The Effects of Inheritance and Ownership Rights on Women's Wages and Employment: The Case of Pakistan

Abstract

This thesis investigates whether inheritance and property ownership rights for women have any impact on women's agriculture, industry and services employment and their wages. In 2012, a constitutional amendment was made to the ownership and inheritance rights of women in Khyber-Pakhtunkhwa (KPK), a province of Pakistan. The objective of the amendment was to protect and secure the inheritance and property rights of women in KPK. This amendment was expected to affect the bargaining power position of women in households as well as their "fall-back" options in the market. By using the policy change as an identification strategy, this study analyses the impact of the inheritance and property rights on women's employment and women's wages across sectors. Using Pakistan Social and Living Standards Measurement (PSLM) data, this study found that the amendment has a significant positive impact on women's wages across sectors. However, we did not find a strong impact of this amendment on women's employment.

Table of Contents

List of Tables

List of Figures

1. Introduction

In the last three decades, the structural transformation of Pakistan has changed the composition of its labour market. Unlike developed countries, where such change is expected to reduce the gender employment gap, it has widened that gap in employment at the sectoral level in Pakistan. More specifically, men have moved away from agriculture to the services sector, whereas women's employment has increased in the agricultural sector (International Labour Organization, 2018). This change in the labour market has raised some interesting questions. For instance, if the ultimate objective of employment is the receipt of financial returns, why are women attracted to the agriculture sector where wages are generally low when compared to those of the services sector? Many factors affect women's decision to participate in the labour market, for example, education level, household characteristics and other socio-economic factors. This study specifically focuses on inheritance and property rights[1] as a potential institutional factor affecting women's socio-economic status in Pakistan. The idea is to investigate whether inheritance and property rights have any substantial impact on women's employment and wages at the sectoral level. Answering this research question will provide a better understanding of the labour market of Pakistan in relation to the gender gap.

Pakistan is the fifth most populated country in the world with 2.81% of the global population (U.S. Census Bureau Current Population). Figure 1 shows the map of Pakistan. The provinces of Pakistan are large and diverse in terms of both size and population. There are four big provinces[2] - Punjab, Sindh, KPK and Balochistan - with 110 districts. The capitals of these provinces are Lahore, Karachi, Peshawar and Quetta, and they have more employment opportunities than other cities and attract many people from other small cities. These types of

[1] In heritance and property rights bill and ownership right words are used as interchangeable.
[2] Province and state are used as interchangeable words.

variations in the labour market across regions show the importance of spatial analysis of labour market outcomes.

Figure 1: Map of Pakistan

In 2012, the KPK province assembly in Pakistan introduced a constitutional act of ownership right for women that gave them equal inheritance and ownership rights to those of men. However, this bill was not introduced in the other three provinces of Pakistan. We expect that a change in inheritance property rights for women would potentially change their bargaining power within the household and would also improve their "fall back" options in the labour market[3]. For the purposes of this thesis, it is assumed that the acquisition of property rights should alter the bargaining power of women within the household, helping them to decide their degree of participation in the labour market, as well as it will give them option to bargain for the higher wages from employer as they have non income asset or property as the financial security.

[3] See Section 3 for details on the "fall back" options.

According to World Bank Gender Equality and Development Report, women's legal inability to inherit property can greatly undermine their economic security and independence, as well as their access to economic opportunities (World Bank, 2011, 2012). Among initiatives aimed at strengthening women's economic empowerment, development practitioners and international organizations have been advocating for equal inheritance rights. Policy changes to inheritance rights has been found to constitute an additional determinant of women's labor force participation, above standard supply and demand factors. Several recent papers have considered gender-progressive reforms in inheritance laws, by focusing on the Indian Hindu Succession Act (for example, Roy, 2015; Heath and Tan, 2020; Mookerjee, 2015). For instance, Heath and Tan (2020) found that the Hindu Succession Act has been successful in increasing the female labour supply. The study proposed that a woman's unearned income improves her autonomy within the household, which raises her gains from working and can increase her labor supply. More specifically, the study suggests that the Hindu Succession Act significantly improved women's ability to inherit property, thereby increasing their lifetime unearned income and their bargaining power. The study developed a theoretical model of a noncooperative household in which a woman's level of unearned income increases her control over her income (an autonomy effect) and thereby her gains from working. A standard income effect predicts that unearned income decreases labor supply. While Heath and Tan (2020) argued that a wife's unearned income also increases her control of her income, raising her effective wage and thus may increase her labor supply. If the autonomy effect dominates the income effect of greater unearned income, then unearned income increases a woman's labor supply.

