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Effects of Labor Reforms on Gender Disparities in Pay in the Formal Labor Market in Tanzania

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Abstract

This study investigates the effect of the implementation of the Employment and Labor Relations Act in 2006 on gender inequalities in pay in the formal labor market in Tanzania. Using data from the Earnings and Employments Surveys before and after the enforcement of the reform, the study is able to construct panel data and estimate difference in difference models to map the effect on the average within-firm wage gap between women and men. In addition, the paper examines developments in gender differences in starting salaries on an individual level within firms, over a period after the labor reform. The main finding is a reduced average firm gender wage gap of 3.0-5.1 percent between 2005 and 2013 after controlling for sector, region, industry and firm size. The outcomes further suggest that for newly recruits employed at the same firm, the gender gap decreased by 9 percentage points between 2010 and 2013, however this can only be demonstrated during a period after the reform, possibly as a delayed effect of the legislation.

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1. Introduction

The gender wage gap continues to be present on a global level with women earning 23 percent less than men[1] on average (ILO, 2016) and extensive research confirms that discrimination against women is not only disadvantageous in terms of costs and losses of incomes for employers but also for entire societies (Becker, 1957; Stiglitz, 1974). Particularly in developing countries more equal wage distribution between genders and elimination of discrimination are significant factors to improve women's empowerment and a country's welfare and economic growth (Stiglitz 1974; Appleton, 1999).

Existing research examining the underlying factors behind the gender wage gap state numerous interlinked reasons steaming from political, economic and social aspects such as individual and work associated characteristics, gender occupational segregation and norms subject to culture and traditions within a society to be the main reasons for the disparities (Fontana and Paciello, 2007; Nopo et al, 2011). Gender discrimination is generally identified as a part of the unexplained wage gap resulting from gender biased hiring and dismissal processes, promotion practices and wage settings (Stamarski and Hing, 2015). The literature has for long had an ongoing debate on how much of this unsolved share of the gap that actually can be derived from discrimination instead of other uncontrolled factors. In some contexts, the wage gap has seen to converge extensively by controlling for specific features not correlated with gender yet known to affect wages settings. However, the gender wage gap has rarely been fully abolished and in those occasional cases, the factors included to reach such result are still commonly correlated with gender discrimination (Gundeson, 1994).

One political key recommendation to combat discrimination and mitigating the gender wage gap at the labor market is the implementation of legal acts prohibiting discrimination on the basis of sex in wage settings and hiring processes and remunerate equal pay for work of equal value (Weichselbaumer and Winter-Ebmer, 2005; ILO, 2016). These laws are usually referred to as a national equal pay act[2] and equal employment opportunity[3] and are typically steaming from a ratification of an international convention; the Convention on the Elimination of All Forms of

[1] Percentage of males' average wage (ILO, 2016).
[2] A regulation prohibiting discrimination on the basis of sex for a job of equal value (ILO, 2013).
[3] A regulation against gender occupational segregation discrimination (ILO, 2013).

Discrimination Against Women [4] (CEDAW, 1979) or ILOs (International Labor Organization Discrimination Convention), The Equal Remuneration Convention (No. 100), 1951 and the Discrimination Employment and Occupation Convention (No. 111), 1958.

Almost all industrialized countries have adopted legislations preventing unequal pay for similar work of equal value, mainly as a cause of stress from trade unions and global pressure after the Second World War[5]. However, although these legislations have been agreed to decades ago, the actual effect on narrowing the wage gap differs significantly across countries and provide mixed results when explaining the motivation of the movements in the size of gender wage gap over time. Voices of criticism against these legislations and enforcement of ratifications of international conventions argue that employers have no reason to implement the reforms and that the follow up mechanisms lack incentives to correct for established differences in salaries (Weichselbaumer, and Winter-Ebmer, 2005). Several national studies show that even decades after an equal pay act has been implemented, the size of the gender wage gap has barley moved and is still extensive (Gundeson, 1994; Rosholm and Smith, 1996). On the other hand, different findings suggest that enforcement of equal pay legislations contribute significantly to mitigate the gender wage gap compared to countries not enforcing policies against gender discrimination at the labor market (Weichselbaumer and Winter-Ebmer, 2005).

The main drivers behind the gender wage gap vary considerably between nations, however convincing research suggests that the gap appears not to be correlated with the magnitude of the Gross Domestic Product (GDP) or being narrowed followed by a rise in economic development (Weichselbaumer and Winter-Ebmer, 2005; Nopo et al, 2011). This implies that the economic well-being of a country is less important, instead other mutual factors amongst countries impose more substantial influence. The pay differences tend be smallest in nations with strong collective bargaining models with labor market parties negotiating salaries (Australia, Sweden, United Kingdom) and larger in countries with more traditional gender roles at the labor market (South

[4] CEDAW defines discrimination as "...any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field."

[5] Examples; France: Constitution and Articles L 140.2 and the labor code (1946) The United States; Equal Pay Act (1963); UK introduced the Equal Pay Act (1970), Sweden: Act on Equality between Men and Women/Equal Opportunities Act (1980), Finland Constitution (section 5, paragraph 4) (1995).

Korea, Japan), or in the US or Canada where the wage composition is decentralized with salaries negotiated at firm-level (Gunderson, 1994). In a study of the gender wage gap in 18 Latin American countries the disparities vary between 9 and 27 percent and are more dominant in the informal sector and among elder people (Atal et al, 2009). In Sub-Saharan Africa (SSA), the unexplained part of the gap consists of around 50 percent of the gender earning differences. In this region, unequal attainment of higher education, gender biased job selection and low level of job related training among women are factors most known to cause to the gap (Nopo et al, 2011). In addition, females are even more disadvantaged in contexts in which both high level of gender inequality and poverty interrelates. This indicates that in a setting of financial constraints and cultural gender imbalances, such as in many SSA countries, women become even more deprived and more likely to be subject to labor market discrimination since their vulnerability and limited freedom are making them more exposed to accept unfair wages and work conditions. Moreover, most gender gap studies are concentrated on industrialized countries and in low income countries, information and access to qualitative data are limited both in terms of the magnitude and trends of the gender wage gap, and on how new legislations might affect the size of earnings disparities and occupational segregation. In addition, given the diversity in country characteristics, the higher relative cost of adopting a multifaceted convention in relation to many other challenges a developing country might prioritize, makes it challenging to generalize and apply findings from industrialized countries on developing countries (Gunderson, 1994). Moreover, the limited trust in society and inadequate resources for institutions and governmental agencies implies an insecurity on how well these jurisdictions are being spread, implemented and followed up in many of these countries.

As a political statement and to set a gender equal standard and promote anti-discrimination among employers', legislations obviously play a significant part, however the real effect of the law adoption appears to be more difficult to interpret. In Africa 55 countries have ratified ILO Convention on Equal Remuneration, 1951 (No. 100) and 53 to the ILO Convention on Discrimination (Employment and Occupation), 1958 (No. 111), although evaluations of the effects of these acts and their national counterpart in this region are less prominent in the academic literature. All in all, conflicting findings on weather equal pay acts actually cause any significant effect on

the gender wage gap and the lack of research on this subject in developing countries motivates the reason to investigate the issue further.

Using the implementation of the Employment and Labor Relations Act (ELRA) in Tanzania in 2006 as a natural experiment, this paper studies the effect on the average within firm gender wage gap at the Tanzanian formal labor market. The formal market activates around 10 percent of the total Tanzanian workforce of which one third are women and the overall gender wage gap was anticipated to be as high as 28 percent in 2001 (ILO, 2016). ELRA prohibits employers' discrimination on the grounds of sex and stresses equal rights for both men and women. Specifically, the act prevents unequal pay based on sex for work of equal value and discrimination in employment processes. (Tanzania Government Portal, 2004). Using data from Tanzania´s National Bureau of Statistics (NBS) Earning and Employment Surveys (EES) over the period 2001-2013, the hypothesis is tested that men should have been less advantaged by increases in wages than women within the same firm in the formal sector as a result of the implementation of ELRA through two different approaches. The first is a difference in difference method used in order to detect differences in the mean wage gap between men and women employed at the same firm in the formal sector over a time period before and after the legislation, while the second aims to detect changes in the gender wage gap in starting salaries within the same firm on an individual level in a post time period. If the legislation has been adopted properly, a convergence in the gender wage gap both the average within firms and on an individual level should be detected. The findings will contribute to policy implications related to the effect of anti-discrimination and equal pay for work of equal value acts and if legislations are significant for the purpose of battling gender wage discrimination in developing countries and consequently greater knowledge on how to combat gender wage gap on a political level.

