements in measurements that allow the factors in the gap to be more understood and decomposed in a way more encompassing factors which go beyond general wage disparities, with the possibility to control for worker conditions tenure and occupational composition becoming more common in wage gaps studies.

While there may be an overall picture that wage gaps have been declining for decades in Sweden, it is important to understand what factors can these expected outcomes within the meta-regression carried out in this thesis. It is clear the model provides a strong explanatory picture of how the different variables in the model enforce study to study variation. Even so, there appeared to be an initial problem with multicollinearity between variables, as demonstrated by a Variance Inflation Factor (VIF) test. Wage type, dataset, as well as decomposition type variables remained highly attached to one another, in addition to a direct association between studies that controlled for both marital status and dependents. In these cases, most representative variable (LNU Data, Hourly Constructed Wages, and Oaxaca-Blinder) were included as a binary in the model (1= inclusion), while marital status and was taken as more illustrative to the study than its connected counterpart. With this in mind, a number of alternate model specifications can be found at the end of the thesis in Appendix B. The linear regression that follows produced a mean VIF score of 2.90 with the exclusion of directly correlated variables, suggesting a low level of multicollinearity. While multicollinearity might not have been a death blow for a study which looks at research methods which might be associated with the fashion of a specific time period or researchers who launch multiple estimates using similar methodologies, its avoidance is obviously sought out.

Table 4: Test to determine multicollinearity between independent variables in final model

Variable	VIF	1/VIF	Variable	VIF	1/VIF
Marital St.	4.36	0.229565	Age	2.94	0.339980
Composition	3.89	0.257262	Oaxaca	2.73	0.365779
Occupation	3.68	0.271980	Industry	2.67	0.375165
Sector	3.27	0.305949	Exp	2.54	0.392932
Tenure	3.02	0.331096	Status	2.33	0.428770
Ed Qual	3.17	0.315641	Gender	1.80	0.556976
LNU Data	2.84	0.351844	Hourly	1.40	0.716217
Mean VIF =			2.90		

Going further, it seems quite difficult to avoid issues of heteroskedasticity with the variation of time, sample size and methodology examined in this study. Even so, an additional GLS estimate with robust standard errors was also run, providing only slight variation from the final model's OLS regression. The results of these additional tests as well as a number of alternative model specifications can be explored in Appendix B. Even with attempts at specification completed, the limited size of the sample and the open nature of the data selection process ensure the study is not totally unproblematic, but its revelatory potential is still substantial.

5.2 Discussion

Even with initial issues, the analysis both surprised and met certain expectations when it came to the strong overall explanatory power among the variables included in the model. Because of the limited size of the data sample and ongoing debate regarding statistical significance the discussion will primarily focus on individual regression coefficients as an illustration of individual effects of moderating variables.

In terms of observed coefficients, the strongest factor bringing down wage gap estimates was accounting for the gender composition of the fields individuals worked in (Coeff = -0.091), which seems to fall in line with expectations about the illustrative capacity of occupational segregation on wages in a Swedish context. The strong negative effect of this variable on the wage gap might indicate that studies which control for this factor are more apt to be in depth in their decomposition and breakdown the gap beyond basic wage levels, which seems especially apt in the Swedish case. Beyond being illustrative of stronger decomposition methodology, this variable also works to highlight one of the fundamental differences that distinguish a country like

Sweden. While highly focused on equality, previous research indicates that Sweden has very obvious workplace segregation, particularly evident across a comparison of the public and private sectors within the country (Arai et al., 1995; Melkas & Akner 1997). With this in mind, it seems clear that an individual study's ability to determine a comprehensive wage gap calculation would hinge on accounting for how the individual reality of workplaces shapes the nature of pay in Sweden.

Table 5: Final model regression output with coefficients.