Following the above theoretical framework, this study evaluates the constitutional act of ownership rights for women which was introduced in KPK in 2012, giving them equal inheritance and ownership rights to those of men. the study is divided into two parts. The first

part explores the impact of inheritance and property rights on women's employment in the agriculture, industry and services sector, whilst the second aims to estimate the impact of those rights on women's wages across sectors. The study uses the difference-in-difference model to empirically investigate the research questions. A similar identification strategy was used by Sapkal (2014) and Nagarajan, Goyal and Deininger (2010) for analysing the impact of property law reform on women's condition. Several considerations make this study an important contribution to the literature. First, to the best of our knowledge, no empirical study has evaluated the impact of inheritance and property right on women's employment and wages in Pakistan[4]. Second, the majority of the previous evidence on the gender gap in Pakistan is based on total employment and average national wages while ignoring the sectoral heterogeneity.[5] The study aims to fill these gaps by examining the impact of inheritance and property rights at the sectoral level. Moreover, the majority of the prior studies have used the data from the labour force survey (see, for example, Asma Hyder, 2005; Sabir and Aftab, 2007; Yasin et al., 2010). One limitation of this dataset is that it does not provide detailed information on individual and household characteristics. This study aims to overcome this limitation by using the extensive data on household characteristics from the Pakistan Social and Living Standards Measurement (PSLM) household survey over a long period from 2005 to 2015 (alternate years).

The findings from this study show that ownership rights failed to have a substantial effect on the sectoral employment for women in the reform province (KPK). However, sectoral wages are substantially affected by the ownership bill for women. It might be because the decision making related to women's employment is mostly done by the male head of household; that is, the husband or father (Sapkal, 2017; Khattak, 2018). Therefore, women might still be

[4]Irfan et al. (2013), Siddiqui and Hamid, (2003) and Nasir, (2005) analysed factors influencing women' occupational status. Other studies (Chishti et al., 1989; Ejaz, 2007, 2010; Faridi et al., 2009; Naqvi and Shehnaz, 2002; Sial and Awan, 2011) analysed the factors affecting female labour force participation.
[5]Ashraf and Ashraf (1993;1996;2009), Siddiqui and Siddiqui, (1998), Nasir and Nazli, (2000), Yasin et al., (2010)

dependent on them when deciding whether or not to contribute to the labour force, regardless of the ownership bill. Moreover, the sources of income for women have increased after the introduction of the bill. They can, for instance, earn money by renting out the residential or commercial properties they own, or they might generate income from inherited farmlands. To this extent, it seems that the ownership bill has provided women with some degree of financial security. Consequently, they are in a better position to bargain for higher wages in the market (Peterman, 2009).

The thesis is structured as follows: Section 2 provides an overview of Pakistan's Economy and describes the law of ownership of rights for women[6]. Section 3 discusses international as well as the literature focusing on Pakistan evaluating the gender gap in the labour market. Section 4 discusses the summary statistics. Section 5 discuss empirical framework. Section 6 shows the results and Section 7 concludes.

[6] Law of ownership of right and inheritance and property rights, policy variable are used as interchangeable words in this thesis.