This paper adds to the academic literature in different ways. First by investigating the effect on a relative new equal pay act in a developing country, an area existing studies barley have covered. Second, by combining firm and individual level data the paper adds a different angle to measuring changes in gender disparities. Finally, by distinguishing gender wage disparities in the formal sector in Tanzania, the part of the labor market political regulations actually targets, the study explicitly links the results to the legislations and avoid to take the large informal labor market into account.

The results provide statistically significant indications that the labor act has caused a reduction in the gender wage gap within the same firm between 2005 and 2013. Moreover, the findings on the individual level in a period of years after the policy was implemented suggest a convergence of the wage gap indicating that the implementation of the equal pay act may resulted in a 9 percentage points gender wage gap reduction in starting salaries between 2010 and 2013.

The remaining part of the thesis is structured as follows. Section 2 presents a literature review. Section 3 demonstrates the theoretical framework related to the topic followed by section 4 that gives information about the data. Section 5 describes the descriptive statistics. Section 6 shows the empirical approach followed by section 7 that presents the results and lastly section 8 provides the analysis and conclusions.

2. Literature Review

The empirical evidence on the relationship between implementing an equal pay act and the size of the gender wage gap is rather diffuse and leaves unclear interpretations. First, most existing literature evolves around industrialized countries, and within this group the correlation between equal pay acts and the gender wage gap varies from showing no significant outcomes to substantial effects in both directions. Second, previous research on gender earning disparities tend to focus more on the absolute size of the gap and to what extent the gap is derived by discrimination. The theoretical aspects of these areas are however relevant and more examined in the theory section. Third, in developing countries particularly in Africa, literature on gender discrimination related to the labor market is scarce and reflects the limited access to qualitative data, although the existing limited findings imply a very weak effect of equal pay acts on the gender wage gap.

One of the earliest comprehensive pieces in the literature on equal pay acts and the gender wage gap is conducted by Gunderson (1994) in an international study on effects of equal pay legislations in Australia[6], Canada[7], the UK[8] and the US[9]. In both the UK and Australia the gender wage gap declined significantly three to ten years after the legal implementations. The main reasons for this outcome in the UK appears to be

[6] Equal Pay for Equal Work (1969), Equal Pay for Work of Equal Value (1972)
[7] Ontario Employment Standards Act (1969)
[8] Equal Pay Act in (1970)
[9] Equal Pay Act[9] (1963) and the Equal Employment Opportunity provision of the Civil Rights Act of (1964)

the broad scope of the act to include the adoption of the policy in the collective agreements, and that it involved elimination of differences between male and female minimum earnings. Australia's adoption of equal pay policies in 1969, 1972 and 1974 to prohibit gender differences in minimum pay and enactment of equal pay for work of equal value all in all contributed to a declining gap from 42 percent to 20 percent in 1979. The findings from Canada show no significant mitigation of gender wage gap even ten years after the embedding of their pay equity act and studies based on US data demonstrate either no or a very small positive direct effect. In Canada, the reported results are based on two studies using cross-sectional and time series data for the province Ontario and the conclusions state that the lack of effect is the result of restrictions of the law to only target disparities in earnings within the same firm and the same type of employment and that an official complaint from the employee was required in order for an investigation to be initiated. In conclusion, Gundeson's review of results are relevant in the sense that the direct effects of equal pay acts are targeted however imposes that more factors than a simple equal pay act is required to reach significant outcomes such as more multifaceted equal pay policies and strong labor unions.

Neumark and Stock (2001) adds another angle on the impact of the US acts using state-policies already embedded prior to the national legislation enabling an opportunity to use these states as control groups in a difference in difference in difference model. The findings show that the wages increased slightly for women compared to men, however not for all estimations. At the same time, the level of female employment declined marginally. These results imply an interchange between improving women's earnings and a reduction in women's employment rate.

Weichselbaumer and Winter-Ebmer (2005) builds upon these empirical findings by utilizing a meta-regression analysis on international data to estimate if ratifying international conventions and implementing national equal pay and treatment acts have any significant effect on mitigating the gender wage gap. By applying specific variables for continents and country socio-economic characteristics as control variables such as fertility rate, GDP per capita and the level of a female activity the findings demonstrate an overall robust result that countries adopting the legislations mitigated their gender wage gap is significantly[10]. The results further impose that fertility rate

[10] A decrease by 3-5 logarithmic points for countries signing the CEDAW and 7-13 points for countries signing ILO C111.

and female participation rate have no significant effect on the wage differentials. The international comparative studies are important for the aim of this study since they give a sense on a general level whether equal pay acts have an impact on wages.

Studies investigating how equal pay acts effect the gender wage differentials on a national level are more restricted to generalization although these analyses contribute with more depth and country specific components to demonstrate the actual change of the gender wage gap. Jurada (2005) studies the effect of equal pay and treatment acts in the Czecjk Republic (2000) and Slovakia (2002), two countries with a high level of gender biased earnings particularly in the private sector. By utilizing a difference in difference method and controlling for both workplace and occupation specific factors, the results demonstrate that these acts only had a minor direct effect on the gender wage gap. However, this paper only investigates the effect of the legislations between two and four years after the implementation making the effect of the policies limited. South Korea adopted new labor policies in 1987, including a gender equal employment act and other reforms related to improvement of collective bargaining processes and less restrictions for unions. These legislations all together contributed to enhanced enforcement of previous implemented labor regulations due to greater compliance among firms to adjust after the unions received more influence. In the context of women's job situation however, subject to education and experience the gender wage differentials or attainment of better quality employment did not see any advancement (Rodgers and Zveglich 2003).

In the context of developing countries particularly in Africa, the effect of implementing gender policies and anti-discrimination laws is an uncommon subject in the academic literature although a few papers demonstrate some relevant results. In a descriptive study of the situation in Nigeria based on their inadequate labor legislature, the importance of workers' knowledge of their rights and information about the different kinds of discrimination they might be subject to is implied as crucial in order for employees to defend themselves against discrimination (Odeku and Animashaun, 2012). Furthermore, in a review by Fontana and Paciello (2007) empirical findings are presented that the effectiveness of equal pay acts on the gender wage gap is rather limited as a cause of weak legislative execution and a high risk for non-compliance in many developing countries. Nevertheless, the review implies that adopting anti-discrimination laws may still improve women's opportunities to attain better quality and more well paid jobs, subject to how well these policies are implemented. It is further

demonstrated that equal pay acts are more effective when implemented parallel with other legal labor instruments such as equal opportunity acts and improvement of collective bargaining models and that equal pay legislations are more effective in the public sector compared to the private mostly as a cause of greater compliance in the public sector. Moreover, in the same study some evidence by Cohen and House (1993) is presented who advocate that countries with a high level of gender biased occupational segregation as in the case of Sudan, lack any effect on the gender wage gap after implementing equal pay legislations. At the same time, it is implied by Liu (2014) that equal pay acts could in theory contribute to mitigating the gender earnings gap in Vietnam due to the substantial gender pay gap within segments at the labor market compared to the gap between segments. All in all, based on existing findings from low income countries, the effectiveness of labor legislations appears to be weak and subject to law enforcement. On the other hand, this lack of effect could be expected since most results are based on labor data contained from both the formal and informal sector and since the majority of workers in low income countries are active in the informal sector, a part of the labor market not applicable for labor legislations, this would in part explain the results.

To my best knowledge, no paper has yet investigated the effect of ELRA, and only one existing study is focusing on the overall gender wage gap in Tanzania, a paper indicating an excessive level of gender bias at the labor market. In this study, using the Tanzanian Labor Force Survey from 2006, Pacchiotti (2012) investigates to what extent discrimination is causing the gender wage gap and demonstrates that undetected factors not related to the level of education, experience, material status or workplace attributes represents 45 percent of the gap, slightly higher than the global average unexplained part of 40 percent as identified by Blau and Kahn (2016). The data in this paper takes both the informal and formal sector into account while ELRA is only targeting the formal. This high level of gender biased unexplainable gap implies that a significant share of the pay gap is subject to be reduced if discrimination is dissolved. However, the author is not taking into account the level of earning differences for employees within the same firm, nor recognized a possible shift of the size of the gap due to the ELRA.