Source	SS	DF	MS	Number of observations = 32	
				F(14, 17) = 3.56	
Model	.11891201	14	.0078082674	Prob > F = 0.0075	
Residual	.040614255	17	.002392884	R-squared = 0.7454	
				Adj R-squared = 0.5357	
Total	.159526265	31	.005146009	Root MSE = .04888	
Estimated Gap	Coef.	Std. Err.	t value	P>t	
Gender	-0.01576	0.026738	-0.59	0.563	
LNU Data	0.000665	0.032399	0.02	0.984	
Oaxaca	-0.05811	0.028629	-2.03	0.058	
Ed Qual	0.072932	0.031314	2.33	0.032*	
Occu	-0.04814	0.033398	-1.44	0.168	
Exp	0.061158	0.031833	1.92	0.072	
Tenure	-0.01935	0.033399	-0.58	0.57	
Age	0.029196	0.03061	0.95	0.354	
Marital St.	0.064921	0.036719	1.77	0.095	
Sector	-0.05269	0.031243	-1.69	0.11	
Industry	0.001385	0.028437	0.05	0.962	
Composition	-0.09016	0.034071	-2.65	0.011*	
Status	-0.07136	0.029349	-2.43	0.0268*	
Hourly Wage	-0.03994	0.024697	-1.62	0.124	
Constant	0.221893	0.051471	4.31	.0000	

* Indicates statistical significance on the 5% level

Quite similar to occupational composition, the meta-analysis suggests that studies which account for whether work is done in a part time or full time capacity also has a strong effect (-0.071) on lowering wage gap findings. This does not seem extremely controversial as on a general level these varying positions would affect the nature of pay for individual workers. Similar to expectations with occupational composition women are more likely to be employed part time

than men, especially after marriage, meaning that this should again be a direct factor of consideration in the wage gap calculation (Melkas & Anker, 1997; Stanfors, 2014). When a study is able to correct for this it creates a significant downward bias which appears to be a counteracting of generalized level of widening which might appear if this simple but evidently "gendered" category of work is not accounted for. A similar, but less magnified effect (-0.052) can also be seen in a studies ability to control for whether individuals are working in the public or private sector, another highly "gendered" distinction. These results speak strongly to the effect the inclusion of comprehensive and nationally relevant variables in a study's wage gap decomposition. Visual inspection suggests these methodologies are not particularly concentrated within a single time period, which further indicates their individual explanatory power rather than being time-dependent on any overall wage gap decrease.

In Stanley & Jarrell (1998), estimates that controlled for individual occupation and industrial categories served as reducers of the expected gender wage differential. In this study, these forces seem to work alternatively to reduce or increase the gap (Occ, -0.048; Ind, 0.013), though the effect of industry was quite miniscule in its upward push. In general, industry category is a very common variable in the study so it makes sense that there is not much significant variation to be found with its presence. Alternatively, occupational control seems to push down the gap, which may further speak to how specific jobs are found to be particularly male or female. With an indication of the different pay levels for specific occupations, the inclusion of this variable again helps to reduce the generality of estimates, which would steer them away from likely an upward bias. Still wages for different occupations might change over time and be influenced by shifting composition rates, making this variable an interesting but possibly incomplete descriptor. Another factor that helps reduce generality is accounting for wage on an hourly level rather than through salary also helps reduce the gap (-0.039). This is consistent with findings in previous meta-analyses, which have alternatively suggested that the use of gross wages and salaries in wage equations generally enlarge the gap (Stanley & Jarrell, 1998; Weichselbaumer and Winter-Ebmer, 2005).

Another variable capable of being highly "gendered," which provides an interesting result is the binary for whether a study controlled for an individual's marital status (0.064). As has been suggested, the wage gap is expected to increase-within marriage, so on a surface level the reading provided by the regression seems in order. This is in line with Weichselbaumer & Winter-Ebmer's (2005) study on the international gender wage gap as they saw the inclusion of marital status in gender wage studies leading to a positive effect on the overall gender pay differential (p. 495). This may be the result of revealing not only how married men are likely to continue to earn, without pay breaks, throughout their children's lives as wives are more likely to take breaks, there is a possibility that men might also receive preferential treatment for being married or fathers alternatively expanding the wage gap within a household even further (Blackburn and Korenman, 1994). In this way, rather than shifting up the estimated gap as a result of generality, this may be more of an indicator of the importance of the variable in illustrating how marriage affects the career ark of wages. This might be expected to be countered in Sweden, where the equity of parental leave could reduce career disparities between men and women in the early lives of their children, but it appears this has not been completely eliminated. Alternatively, studies may be misreading the people of Sweden, by not including a separate cohabitation variable showing an alternate take on Swedish family life. A stronger distinction might provide illuminating results going forward.