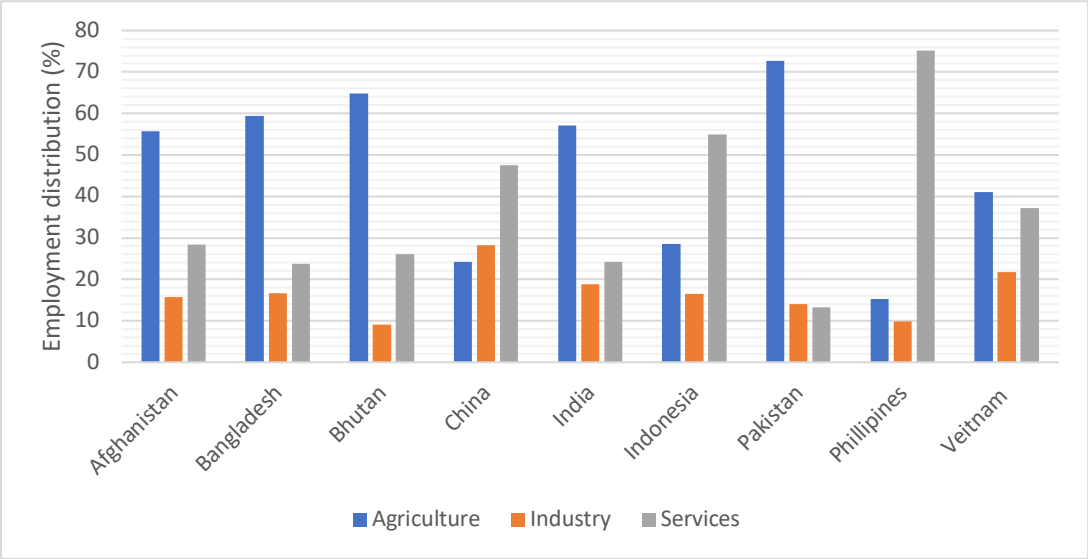
2. Context

2.1. Gender Gap in Employment and Wages in an International Perspective

The McKinsey Global Institute has found that men dominated the highest productivity sectors, i.e., the industry sector in all regions of the world, whereas women dominated the services sector in all regions except South Asia. Moreover, within the services sector, on a global level, women are concentrated in low-productivity industries, such as the wholesale and retail trade, health and social work, and education (Woetzel et al., 2015). As far as South Asia is concerned, women work mostly in the agriculture sector. Note that in most regions, industry is considered to be the highest productivity sector, and agriculture the lowest. This concentration of women in low productivity industries and occupations accounts for 50% of the total gender gap in the United States (Blau et al, 2000).

Figure 2 shows the female employment distribution for South Asian countries for the year 2018. It can be seen that Pakistan has the highest percentage of women employed in agriculture (73%) and the lowest percentage of females employed in services (13%) as compared to other countries. Whereas, the Philippines has the highest female employment in the services sector (75%) and the lowest female employment in the agriculture sector (15%).

Figure 2:Female Employment Distribution by Economic Sectors, 2018



Data Source: International labour organization, 2018

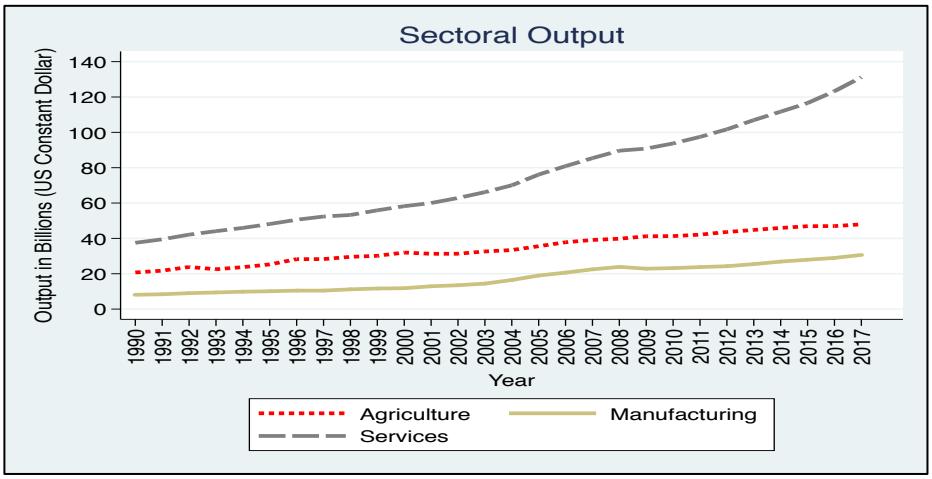
According to 'Global Wage Report 2018/19', the average gender pay gap in the world is 15.6%. The report has used the survey data on wages from 73 countries which reflect the wage distribution of about 80% of the world's wage employees. The report found that lower-middle-income and high-income countries have the highest average gender pay gap. Within the lower-middle-income countries, Pakistan ranks second with the highest gender pay gap of 34% after India (34.5%). Furthermore, some lower-middle-income countries have a negative average gender pay gap, reflecting that women have higher wages than men. Egypt, Bangladesh, Philippines are some examples of these countries with -4.4%, -5.5%, and -10.3% average gender pay gaps respectively. One potential reason behind the negative average gender pay gap in these countries is the migration of highly educated men abroad to seek higher wages. According to the World Bank's Migration and Development Brief 31, Egypt, Bangladesh, Philippines have recorded highest remittance growth in the year 2018.

2.2. Gender Gap in Employment and Wages in Pakistan

Pakistan stood 146th out of 149 countries on the Global Gender Gap Index, just above Yemen, Syria and Iraq (Gender Global Gap Report, 2018).[7] Although women's participation in the labour force in Pakistan has increased in the last three decades, from 11% in 1990 to 22% in 2018, it is still very low when compared to the rate for men which stood at 80% in 2018. Figure 3 presents an overview of sectoral output of Pakistan during the last three decades. Overall, the services sector has been the dominant sector in Pakistan's economy. The sector has witnessed a remarkable increase in its output from 40 billion USD in 1990 to around 140 billion USD in 2017. Agriculture is the second largest sector contributing to the economic activity and its output has increased twofold from 20 billion USD to 45 billion USD. Lastly, the output level of the manufacturing[8] sector has increased from 10 billion USD to 25 billion USD.