This review determines unclear conclusions on the effect of equal pay acts on the gender wage gap. It appears that on a general level and in well-equipped labor regulated developed countries a political framework might contribute to somewhat

mitigate the gap, however in low income countries the wanted effect is not as convincing. Therefore, the aim of this study is to clarify and enhance understanding of the effect of labor legislations on gender earning differentials in Tanzania.

3. Theoretical Framework

Evaluating the relationship between the gender wage gap and the implementation of anti-discrimination legislations is rare in the academic literature, therefore most theories are established based on empirical outcomes. However, the structures and drivers behind the gender pay gap is well recognized in both previous research and theory and will be useful to map out for an overall theoretical understanding of some of the most relevant components of the gap.

3.1 Equal Pay Acts and the Gender Wage Gap

The main intuition behind implementing an equal pay act is for employers to strive towards reducing gender wage differentials for work of equal value within their establishment. However, as seen in the literature the wanted effect appears difficult to attain and why this is the case has in some situations been tested empirically.

One commonly discussed theory mentioned by Weichselbaumer and Winter-Ebmer (2005) is the risk of governments signing agreements for other reasons than aiming to combat the wage differentials. A country may ratify an international convention or adopt a national equal pay act in order to appear better to the outside world since the consequences for not upholding the legislations may be too weak. Another argument is unwillingness for employers to actually reinforce the equal pay acts due to weak incentives to file complaints and difficulties for authorities to apply follow up mechanisms (Fontana and Paciello, 2007). This can be derived from unofficial workplaces salary information, making it difficult to conduct fair comparisons of wage data among employees, and that the threshold for a woman to file a complaint is too high. These theories have however been criticized, with the argument that not obeying to legal acts comes with a large price (Chau and Kanbur, 2001), that countries in general are alert of the consequences for employers not to follow the political framework (Samson and Schindler, 1999) and that following up systems have previously reprimanded numerous nations. Another theory is that equal pay acts are more common in countries with a higher tendency of treating females and males

equally, therefore the cost for adopting the policies would not be high since resistance would barely exists. Empirical tests have further been performed by Weichselbaumer and Winter-Ebmer (2005) in their international study on the effect of equal treatment laws on gender wage differentials. In order to avoid possible endogeneity issues and confirm the way the causality works, the authors are utilizing two instrumental strategies and find convincing assurance that it is the signing of the legislations that is causing the mitigated gender wage gap in their study.

3.2 The drivers behind the gender wage gap

The main drivers behind the gender wage gap found in the literature are in theory applicable on most SSA countries, however certain elements are not translatable due to too large fundamental differences in the level of development and institutional, cultural and social norms. On a general basis, observable earning disparities between women and men are derived from individual and job characteristics (education, experience, age, preferences, type of work, industry, sector and region) labor market construction and other economic and political factors and often are these factors interlinked with each other. In order to understand how both observable and non-observable factors interrelate when it comes to gender discrimination and to grasp the theoretical determinants, some of the most relevant areas of drivers to the gap in developing countries, in particular the SSA are described below.

Individual characteristics

The level of attained and endowed characteristics such as education, experience and other work related training are known factors to reflect earnings (Gundeson, 1994). In SSA, the gender biased attainment of higher education and vocational training are some of main factors to explain the wage differentials and are significant in the sense that work related education is almost a necessity to attain a well-paid job in the formal sector (Nopo et al, 2011). Higher education further enables improved work related experience and other relevant skills competitive at the labor market (Fontana and Paciello, 2007). On the other hand, a study investigating the gender wage differences in Jamaica and Barbados, find that although women's educational level is higher than men's, men still earn significantly more in both countries. Instead job experience and tenure appear to impose the most significance factors contributing to tightening the gender wage gap (Bellony et al, 2010). Many developing countries have been successful in attempts to

narrow the gender education gap on primary and secondary level, however in terms of job attainment, more women are active in occupations requiring lower skills than their education have gained them (Fontana and Paciello, 2007).

Individual preferences

Females, particularly in developing countries are more often obligated to take care of the children and household. For the same reason, men are freer to attain jobs with a higher level of responsibilities and longer work hours and this difference in type of jobs attained will reflect the level of payment (Gundeson, 1994). Hence many women work less hours than men outside the household due to higher expectations to take care of family chores which consequently leads to fewer opportunities to attain a full time paid job outside the house. Findings further demonstrate that the gender wage gap is significantly larger for married women compared to singles (Weichselbaumer and Winter-Ebmer, 2005). Common arguments by neo-classical economists are that inequality at the labor market is simply reflected by women's preferences to certain occupations and sectors, and earnings differences are rather results from choices than from discrimination. However, if not both men and women are given the same choices and freedom, and women are encouraged to select work set out to be suitable for them this argument fails (Vargas-Lundius and Ypeij, 2007). A view assuming equal opportunities and choices for both sexes is in other words too simplified and neglect the level of structural obstacles in institutional and cultural environments.

Occupational segregation

Occupational segregation is a common phenomenon and reflected both by employer's distaste for women attaining work of a specific character and by the society in large to encourage women to attain work in sectors that tend to pay lower wages due to social, cultural and stereotypical norms. On an international level, almost 50 percent of the gender pay gap is caused by overrepresentation of females or males in certain groups of jobs or industries (Blau and Kahn, 2016). In SSA employer's gender biased perceptions contribute largely to the wide range of occupational segregation and is one of the main drivers to the earning disparities in the region (Nopo et al, 2011). In these countries, women in general have fewer possibilities to attain better paid jobs compared to their male counterparts, particularly in countries with relatively small formal sectors. In addition, the crowding out theory predicts, if women are restricted or encouraged to

only work in certain sectors the risk is that this will lead to higher competition on limited number of jobs further reduce the earnings in these occupations (Fontana and Paciello 2007).

Labor force participation

One theory commonly emphasized in the literature is the negative effect on female earnings of a growing female labor force participation (Weichselbaumer and Winter-Ebmer, 2005; Blau and Kahn, 2016). However, a greater share of women at the labor market could also be correlated with a legislation prohibiting discrimination against women in hiring processes and wage settings. Although some studies have found no correlation between female labor participation rate and lower gender pay gap on an international level (Weichselbaumer and Winter-Ebmer, 2005), improved female representation in higher wage sectors in SSA has seen to mitigate the gender earnings gap over time. In a study investigating the gender wage gap over time in Ethiopia, Uganda and Cote d'Ivore, the results show that a rise in women's share in the higher paid public sector reduced the gender earning disparities (Appleton et al, 1996). That the public sector is better paid and tend to hold a more gender equal representation compared to the private sector is in general true in many SSA countries.

Wage inequality

Another main cause behind gender disparities in earnings is the level of wage inequality within a country, in particular relevant to apply in developing countries (Blau and Kahn, 2016). Since women in general dominate the sectors in the lower part of the wage span, the overall wage inequality affects the gender pay differences significantly. In addition, gender wage differentials are more difficult to combat in the higher wage intervals since evidence over time reveals that the wage gap converges faster in the lower part of the wage distribution. This is further augmented by Nordman and Wolff (2010) who provide an analysis on how enterprise attributes affect the gender wage gap in manufacturing firms in seven African countries[11] by controlling for both individual and firm characteristics and illustrate that distribution of wage is a strong determinant to affect the gender wage gap.

[11] Benin, Mauritius, Morocco Kenya, Madagascar, Senegal and Uganda.

As many of the observed reasons and underlying drivers behind the gender wage gap are intervened and multifaceted, the general consensus is that the unexplained part of the gap is the main target of equal pay acts, as many of the above mentioned factors are contributing to, however many of them are not possible to control for based on the accessible data. Still, how theory predicts the relationship between labor legislations and gender biased earnings, as well as essential factors and circumstances affecting the gap, will benefit the continuous discussion and the significance of the interpretations and conclusions from the findings.