Strong impact (-0.058) on study to study variance can also be seen in whether a study utilized some form of the classic Oaxaca-Blinder based wage decomposition rather than a dummy variable for gender or alternate decomposition when decomposing the wage gap. In this way, studies that may have a more illustrative capacity may also push the wage gap down rather than the gap being expanded by the presence of generalities. This partially illustrates how this study also works to illuminate the evolution of gender wage research. In early studies in the 1970's and 1980's it was more common to either use a dummy decomposition or the basic tenants of the method, which was noted by Stanley & Jarrell (1998; 2004) in their United States meta-analysis. Newer studies which have the Oaxaca-Blinder based decomposition as a basis were also included in this category, which likely helped drive this category down even further as they have incorporated more variables helping to reduce the unexplained gap, which might be exacerbated by previous generalities of research. Even further, as well as being oriented with the stronger datasets and theoretical considerations, this method might also be connected with an

overall falling wage gap over time, which suggests that some explanatory power might be more linked to social or institutional change, rather than the nature or components of the decomposition itself.

An interesting force can be seen in the effect (0.029) caused by the inclusion of a variable for the workers age, as this seems to exert force in widening wage differentials. While its effect is not particularly strong, its upward contribution may be related to the fact that many early studies emphasized age primarily as a proxy for a work experience as a variable. This is argued by Johansson et al. (2005) who suggest that the age variable fails to capture anticipated breaks from the labor market, thus giving an inaccurate understanding of experience (p. 343). Further, researchers have suggested the squaring, or even cubing of age and experience variables in wage equations to account for different employment paths faced by women, meaning the age or experience proxies might not paint an accurate comparison as the gap has a tendency to widen over a career span (Murphy and Welsh, 1990). Without accounting for expected differences in the time sensitive human capital categories experienced by men and women it seems likely that this might lead to a generalized overstating of the gender wage gap. Alternatively, accounting for tenure leads to a reductive force on the gap (-0.019), possibly suggesting accounting for long term within job experience provides a stronger way of comparing male and female work experience leading to a less general picture of the wage gap.

Another example of the possible upward effect that indirect model specifications can have on gender wage calculations is seen in the use of education proxies within studies. Indeed, the regression suggests that this pushes up the wage gap (0.0729), which may be a result from studies being unable to identify the type of education individuals receive besides on a base level; therefore they may be unable to track how certain individuals entering a field with a specific educational advantage are apt to be paid more. Indeed, studies suggest women are increasingly over representing men in overall of higher education participation, but like the workplace educational fields remain segregated (Swedish Higher Education Authority, 2014). With this in mind, a blanket exploration of education purely from a qualification standpoint does little distinguish men and women and the educational differences they may experience which could contribute to a larger residual between the two and a higher reported gap. This appeared the strongest way of indicating differences in education measurements, but gives less of an

indication of how more precise explorations of education might have an effect. Ideally, it should be the case that future studies will take into account the individual education level of individuals as reported and, if data permits, go even further to account for an individual's specialization within their studies as well as possibly recording their college major.

Surprisingly there was no major influence to be found with the use of specific databases on determining the overall wage gap. This may have to do with the ultimate popularity of the Level of Living Survey (0.0006) or may be a sign that the data used by researchers is largely inscrutable while the methods and information they extract from and employ on the data may be more suspect. An alternative model which included a variable for internationally sourced datasets can be seen in Appendix B, but this did little to enhance the explanatory power of the model. The impact of differing datasets was also quite muted in Stanley and Jarrell's (1998) study with no significant results to show. Overall, this may serve as an indication of a level of reliability in locally sourced data, as a visual scan of internationally sourced data generally suggested a much higher set of estimations (0.469 to 0.185) in the data's range of unexplained wage gap findings. Nonetheless, the estimates used in this study were generally much less volatile than those reported in the 1998 meta-analysis of the U.S wage gap, owing probably to Sweden's relative size, homogeneity, and general worker protection schemes compared to the United States. Another difference between this thesis and the U.S meta-analysis can be seen when exploring researcher bias.

While the results do not satisfy every a priori expectation in their final configuration, it is interesting to see that this study seems to disagree with Stanley and Jarrell's (1998) as well as Weichselbaumer & Winter-Ebmer 's (2005) assessment of possible researcher gender influence on estimates. Indeed, it seems that male researchers are more likely to report lower wage gaps (-0.015) rather than widening them as suggested by previous studies, though this also appears with a minimal overall effect. Even so, the majority of studies were done with a number of co-authors of mixed gender so this may be a factor that differentiates how findings might have been previously associated with gender. The presence of such a wide range of cross gender collaborations was an interesting element to note when collecting the data which made it into the study. Even with alternate contexts considered, the "virtuosity" that Stanley and Jarrell (1998) seem to equate with male inclination to overstate the gender wage gap, hardly seems a reflection

of conscious choice and must be taken as largely reflective of the data and methods used along with the time period of the study, rather than the individual intentions of those using them (p. 967). Though the authors do not give the names of study authors in their meta-analysis it seems likely that with their larger declining time based trend line, men would be more likely to report the largest wage gaps at a time when male economists had a far more dominant voice in the publishing space. On basic level, the lower overall wage gap and tendency for inter gender collaboration in Swedish research suggests that there might simply be inherent differences between studies on U.S and Swedish gender wage differentials.

Some factors of the meta-analysis were expectedly minimal in their effects owing at least partially to the overall ubiquity of certain variables in gender wage gap calculations, leading to correlation or simply no major variation between studies. It is clear that the impact of some of the effects explored in this study were much stronger than others and, further, might stem from whether significance was greatly affected by the inclusion and exclusion of different variables, but the final configuration of this study used both knowledge provided by previous studies as well as a theoretical and practical approach geared towards Swedish research. One explanation for the reduced explanatory strength as well as significance seen in this model when compared to compared Stanley & Jarrell's (1998; 2001) as well as Weichselbaumer & Winter-Ebmer's (2005) might be the reduced amount of observations, but in addition to this, gender wage differentials have generally fluctuated at a much lesser rate, starting smaller so that less impact can be drawn from the time based, social change and methodology differences that must be considered. Even so, the results have proven to be highly relevant especially with the particular labor force and institutional characteristics of Sweden. With the results explored and discussed, the thesis will conclude by connecting the study's aims and results and discussing possible contributions it may have for future research.

6. Conclusion & Contributions

At the fundamental level, this thesis provides both a descriptive and analytical entry point into the research of gender wage differentials in Sweden. It was the aim of this paper to bring together a set of separate findings about a common phenomenon and see how they could work together to provide a better understanding of this phenomenon. More specifically, a number of questions were put forward in the introduction. The conclusion will examine how the thesis has addressed and answered these questions.

When examining the question of whether research has indicated the presence of a falling gender wage gap, the answer is clear. With the estimates derived from a standardized database, there is a downward trend (0.003% annually) in the reported gender wage gaps stretching from 1968 to 2013. As stated, these estimates indicate a researcher suggestion that the gap in Sweden is falling, and while they should not be taken as the full story of falling wage gaps, the estimates provide a clear descriptive indication. What percentage of this minimizing can be attributed to social change over time, and what can be chalked up to measurement and model differences, is a bit more difficult to determine at this level. Still, results of the empirical analysis indicate the strong influence of specific variables on the variation between studies.

The question of how study to study variation is affected by the variables used in individual studies required a contextual understanding of Swedish research. When presenting the strongest results obtained, some basic conclusions seem clear. For one, decomposition method proves to be an obvious influence towards the estimate of the gap, with the Oaxaca-Blinder decompositions and its offshoots leading to a generally lower estimate of the unexplained gender wage gap. Expectedly, strong negative influence was also exerted when studies controlled for both part time work in addition to full time and for the gender composition of specific occupations. As has been suggested, Sweden continues to see a highly segregated workforce, often divided between the public and private sectors, where wage gaps can be enhanced or minimized. Similarly, controlling for occupational categories, hourly wages and tenure had lesser, but still notable downward effects on the gap. It appears as if the inclusion of these important and specified variables indicate that a study's decomposition was not leading to a generalization of wage differences, but rather capturing how the different experiences of working men and women need to be defined by more than a general pay differences.