4. Data

4.1 The Survey

The data used is based on Tanzania's Earning and Employment Surveys (EES) conducted by Tanzania National Bureau of Statistics (NBS). The survey aims to annually provide information of formal labor market indicators from employers such as accumulated female and male earnings, firm characteristics, and sector and occupation groups of all regions in Tanzania. The data covers all public enterprises, all private enterprises with over 50 employees and a sample of private firms with 5-49 employees. Thus, the EES coverage gives a fair estimation of the characteristics of the formal Tanzanian labor market. Each dataset consists of a sample of 8,000 to 12,000 observations, representing all firm establishments as sampling units. In order to account for the private firms of 5-49 employees not included in the sample, a weight variable for strata is included.[12] Smaller enterprises, household workers, workers in seasonal smallholding agriculture, foreign international development establishments and the military are excluded from the survey. Over the past two decades, the survey has been carried out in 2001, 2002, 2005, 2006, 2007, 2010, 2012, 2013 and 2014[13], hence it covers the period both before and after the policy implementation in 2006. The response rate and number of respondents in the surveys are high although lower in the oldest versions[14], however still high enough to indicate sufficient validity of the data. From 2010 and forward, the survey expanded to also include additional information regarding newly recruits and vacancies. In these latter datasets, additional variables on an

[12] *Weight*=N (total number of establishments before sampling)/n (total number of sampled establishments)
[13] Due to financial constraints, the survey could not be executed in 2000, 2003, 2004, 2008 and 2009.
[14] Response rate and number of respondents: 2013: 89.2 %, 8,828; 2012: 88 %, 9,431; 2010: 75.3 %, 8,655; 2007: 64 %, 4,977; 2001: 73.2 %, 4898.

individual level such as starting salary, education, type of contract and occupations are available. Based on the EES data, two separate datasets are created named "Firm Earnings" and "Individual Earnings". Both of the datasets are limited to only focusing on adult[15] regular employees and do not account for young employees or casual workers given the errors, missing values, and outliers in these groups. The firm earnings dataset target the average salary for men and women respectively at each firm, as the dependent variable and is formed to include the data from 2005 and 2006 as a base for the pre-time period and data from 2012 and 2013[16] for the post-time period, while the individual earnings data use starting salary for newly recruits for the available data periods 2010, 2012 and 2013 to conduct an assessment of the gender wage gap on the individual level.

4.2 Firm Earnings Dataset

Dependent variables

In each establishment, variables of accumulated earnings for regular female and male employees respectively are available. Regular employees relate to all paid workers employed longer than a month. Earnings are referred to as monthly cash gross earnings before any deductions[17]. In addition, there is information on the total numbers of females and males in each establishment. Using the accumulated earnings and number of employees I construct two new variables to receive the average earnings for men and women. The earning variables are further adjusted for inflation through the Annual Average Inflation Rate Index, provided from NBS into the Tanzanian shilling (Tsh) value of 2010[18]. In order to interpret the results more clearly I transform these variables into logarithms and create a new variable to represent the logarithms of the firm gender difference in earnings called wage difference. For establishments consisting of exclusively men or women, wage difference and male/female earnings become a missing value. However, there are some drawbacks in the construction of the earnings variables. First it is quite optimistic to assume that all women and all men in one establishment get rewarded the same amount of gross earnings, leaving the diversity of wages out of the model. Second, more women than men work part time in Tanzania

[15] Adult employees are over 25 years old.
[16] Only data up to 2013 was available during my visit to NBS in April 2015, this this is the reason of not including the 2014 data.
[17] Employers fees, pension funds, paid leave etc.
[18] September.

(Pacchiotti, 2012) and since the earnings variables assume monthly wages instead of hourly, the result might be biased in the sense that the likelihood of earnings to not reflect the same hours worked for both men and women.

Control variables

Sectors are divided into public (central government, local government and parastatal organizations), and private (profit and non-profit firms, and cooperatives). Unequal treatment of sexes between the sectors and widely diverse wage levels between the private and public sector in Tanzania (EES, 2014) as previous studies demonstrate, impose that the pay gap is less significant in the public sector compared to the private (Weichselbaumer and Winter-Ebmer, 2002).

Industry groups or classification of "Industrial Classification of All Economic Activities" (ISIC) are present in the surveys from 2010, 2012 and 2013 but not in the older data sets. Therefore, I create the same groups through ISIC units in the 2005, and 2006 and datasets. The groups include agriculture, electricity and mining, manufacturing, trade and transport, finance and real estate, public administration, and education. All occupations groups are generated into dummy variables and the largest variable manufacturing is omitted in all regressions in order to avoid multicollinearity. The likelihood of the gender wage gap being different in different occupation groups is assessed as high (Hegewisch et al, 2014; Andrén and Andrén, 2015).

Tanzania is divided into 21 different regions, and each region is categorized into groups based on geographical location; DMS (Dar es Salaam), South (Lindi, Mtwara, Ruvuma), North (Arusha, Kilimanjaro, Sinyanga, Kagera, Mzanza, Mara), WestCentral (Mbeya, Tabora, Rukwa, Kigoma, Dodoma, Iringa, Singida) and East (Manyara, Tanga, Morogoro, Pwani). Since the statistics indicate various differences in regard to gender differences among regions, the regional variables are essential to include in the model (Blau and Kahn, 2016). The variable WestCentral omitted to use as a benchmark.

Firm size is an ordinal variable consisting of three levels; firms with 5-9 employees, 10-49 employees and 50+ employees. I adjust them to dummy variables; small, medium, and large respectively, and drop small in the estimations to use as the benchmark. It is justified to include the size of the firm as firm heterogeneity is emphasized as a central factor to effect differences in earnings in the literature (Blau and Kahn, 2016) and theory predicts that bigger firms in general have a higher wage

level. As a cause of higher competition, the better paid jobs may also be even more subject to gender discrimination based on employer preferences (Gundeson, 1994).

4.3 Individual Earnings Dataset

In the individual earnings sample, only new employees are included as observations. The dependent variable, starting salary is the monthly gross earnings an individual receives when she or he starts working at a firm. Likewise as in the firm earning sample, the wage variable is adjusted for inflation through the Annual Average Inflation Rate Index, into the Tanzanian shilling (Tsh) value of 2010[19]. In this second model I further include year dummies as explanatory variables of interest (2010, 2012 and 2013) and the same control variables as in the firm earnings sample. However, since this dataset contains individual variables I add wage interval, education level and occupation. Wage interval is important since disparities in earnings is a known component to influence gender biased wage settings (Weichselbaumer and Winter-Ebmer, 2005) and the division of wage categories will most likely differ between women and men. The different wage spans are low[20], medium[21] and high[22]. Education level is divided into primary, secondary, vocational, teacher college, college and university. Occupation consists of legislators, administrators and managers, professionals, technicians and associate professionals, clerks, service workers, machine operators, and elementary occupations. All control variables are regenerated into dummy variables and low, primary, elementary and are excluded in the estimations to prevent from multicollinearity.

5. Descriptive Statistics

5.1 Firm Earnings

In table 1 below, the summary statistics is provided for the firm earnings dataset of the full sample (2005-2013), the before period (2005-2006) and the after period (2012-2013) of the ELRA implementation. The variables of interest, female earnings and male earnings are presented in Tanzanian shilling (Tsh) recalculated into logarithms. Male earnings have, as anticipated a higher average than females in all samples, however the

[19] September.
[20] Tsh 65,000-150,000
[21] Tsh 150,001-500,000
[22] Tsh 501000-1,500,000

data suggest a few logarithmic points higher increase of female earnings comparing the before and after sample. Fewer observations for women than men are noted as expected for all samples, as a cause of lack of women in many firms. For the control dummies, the data demonstrates more public than private firms in the before sample and more private than public firms in the after sample. For the industry groups, it is clear that most of the enterprises are in education, although the share declines in the after sample. Some of the industry groups are omitted due to too small share of workers. Overall the summary statistics demonstrate that males attain a higher wage than women in both in the before and after sample.