In contrast to these downward leading controls, forces pushing the gap upwards were mainly seen when studies used variables that were likely to act either as proxies or provide too general a picture to allow for robust controls. This was the case with both the inclusion of age and experience variables, as well studies which used educational qualification rather than reported education level. While these variables have traditionally made up the basis for wage profiles, there may be more illustrative ways of showing similar processes on a more specific level. This may include accounting for high school specialization, college major, age at marriage, number of previous employers and even tenure. Marriage also pushes the wage gap upwards according to this meta-analysis, which may alternatively be a sign of its illustrative capacity of showing an additional "inter-marriage gap," or that it might be contrasted by the presence of better defined cohabitation variables, particularly in the Swedish case.

It is also important to note the small effect seen from the inclusion of a variable for data set in the regression. This was also the case in previous meta-analyses as well, but also might be indicative of the quality of data in a small country like Sweden, compared to a larger and more heterogeneous nation like the United States (Stanley & Jerrell, 1998). Surprisingly, unlike previous studies conducted by Stanley & Jerrell (1998) as well as Weichselbaumer and Winter-Ebmer (2005), no significant effect can be drawn between the gender of researchers and the outcome of wage gap studies. This might have to with the more equitable division of studies included in this thesis across its timeline and also the fact that with a more minimized gap generally low estimations are concentrated among all researchers.

At the masters level it is difficult to offer much new to an ever expanding research climate, but a reconsideration of gender research might do this. In this way, this study presents a unique voice entering into the existing research on Sweden as well as adding a case to an expanding body of empirical literature. While no new original study has been performed to calculate a wage gap based on national data, an opening has been developed consideration of the impact of research design on estimated wage calculations, and this may be expanded to other economic fields. With a study that probes previous research in a way that seeks to estimate effects and understand methodology there is a clear contribution is in line. While it is difficult to solidify a direct line between research methods and research outcomes, the results illustrate how breaking down the past might influence research going forward.

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Appendix A:

Table A.1: Original Dataset, which includes a control for Sample Size and the variables included in the final linear regression model.

Gap	Gender	Data Year	Sample Size 10,000>=1	LNU	Oaxaca	Ed.	Occ Cat.	Exp.	Tenure	Age	Mar.	Sector	Industry Cat.	Composition	FT/PT	hourly
0.252	0	1968	0	1	0	0	0	1	0	0	0	0	0	1	0	1
0.2726	0	1968	0	1	0	0	1	1	0	1	0	0	0	0	0	1
0.2281	0	1974	0	1	0	0	1	1	0	1	0	0	0	0	0	1
0.19	0	1974	0	1	0	0	0	1	0	0	0	0	0	1	0	1
0.10852	1	1975	1	0	1	0	1	0	0	1	0	0	0	0	0	1
0.469	0	1980	0	0	0	1	1	1	0	1	1	0	1	0	0	0
0.193	0	1981	0	1	1	1	1	1	0	0	0	0	0	0	0	1
0.161	0	1981	1	0	1	1	0	0	0	1	1	1	1	1	0	1
0.119	0	1981	0	0	0	0	0	1	0	0	0	0	0	1	0	1
0.1543	0	1981	0	0	0	0	1	1	0	1	0	0	0	0	0	1
0.125	1	1984	0	0	1	0	1	1	1	1	1	1	1	0	0	1
0.15	1	1986	0	0	1	0	1	1	1	1	1	1	1	0	0	1
0.143	0	1986	1	0	1	1	0	0	0	1	1	1	1	1	0	1
0.128	1	1991	0	1	0	1	1	1	0	0	1	1	1	1	0	1
0.1222	0	1991	0	1	0	1	1	1	1	0	0	0	1	1	0	1
0.124	0	1991	0	1	0	0	0	1	0	0	0	0	0	1	0	1
0.175	0	1991	1	0	1	1	0	1	0	1	1	1	1	1	0	1
0.124	0	1992	0	0	1	1	1	1	1	1	1	1	0	1	1	0
0.187	1	1993	0	0	1	0	1	1	1	1	1	0	0	0	0	1
0.163	0	1993	1	0	1	1	1	1	0	0	1	1	1	0	1	1
0.216	0	1994	0	0	0	0	0	0	0	1	1	0	0	0	1	0
0.167	0	1995	1	0	1	1	0	0	0	1	1	1	1	1	0	1
0.118	1	1995	0	0	1	0	0	1	1	0	0	0	1	1	0	0
0.107	1	1997	0	0	0	0	1	1	1	1	0	1	1	1	1	1
0.122	0	1998	0	0	0	0	0	1	1	1	1	1	1	1	1	1
0.169	0	1998	1	0	1	1	1	1	0	0	1	1	1	0	1	1
0.169	0	1998	1	0	1	1	0	0	0	1	1	1	1	1	0	1
0.118	0	2000	0	1	1	0	0	1	1	1	1	0	0	1	0	1
0.142	0	2002	1	0	1	1	1	1	0	0	1	1	1	0	1	1
0.185	0	2005	0	0	1	0	1	1	0	1	1	1	1	0	0	0
0.133	1	2006	1	0	0	0	0	0	0	1	0	0	0	0	1	0
0.049	0	2013	1	0	0	0	1	0	0	0	0	1	1	0	1	0

Appendix B
Testing & Alternate Specifications

Table B.1: GLS Regression with final model variables using robust standard errors to control for possible heteroskedasticity:

Linear Regression			Number of observations = 32	
			F(14, 17) = 3.56	
			Prob > F = 0.0062	
			R-squared = 0.7454	
			Root MSE = .04888	
Estimated Gap	Coef.	Rob. Std. Err.	t value	P>t
Gender	-0.0157647	0.0283115	-0.56	0.585
LNU Data	0.0006648	0.0421634	0.02	0.988
Oaxaca	-0.058108	0.0320482	-1.81	0.088
Ed Qual	0.0729318	0.0325944	2.24	0.039
Occu	-0.0481374	0.024397	-1.97	0.065
Exp	0.0611583	0.0259154	2.36	0.030
Tenure	-0.0193515	0.0332716	-0.58	0.568
Age	0.0291956	0.0290156	1.01	0.328
Marital St.	0.064921	0.0390577	1.66	0.090
Sector	-0.052887	0.0293393	-1.80	0.090
Industry	0.0013853	0.0260202	0.05	0.958
Composition	-0.090164	0.0265297	-3.40	0.003
Part time	-0.0713631	0.02991	-2.39	0.029
Hourly Wage	-0.0399442	0.0226087	-1.77	0.095
Constant	0.2218931	0.0488877	4.54	.0000

These results remained in line with those of the OLS linear regression. With this in mind, the OLS regression and variables were solidified as the paper's final model.

Table B.2: Alternate Model adding the influence of internationally sourced data:

Source	SS	DF	MS	Number of observations = 32	
				F(15, 16) = 3.13	
Model	.118932281	15	.007928819	Prob > F = 0.0150	
Residual	.040593984	16	.002537124	R-squared = 0.7455	
				Adj R-squared = 0.5070	
Total	.159526265	31	.005146009	Root MSE = .05037	
Estimated Gap	Coef.	Std. Err.	t value	P>t	
International data	.00849371	.0950617	0.09	0.930	
Gender	-0.0139762	0.034052	-0.41	0.687	

LNU Data	0.011673	0.0338575	0.03	0.973
Oaxaca	-0.0570481	0.0317968	-1.79	0.092
Ed Qual	0.0742353	0.0354122	2.10	0.052
Occu	-0.0487578	0.0351101	-1.39	0.184
Exp	0.0616339	0.0332334	1.95	0.082
Tenure	-0.0183982	0.0360326	-0.51	0.617
Age	0.0303084	0.0339118	0.89	0.385
Marital St.	0.0596361	0.0702009	0.65	0.408
Sector	-0.049964	0.0443372	-1.13	0.276
Industry	0.0009391	0.0297265	0.03	0.975
Composition	-0.0888782	0.0379434	-2.34	0.032
Part time	-0.0688109	0.0415937	-1.65	0.0118
Hourly Wage	-0.0362332	0.0486971	-0.74	0.468
Constant	0.2162108	0.0827927	2.61	.0000

This did not greatly improve explanatory power, with international data contributing an even smaller effect than the already small variable for LNU data. As LNU data was the most representative among data sets controlled for by researchers it remained included the final configuration of the regression model.