Table 1. Summary statistics for average female and male within-firm earnings (Tsh) and control variables (shares)

	Full sample		Before sample		After sample	
	Mean	Std dev	Mean	Std dev	Mean	Std dev
Female earnings (ln)	12.36	0.89	12.24	0.94	12.47	0.82
Male earnings (ln)	12.50	0.90	12.40	0.95	12.60	0.82
Sector						
Private	0.48	0.49	0.42	0.49	0.56	0.49
Public	0.51	0.49	0.57	0.49	0.43	0.49
Region						
Dar es Salaam	0.21	0.40	0.22	0.41	0.20	0.40
East	0.13	0.34	0.13	0.34	0.13	0.33
South	0.11	0.32	0.11	0.32	0.11	0.31
North	0.24	0.43	0.22	0.41	0.27	0.44
West Central	0.28	0.45	0.29	0.45	0.25	0.43
Firm size						
Small	0.40	0.48	0.37	0.48	0.41	0.49
Medium	0.39	0.48	0.42	0.49	0.37	0.48
Large	0.19	0.40	0.19	0.39	0.21	0.40
Industry						
Agriculture	0.03	0.17	0.03	0.17	0.03	0.17
Electricity and Mining	0.01	0.11	0.02	0.13	0.01	0.09
Manufacturing	0.07	0.25	0.07	0.25	0.08	0.27
Trade and Transport	0.23	0.42	0.21	0.40	0.25	0.43
Finance and Real Estate	0.05	0.21	0.07	0.26	0.03	0.16
Public Administration	0.11	0.30	0.09	0.28	0.13	0.32
Education	0.31	0.45	0.33	0.47	0.28	0.45
Sample size	46.149		15.460		15.736	

Notes: Full sample: 2005, 2006, 2007, 2010, 2012 and 2013, Before sample: 2005 and 2006, After sample: 2012 and 2013. Female and Male earnings are the average monthly earnings within firms in Tanzanian shillings expressed in in logarithms. The control variables in sector, region, firm size and industry show the shares in each category.

5.2 Individual Earnings

Descriptive statistics for the new employees' individual earnings sample is presented in table 2 for the full samples overt the time period 2010-2013 divided between females and males. The sample size is smaller for women compared to men as expected and the starting salary for female employees is on average Tsh 34,000 less than the mean starting wage of males (around 10 percent). It is further notable that men are more represented in the higher and the lower earnings spans, with the exception of very low which is equal between genders, while women are dominating the medium low interval. Moreover, less women than men have attained a university degree, however the difference is not substantial. More males have conducted vocational training while more women have gone to teacher college, and more females than males have only finished primary school. In terms of occupation, the most prominent difference is to be found in the category technician and associate professional which complies of 55 percent women compared to 48 percent men. More male than female new employees are further active as professionals, in the service occupations and as machine operators. In addition, in this sample, both men and women are mostly active in large firms, 84 percent and 81 percent respectively. More females than males are represented in the public sector, 67 percent compared to 61 percent. In conclusion, among new employees' men earn on average more than women, however the disparities in the wage intervals suggest that women are more represented in the medium block and relatively more men denoted in the higher and lower divisions.

Table 2. Summary statistics for individuals starting salaries (Tsh) and control variables (share)

	Female		Male	
	Mean	Std dev	Mean	Std dev
Starting salary	329[23]	876	363	1222
Wage Interval				
Low	0.17	0.38	0.19	0.39
Medium	0.65	0.46	0.60	0.48
High	0.17	0.37	0.19	0.39
Education				
University	0.20	0.40	0.22	0.41
College	0.17	0.37	0.17	0.37
Teacher college	0.31	0.46	0.25	0.43
Vocational	0.04	0.21	0.07	0.26
Secondary	0.18	0.38	0.17	0.38
Primary	0.07	0.26	0.09	0.29
Sector				
Private	0.32	0.46	0.38	0.48
Public	0.67	0.46	0.61	0.48
Firm Size				
Small	0.04	0.21	0.03	0.19
Medium	0.13	0.33	0.11	0.32
Large	0.81	0.38	0.84	0.36
Occupation				
Legal, Admin, Manager	0.02	0.14	0.02	0.14
Professional	0.17	0.38	0.20	0.40
Technician, Associate	0.55	0.49	0.48	0.49
Clerks	0.07	0.25	0.04	0.19
Service	0.06	0.23	0.10	0.30
Machinery	0.04	0.21	0.07	0.26
Elementary	0.04	0.21	0.04	0.20
Sample size	42.536		53.689	

Notes: The data is for 2013, 2012 and 2010. Starting salary is the average monthly wage in thousands Tanzanian shillings a new employee earns. The control variables in wage interval, education, sector, firm size and occupation groups show the shares in each category.

6. Empirical Approach

This study uses two different econometric approaches to analyze the separate data samples. The first is a difference in difference model used in order to determine the effect on wage difference after the policy implication on firm level. The second model explores the possibility of a delayed effect of the legislation by investigating trends in

[23] Thousand Tanzanian shillings (Tsh).

starting salary of new employees on an individual level. Below follow descriptions of these utilized models.

6.1 Empirical strategy for Firm Earnings: Difference in Difference

The difference in difference model is a common practice when estimating effects of policy changes. The method is used by Card (1990) to measure effects of immigration on non-immigration wages and Duflo (2001) to estimate wage and education effects after the implementation of a school construction program. The core formulation of the difference in difference method is to investigate the time effect between a treatment group and a control group in order to explore a possible effect of a treatment (Cameron and Trivedi, 2010). In this case, women constitute as the treatment group and men as the control group, since women are "treated" with the implementation of ELRA. In order to estimate accurate changes in mean wages between men and women, I would preferably use the same men and women, holding everything else constant and follow them during the ELRA implementation and control for both individual and firm characteristics. If the sample would be randomly assigned, the assumption is that no differences between men and women prior to the law implementation could affect the outcome of the treatment (ELRA implementation), hence result in elimination of systematic differences between men and women. On the other hand, since the data for firm earnings is weighted to denote the full formal sector it is fair to assume that the samples are fairly representative for the targeted groups making the validity of the data sufficient. Still, there is a risk that disparities between the groups would affect earnings differences over time, hence heterogeneity might occur in the error term because the covariance between men and women could vary as a cause of different characteristics between the two groups. Including available and plausible control variables mitigate this issue, although there is still a likelihood that unobservable factors would generate a biased result.

Hence, in order to improve the validity of the results a few underlying assumptions are necessary. The first is the parallel trend assumption, predicting that if the policy implementation would not have occurred, both men and women´s earnings would have evolved in the same direction (Cameron and Trivedi, 2010). This further formulates the hypothesis that if the policy in fact had an effect, women's earnings

should have progressed faster men's. Moreover, the parallel trend assumption forecasts that the control group (men) would capture all other differences occurring during the time absent the policy change. Thus, the difference between the groups that actually arise during this time period should be the result of the legislation. The second assumption indicates that the structure of the two groups is the same during the tested time period, partly encountered by the use of panel data in the main model. For the firm earnings data sample the panel is created based on firm group identifiers constructed by an adjusted formula of establishment identifiers, regions and district in each data set separately (2005, 2006, 2012 and 2013) and appended to one comprehensive dataset. The ultimate set up would obviously be to follow each firm over the years to see how the wage structure has changed, however since firms in Tanzania over this time period have changed formation, new firms have been added and others have been dissolved, the establishment identifiers have not been consistent. The result therefore, is a fairly unbalanced data set with significant error types and acts as motivation to why I also choose to drop duplicated observations and use a strongly balanced data set for robustness, however then with much less observations.

In conclusion, there are two critical factors to take into consideration during the estimations, the pre-existing differences of men and women that could disturb the accuracy of the outcome and that men and women might be affected differently by factors outside the model over the time period of interest.

In order to estimate the effect of ELRA on the firm average earnings I provide three models with different dependent variables. In the first two I regress women and men's earnings on cross sectional data in order to obtain the earnings difference over the time period for each gender, in other words the treatment effect of the treated (1) and the treatment effect of the controls (2).

$$Female\ earnings\ (ln)_{ft} = \beta_0 + \beta_1\,(after_t) + \beta_2\,X'_f + \varepsilon_{ft} \qquad (1)$$

$$Male\ earnings\ (ln)_{ft} = \beta_0 + \beta_1\,(after_t) + \beta_2\,X'_f + \varepsilon_{ft} \qquad (2)$$

The outcome is female or male average earnings for firm f in time t expressed in logarithms. The after dummy is equal to 1 if the time period is after the policy (2012 or

2013) and 0 before (2005 or 2006). *X* is a vector for all the control dummy's and ε is the error term capturing unobserved elements that could affect the earnings. It is expected that the after variable will be positive for both female and male earnings, however the magnitude of the female after coefficient should be larger than the male one. For the third model (3), the average wage difference for firm *f* in logarithms acts as the dependent variable, to directly measure the difference in difference effect based on panel data.

$$Wage\ difference\ (ln)_{ft} = \alpha_0 + \alpha_1(after_t) + \alpha_2 X'_{ft} + \varepsilon_{ft} \qquad (3)$$

The outcome in model (3) is the average earnings difference between women and men for firm *f* over time period *t*. The after dummy is the same as for model (1) and (2). *X* is still a vector of the control variables and ε the error term. Given that the observations in the firm earnings sample are compiled on firm level, the classic difference in difference formula of using individual earnings as the dependent variable and an interaction variable consisting of a female dummy and a time variable, had to be adjusted. The wage difference variable is simply constructed by subtracting female firm average earnings from males and can be described as a substitute in the classic difference in difference formula for the female dummy as part of the interaction variable and real individual earnings as dependent variable. The expectation is that the after variable should be negative in model (3) since this would impose that female earnings have improved above males. The standard error will be robust in all estimations avoiding any assumption on the construction of the heteroscedasticity.

6.2 Empirical Strategy of Individual Earnings

Although wage data of new employees is not available until 2010, there is still rationale for expecting an effect of the legislation not to be visible until after a period of time has passed. Considering that wages in general grow slowly over time and given the small likelihood of employers correcting for wages already established, starting salaries for newly recruits should in theory be more available for modifications by employers. This second model uses data of new employees in an attempt to study trends of convergence or divergence of differences in starting salary between genders. Combining two different empirical approaches on different data samples, both individual and firm

earnings data adds both robustness to the overall result as well another dimension to the wage trends. The individual earnings dataset further allows me to expand the data and reshape it so each observation represents one individual in contrast to firm level as in the previous data set and is illustrated below in model 4.

$$Starting\ salary\ (ln)_{it} = \beta_0 + \beta_1\,(female_{it}) + \beta_2\,X'_{it} + \varepsilon_{it} \qquad (4)$$

The dependent variable is Starting salary for individual *i* in time *t*. The female dummy is equal to 1 if the individual is female and 0 if male. This variable is predicted to be negative since female starting salaries are expected to be lower, however the coefficient is expected to decline in magnitude for the latter years. X represents, as in the previous models, a vector of the control variables outlined in section 4.3 and ε the error term. I run this model with weights for all three years for which individual data is available, 2010, 2012 and 2013.

6.3 Robustness

The most critical element in the difference in difference estimation is the risk that factors outside the model could have affected women´s earnings more than men's, in other words there is a risk that changes in the gender wage gap would have happened without the legal framework, illustrated by the assumption of parallel trends described above. Therefore, I test if the difference between female and male average firm earnings follow the same trend in a period before ELRA, 2001- 2005 and 2001- 2006. If the female wages accelerate faster than males in the labor reform period, 2005/2006-2013, compared to before the labor reform, 2001-2005; 2001- 2006, this will indicate that no other significant factors outside the model would have affected the gender wage gap. Moreover, since the aim of robustness checks is to see how sensitive the variable of interest is to the chosen model, I further include estimations of a weighted data sample, and a balanced panel data set, due to weak consistency for the firm establishments for the panel in the main model, and a regression on cross sectional data with weights marked with w. in the following table 3.

7. Results

7.1 Results Firm Earnings

First, I start with the treatment effect, hence the effect the labor reform had on both female and the male wages separately using panel data, demonstrated in table 3. The post effect variable represents the "post labor reform effect" on wages in natural logarithms being one if the year is 2012 or 2013, and zero if the year is 2005 or 2006. The regressions controlling for regions, sectors, industry groups and firm size marked with "c". The columns marked with "w" represents the weighted estimation sample including controls, and are therefore likely to give the most reliable results. The reason the weighted sample is not the benchmark is to demonstrate the difference between the balanced and unbalanced results in table 4 since weights were not possible to perform on the balanced data. The full table 3 including all control variable results is found in the annex. All estimations are significant on a 1 percent level. Looking at the panel data with controls, female wages improved by 34.4 percent compared to 31.6 percent for male wages on average in each firm over the before and after labor reform period. In the weighted sample the figures are 21.7 percent for women compared to 16.2 percent for men. The results impose that female wages improved further than males as anticipated, and the difference is most prominent comparing the weighted estimations with controls variables, suggesting that the control variables are likely to improve and precise the results.

Table 3. Female and male increases in average firm wages (ln)

	Female	Male	Female c.	Male c.	Female cw.	Male cw.
Post-effect	0.200**	0.175**	0.344**	0.316**	0.217**	0.162**
	(0.015)	(0.014)	(0.013)	(0.011)	(0.015)	(0.014)
Controls	No	No	Yes	Yes	Yes	Yes
Weights	No	No	No	No	Yes	Yes
Constant	12.25**	12.40**	12.13**	12.13**	12.15**	12.33**
	(0.011)	(0.010)	(0.019)	(0.019)	(0.019)	(0.019)
Sample size	25.627	30.365	25.627	30.365	25.627	30.365
R-squared	0.01	0.01	0.26	0.26	0.28	0.27

Notes: Post-effect is a binary variable and equal to 1 if the year is after the labor reform (2012 and 2013) and equal to 0 if the period if before the labor reform (2005 and 2006). The c-columns include control variables and the cw-columns include control variables and weights. Control variables included are Sector (Private), Region (Dar es Salaam, North, East, South), Firm size (Medium and Large), Industry groups (Agriculture, Electricity and Mining, Trade and Transport, Finance and Real Estate, Public Administration and Education). * $p<0.05$; ** $p<0.01$. Robust standard errors in parentheses.

The next step is to estimate if the gender difference in wage increases as demonstrated in table 3 above is significant, in other words estimate the real difference in difference effect. In order provide such robust result as possible I conduct three different regressions with the gender wage difference expressed in logarithms as the dependent variable. As benchmark, I use the same panel data as in table 3, the second estimation is conducted with weights and the final with a balanced panel data. All regressions contain control variables. In order to precise the result, I perform two different time comparisons, one using the difference between 2005 and 2012 and the second 2006 to 2013. If the value on the post effect coefficients show a negative sign and are significant, this will impose a mitigation of the wage gap over the after period. The results are presented in table 4. The variable of most interest, the post effect variable, shows negative and highly significant effects for both time periods in the benchmark and weighted estimations, 5.1 percent improvement in wage difference between 2005 and 2012 and 3.0 percent between 2006 and 2013 for the weighted sample. The balanced panel is insignificant in both estimations, however this is likely due to the low number of observations, hence might not properly represent the full work force compared to the weighted estimation. In addition, there is also a high likelihood of errors in the firm identifiers in the balanced panel and as previously noted, of which a small share provided to be consistent. Significant results on the explanatory variables indicate if any fluctuations in wage differences could have been affected by regional, firm or industry factors. As seen in table 4, firm size appears to effect mitigating wage differences meanwhile being active in agriculture or education would increase the gender wage differences. However, working in the private or public sector or living in a specific region is less noteworthy.

Table 4. Average within firm gender wage differences 2005-2012 and 2006-2013 (ln)

	2005-2012			*2006-2013*		
	Benchmark	Weights	Balanced	Benchmark	Weights	Balanced
Post-effect	-0.032**	-0.051**	-0.005	-0.019*	-0.030**	0.010
	(0.009)	(0.013)	(0.020)	(0.009)	(0.011)	(0.016)
Sector						
Private	-0.010	-0.007	-0.046	0.027	0.032	0.022
	(0.015)	(0.021)	(0.027)	(0.014)	(0.020)	(0.028)
Region						
Dar es Salaam	-0.156	-0.012	-0.014	-0.022	-0.011	-0.060*
	(0.014)	(0.019)	(0.025)	(0.013)	(0.017)	(0.025)
North	-0.298*	-0.035	-0.022	-0.023*	-0.029	-0.002
	(0.013)	(0.018)	(0.023)	(0.011)	(0.016)	(0.020)