Table B.3: Alternate Model including controls for children/ dependents:

Source	SS	DF	MS	Number of observations = 32	
				F(15, 16) = 3.13	
Model	.119538515	15	.007969234	Prob > F = 0.0137	
Residual	.03998775	16	.002499234	R-squared = 0.7493	
				Adj R-squared = 0.5143	
Total	.159526265	31	.005146009	Root MSE = .04999	
Estimated Gap	Coef.	Std. Err.	t value	P>t	
Gender	-0.0195169	0.0283553	-0.69	0.501	
LNU Data	0.0012536	0.0333582	0.04	0.970	
Oaxaca	-0.0585326	0.0292942	-2.00	0.062	
Ed Qual	0.0785059	0.033908	2.32	0.034	
Occu	-0.0487578	0.0377516	-1.49	0.156	
Exp	0.0504594	0.0389449	1.30	0.213	
Tenure	-0.0210512	0.0343281	-0.61	0.548	
Age	0.0334735	0.0324524	1.03	0.318	
Marital St.	0.0415272	0.0599473	0.69	0.498	
Sector	-0.0531306	0.0319668	-1.66	0.116	
Industry	0.0028447	0.0292306	0.10	0.924	
Composition	-0.0901794	0.0348475	-2.59	0.020	
Part time	-0.0758635	0.0313348	-2.42	0.028	

Hourly Wage	-0.0375217	0.0257194	-1.46	0.164
Dependents	0.0285864	0.0570953	0.50	0.623
Constant	0.2327447	0.0569309	4.09	.001

Though it did not enhance explanatory power, similar to controlling for marriage, the variable for controlling for dependents and children also showed an effect of being an upward force on the gap. Even so, this variable was highly attached with controls for marriage leading to its exclusion in the final model.

Table B.4: An additional model with the inclusion of a simpler decomposition method using a

basic dummy variable for sex:

Source	SS	DF	MS	Number of observations = 32	
				$F(15, 16) = 3.33$	
Model	.120830713	15	.008055381	Prob > F = 0.0112	
Residual	.038695552	16	.002418472	R-squared = 0.7574	
				Adj R-squared = 0.5300	
Total	.159526265	31	.005146009	Root MSE = .04918	
Estimated Gap	Coef.	Std. Err.	t value	P>t	
Gender	-0.0311006	0.0319397	-0.97	0.345	
LNU Data	0.0058594	0.0331151	0.18	0.862	
Oaxaca	-0.0746912	0.034298	-2.18	0.045	
Dummy for Sex	-0.0478435	.0537142	-0.89	0.386	
Ed Qual	0.0821636	0.0331675	2.48	0.025	
Occu	-0.0507057	0.0377263	-1.50	0.152	
Exp	0.0704961	0.0337006	2.09	0.053	
Tenure	-0.002733	0.0384357	-0.07	0.944	
Age	0.0549005	0.0422057	1.30	0.212	
Marital St.	0.0331742	0.051335	0.65	0.527	
Sector	-0.043889	0.0329501	-1.33	0.202	
Industry	0.0127322	0.031319	0.41	0.690	
Composition	-0.101426	0.0365373	-2.78	0.013	
Part time	-0.0665426	0.0300208	-2.22	0.041	
Hourly Wage	-0.0262108	0.0292437	0.90	0.383	
Constant	0.2121162	0.0529368	4.01	.001	

This variable additionally did little to contribute to the overall explanatory power of the model (with its inclusion actually lowering the adjusted R-Squared). With this in mind, the Oaxaca-Blinder based decompositions were taken as a more representative control variable in the final model, exerting negative force on the overall gap.