East	-0.010	-0.011	-0.018	-0.034**	-0.050**	-0.060
	(0.016)	(0.024)	(0.030)	(0.015)	(0.020)	(0.028)
South	0.017	0.023	0.047	0.026	0.034	0.013
	(0.018)	(0.025)	(0.037)	(0.018)	(0.023)	(0.035)
Firm size						
Medium	-0.047**	-0.043**	-0.042	-0.058**	-0.067**	-0.036
	(0.012)	(0.014)	(0.024)	(0.011)	(0.012)	(0.021)
Large	-0.109**	-0.102**	-0.104**	-0.139**	-0.139**	-0.128**
	(0.014)	(0.015)	(0.025)	(0.012)	(0.013)	(0.023)
Industry						
Agriculture	0.080**	0.122**	0.064	0.141**	0.154**	0.140*
	(0.030)	(0.038)	(0.047)	(0.031)	(0.036)	(0.058)
Electricity and Mining	0.066	0.010	-0.046	0.054	0.064	0.030
	(0.030)	(0.068)	(0.097)	(0.043)	(0.071)	(0.068)
Trade and Transport	-0.023	-0.011	-0.010	-0.024	0.002	0.015
	(0.017)	(0.021)	(0.034)	(0.016)	(0.019)	(0.030)
Finance and Real Estate	0.033	0.019	0.119*	0.056*	0.080*	0.155**
	(0.027)	(0.039)	(0.057)	(0.023)	(0.032)	(0.047)
Education	0.080**	0.099**	0.096**	0.106**	0.157**	0.141**
	(0.014)	(0.021)	(0.023)	(0.012)	(0.018)	(0.021)
Public Administration	0.060**	0.070**	0.042	0.067**	0.108**	0.060*
	(0.016)	(0.024)	(0.028)	(0.012)	(0.021)	(0.027)
Constant	0.190**	0.181**	0.160**	0.187**	0.160**	0.146**
	(0.017)	(0.023)	(0.033)	(0.014)	(0.017)	(0.023)
Sample size	11.512	11.512	3187	13.416	13.416	4124
R-squared	0.014	0.017	0.024	0.020	0.024	0.026

Notes: Post-effect is a binary variable and equal to 1 if the year is after the labor reform (2012 for column 1-3 and 2013 for column 4-5´6) and equal to 0 if the period if before the labor reform (2005 for column 1-3 and 2006 for column 4-6). * $p<0.05$; ** $p<0.01$. Robust standard errors in parentheses.

In conclusion, the data suggests that the gender wage differences have been mitigated over the estimated periods most likely as a result of the labor reform, however, the magnitude differs depending on using 2005-2012 or 2006-2013 as time periods. The 2005-2012 results could possibly demonstrate a more direct effect since the labor reform in 2005 was known to most employers although the ratification was not put in place until a year later.

I continue to control the validity of the results by testing the most crucial assumption when performing a difference in difference estimation. That is the parallel trend assumption and by using data from 2001 I can analyze if the wage differences follow the same trend before the labor reform 2001-2005 and 2001-2006 as after the labor reform 2005-2012 and 2006-2013. If the common trend assumption holds and the time periods show different trends, then the difference in the pre-era should be insignificant. Table 5 presents the results and as suggested, the pre-labor reform period shows insignificant and positive results while the post-labor reform period demonstrates negative and significant results.

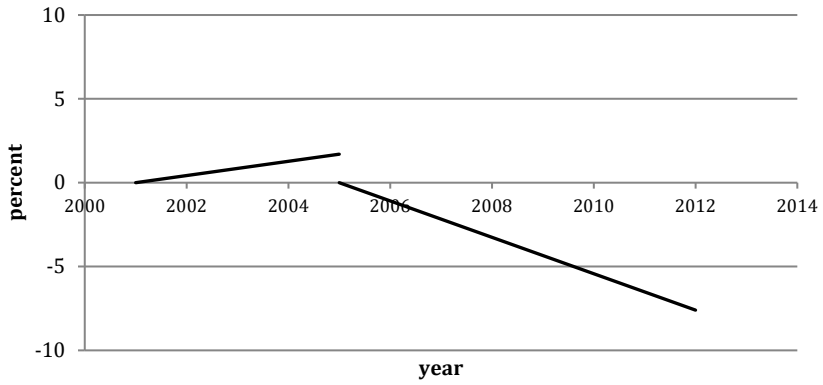
Table 5. Average firm gender wage differences in pre- and post-labor reform periods

	2001-2005	2001-2006	2005-2012	2006-2013
Post-effect	0.017 (0.018)	0.028 (0.017)	-0.076** (0.013)	-0.052** (0.012)
Constant	0.171** (0.014)	0.171** (0.014)	0.188** (0.010)	0.200** (0.009)
Sample size	8.809	10.087	11.512	13.416
R-squared	0.00	0.00	0.00	0.00

Notes: Post-effect is a binary variable and equal to 1 if the year is 2005 in column 1 and 2 or 2006 in column 3 and 4 and equal to 0 if the year is 2001. * $p<0.05$; ** $p<0.01$. Robust standard errors in parentheses.

The core idea about the parallel trend assumption is that, if the policy implementation in fact did not have any effect, the wage trends of men and women would evolve in the same direction as between 2001 and 2005 or 2006. As the results show, the parallel trend assumption holds since the difference in the wage gap is clearly following another trend in the time period prior to the policy. The time trends over the full period are graphically presented in figure 1 for the period 2001-2005 and 2005-2012.

Figure 1. Average firm gender wage difference 2001-2005 and 2005-2012



7.2 Results Individual Earnings

Next, I examine the individual earning differences in 2010, 2012 and 2013 in a weighted sample, presented in table 6. The data demonstrates that females have 18.2 percent less in starting salaries than their male counterparts in 2010 and 9.2 percent in 2013, results significant at a one percent level. The estimations control for level of education, sector, firm size and occupation group, variables all assumed to have a considerable effect on the level of starting salaries. Looking more closely at the control

variables, having a university or college degree effect the starting salary much more in 2013 compared to 2010, while vocational training reveals an opposite result. Further, being in the private sector is not as lucrative as being in the public for a new employee and the gap widens as the years pass. Being employed by a large firm compared to a small further appears to have a negative effect in 2010, however shifts to be positive in 2012 and 2013.

Table 6. Gender differences in individual starting salaries (ln)

	2013	2012	2010
Female	-0.092**	-0.036**	-0.182**
	(0.010)	(0.009)	(0.022)
Education			
University	1.084**	0.741**	0.375**
	(0.035)	(0.033)	(0.054)
College	0.801**	0.593**	0.412**
	(0.032)	(0.024)	(0.056)
Teacher college	0.350**	0.455**	0.255**
	(0.030)	(0.025)	(0.047)
Vocational	0.485**	0.288**	0.687**
	(0.037)	(0.028)	(0.047)
Secondary	0.263**	0.352**	0.084**
	(0.027)	(0.026)	(0.035)
Sector			
Private	-0.114**	-0.051**	-0.067**
	(0.012)	(0.008)	(0.022)
Firm size			
Medium	0.011	0.220**	-0.132**
	(0.030)	(0.028)	(0.045)
Large	0.133**	0.284**	-0.081*
	(0.026)	(0.026)	(0.037)
Occupation			
Legal, Admin, Manager	0.546**	0.883**	0.621**
	(0.042)	(0.068)	(0.049)
Professional	0.341**	0.834	1.302**
	(0.031)	(0.037)	(0.047)
Technician, Associate	0.353**	0.441**	0.537**
	(0.027)	(0.028)	(0.045)
Clerks	0.340**	0.307	0.032**
	(0.039)	(0.044)	(0.050)
Service	-0.296**	-0.332**	0.068
	(0.030)	(0.030)	(0.035)
Machinery	-0.303**	0.223**	0.212**
	(0.027)	(0.032)	(0.033)
Constant	11.515**	11.146**	11.615**
	(0.042)	(0.041)	(0.052)
Sample size	34.387	31.760	28.929
R-squared	0.609	0.609	0.343

Notes: Female is a binary variable and equal to 1 if the individual is a female and 0 if the individual is male. All regressions include weights. * $p<0.05$; ** $p<0.01$. Robust standard errors in parentheses.

Next, in order to see if the gender differences in starting salaries are significant between the estimated years I perform a difference in difference test to see if this is the

case comparing 2010 to 2013. The estimation is conducted with a weighted sample using normal standard errors and all control variables as in table 7. The time variable represents the year 2013 compared to 2010. The interaction variable combining both being a female and the time aspect is the variable of most interest. As anticipated in the previous estimations, table 7 shows that female starting salaries have improved by 9.2 percentage points between 2010 and 2013 and the result is significant on a one percent level.

Table 7. Time and gender effects on individual starting salaries (ln) between 2013 and 2010

	Full sample with controls
Female	-0.201**
	(0.023)
Time	-0.141**
	(0.015)
Female*Time	0.092**
	(0.026)
Controls	Yes
Constant	11.738**
	(0.034)
Sample size	63.316
R-squared	0.417

Notes: Female is a binary variable and equal to 1 if the individual is a female and 0 if the individual is male. Time is also a binary variable equal to 1 if the year is 2013 and equal to 0 if the year is 2010. Control variables included are Education (University, College, Teacher college, Vocational, Secondary), Firm size (Medium, Large), and Occupation (Legal/ Admin,/Manager, Professional, Technician/Associate, Clerks, Service, Machinery). * $p<0.05$; ** $p<0.01$. Robust standard errors in parentheses.

Although the results for individual starting wages do not show the direct effects of the labor reform, it is still fair to conclude that the type of wage most subject to changes by employers have seen a large improvement of achieving a more gender neutral initial wage setting. On the other hand, factors more sensitive to unequal salaries tend to be more prominent after being active in the workforce for a while therefore the combined results from both the average firm earnings sample as well as the individual starting salary sample might be used to in order to enhance the overall picture of the wage development in Tanzania in a gender perspective.

8. Discussion and conclusions

The results of the estimations indicate that the implementation of ELRA decreased the wage gap between men and women's average earnings within firms up until 2013, results provided to be both statistically and economically significant. The findings have demonstrated a 3.0-5.1 average percent gender wage gap decrease for workers employed at the same firm over 2005-2012 and 2006-2013 respectively, a vital result since policy reforms at the labor market is one of the most common political actions to address gender equal rights at the labor market. Compiling to an equal pay act as an employer in a system where inequality between women and men is the norm and a heritage from all different levels in the society is naturally facing many potential obstacles. As recognized in the theoretical section, successful results from equal pay legislations lay partly in the hands of employers and their ability to adjust for within firm gender wage differences for work of equal value. I have used different approaches to measure the gender wage gap in terms of average earnings of women and men within firms, and although the fully balanced panel did not show any significant outcomes, the test of the parallel trend assumption displayed a different wage development in the period before the ELRA reform. As the available data set had non consistent firm identifiers over the years, the groups created for the panel were not particularly robust, which might explain the insignificant outcomes for that regression. Furthermore, the findings from developments of the wage gap in starting salaries for individuals demonstrate a substantial wage gap reduction of 9 percentage points between 2010 and 2013. As the period of the labor reform implementation was not possible to account for in these estimations, one cannot state that the labor reform caused this effect. On the other hand, the labor reform cannot be excluded as a likely factor contributing to the results, as a delayed effect of the reform.

As theory lays out, enforcing labor reforms and equal pay acts in a country as Tanzania with weak follow up procedures, insufficient institutional framework and lacking strategies for information to all actors involved, is facing several challenges. Moreover, as the issue of gender disparities is highly present worldwide, developing countries are facing additional challenges making compliance to equal pay acts less of a priority, in particular the gender element. Hence the positive results of a reduced gender wage gap as indicated by this study was not given. One should not neglect the fact that despite a positive result of the parallel trend assumption, there might still be

factors, not accounted for in the estimations that could explain the magnitude of the wage trends. Hence, there is a risk that the positive change in the earnings gap might be a cause of other factors or could have enhanced the effect of the legal framework. For instance, during the post era of the labor reform, a lot has happened in Tanzania in terms of GDP growth rate, shifts in sectors and more women entering the formal labor market. These outside determinants, not present in the period 2001-2005/2006 (the accounted pre-labor reform era in the parallel trend estimation), could impose different effects on female and male earnings respectively, for instance, the different elaborations of industries being more or less represented by men/women and a more liberate attitude towards women's equal value to men. Hence, both the overall labor reform as well as other outside factors connected to gender equality progress and labor market developments could together have influenced to the decreasing gap. In addition, other dimensions in the labor act apart from the specific saying of equal wage for equal work such as the part of non-discrimination in hiring processes could have had indirect wage effects by enhancing women's position at the formal labor market. Moreover, as Blau and Kahn, (2016) points out, the gender wage gaps should in theory be more subject to reduction in the lower parts of the wage span, which may also be a reason to the positive results as females normally are more represented among low income earners.

Another aspect of the individual earnings sample is that the descriptive statistics showed that the education level of females and males were relatively equal, and a larger share of women were represented in the public sector that generally pays larger wages than the private. Hence as both of these factors should contribute to relatively equal wage settings between the genders, the results of initial 18 percent earnings difference for starting salaries in 2010 is indeed extensive and most likely partly due to unobservable factors as earlier identified partly as discrimination. Furthermore, since the starting salary gap reduces by almost 50 percent over a limited time period, and the unbalanced wage setting may in part be due to discrimination, a positive development is certainly noted. In addition to this, the starting salaries in Tanzania are indeed movable, in particular towards a more gender equal wage standard.

The results of this study are similar to the findings by Weichselbaumer and Winter-Ebmer (2005) who found reduced gender wage gap on a general international level as an effect from implementing international conventions of the equal pay act. However, aside from this, previous literature lacks convincing and robust results highly comparable to this study making it difficult to draw any clear comparable conclusions.

For instance, studies examining gender wage gap developments on the basis of the whole labor market both the formal and informal differ from this study, as effects found in this paper can only be targeted to the formal part, around 10 percent of the full labor market. The likelihood of a reduced gender wage gap to be found in this study had to be larger compared to if something similar would be conducted for the full labor market.

The interpretations of the results are restricted to the extent that the labor reform explicitly affected female wages, not taking other plausible firm and individual factors into account. Many other potential variables, the data did not allow to control for could very well have affected the wages and thereby there is a risk that omitted variable bias would cause skewed conclusions about the results such as individual characteristics as age, education and work related experience.

The limitations of this study are several. As wage data before and after the labor reform period only were available on firm level, it is only possible to draw conclusions on the gender wage gap within firms based on average earnings, making it impossible to control for individual factors. Another factor is the absence of information on hourly wages since women and men are likely not to work full time to the same extent. It would also be of value to compare the gender wage gap between firms. Ideally, data on individual earnings on starting salaries should have been available for earlier years, and with more elaborate individual information. As seen by the results these wages are more likely to be mobile, therefore a more in-depth analysis in this area would have been of great value.

As for future research, new publications of the Labor Force Survey in Tanzania could be used for more in-depth analysis of how ELRA affected the full labor market, both in terms of the changes in the gender wage gap on an individual level, as that data allows for substantial factors known to affect wages such as age and material status, but also looking more closely to changes in the unobserved part of the actual gender wage gap. It would also be interesting to account for the gender individual characteristics in order to decompose wage differentials to evaluate the actual causes of the wage gap, combined with how the gap has evolved over time.

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Annex

Table 3. Female and male increases in average firm wages (ln)

	Female c.	Male c.
Post-effect	0.344**	0.316**
	(0.013)	(0.011)
Sector		
Private	-0.484	-0.517
	(0.018)	(0.017)
Region		
Dar es Salaam	0.269**	0.190**
	(0.180)	(0.016)
North	0.043***	0.009
	(0.013)	(0.012)
East	0.025	-0.000
	(0.016)	(0.015)
South	0.044**	0.035*
	(0.018)	(0.017)
Firm size		
Medium	0.241**	0.125**
	(0.014)	(0.012)
Large	0.329**	0.178**
	(0.016)	(0.015)
Industry		
Agriculture	-0.244	-0.141
	(0.035)	(0.035)
Electricity and Mining	0.303***	0.327
	(0.065)	(0.060)
Trade and Transport	-0.334	-0.299
	(0.022)	(0.019)
Finance and Real Estate	0.803**	0.863**
	(0.033)	(0.032)
Education	0.084**	0.222**
	(0.015)	(0.014)
Public Administration	-0.221	-0.201
	(0.021)	(0.020)
Constant	12.13**	12.13**
	(0.019)	(0.019)
Sample size	25.627	30.365
R-squared	0.26	0.26

Notes: Post-effect is a binary variable and equal to 1 if the year is after the labor reform (2012 and 2013) and equal to 0 if the period if before the labor reform (2005 and 2006). * $p<0.05$; ** $p<0.01$. Robust standard errors in parentheses.