[7] The index measures the gap between men and women in terms of four categories: 1) economic participation and opportunity; ii) health and survival; iii) educational attainment; and iv) political empowerment.
[8] Industry and manufacturing sector term used as interchangeably

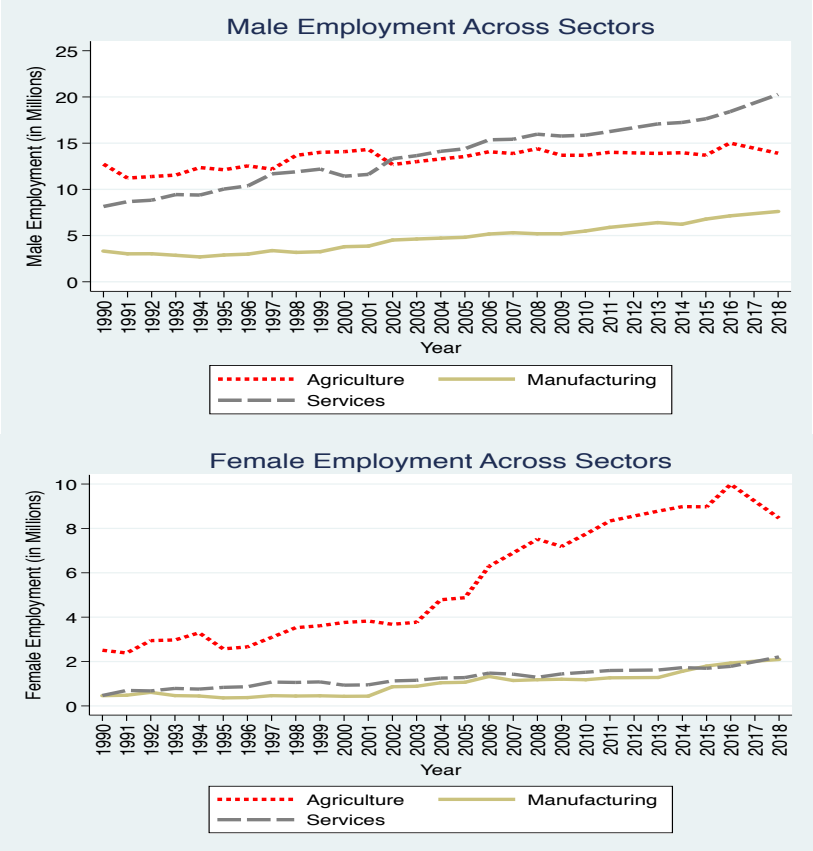
Figure 3: Sectoral Output (1990-2017)



Notes: Figures are reported in constant USD. Data Source: World Bank

As a next step, Figure 4 presents the total employment at the sector level, disaggregated by gender. The vertical axis in the top panel measures the total number of men employed in agriculture, manufacturing and services sectors and the bottom panel represents women. It can be seen that in the early 1990s men were mostly employed in the agricultural sector, but in 2018 were mostly in the services sector. In the agricultural sector, male employment remained relatively stable at 12 million in 1990, growing to 13 million in 2018. On the other hand, there was a substantial increase in men's employment in the services sector. More specifically, in 1990 the number of men employed in the services sector was 8 million, increasing to more than 20 million in 2018. Examining women's employment across sectors, one can see the remarkable increase in the number of women employed in agriculture in the last three decades; 2.5 million in 1990, increasing to 8.5 million in 2018. On the other hand, women's employment in the manufacturing and services sectors remained persistently closer, starting at 0.5 million in 1990 and growing to 2 million in 2018.

Figure 4: Sectoral Employment Disaggregated by Gender



Data Source: International labour organization.

According to the Gender Equality and Development Report (2012), women are more likely to work as unpaid family workers or in informal sectors. Even those who work in paid jobs receive lower wages than men, and in this sense, Pakistan is no different from any other country. The table below shows the average monthly wages for men and women in major industries in Pakistan for the year 2018. The figures report the mean nominal monthly earnings (local currency) of employees by sex and industry. The industries have been disaggregated according to International Standard Industrial Classification (ISIC) Revision 4. A cursory glance at Table 2 suggests that average wages in the agriculture, forestry and fishery industries are the lowest for both genders. For men, the industry that pays the highest average monthly wages is finance and insurance, and higher wages in the services sector may in some way explain the shift in

men's employment from agriculture to services. Meanwhile, for women, the information and communication industry pay the highest average monthly wages.

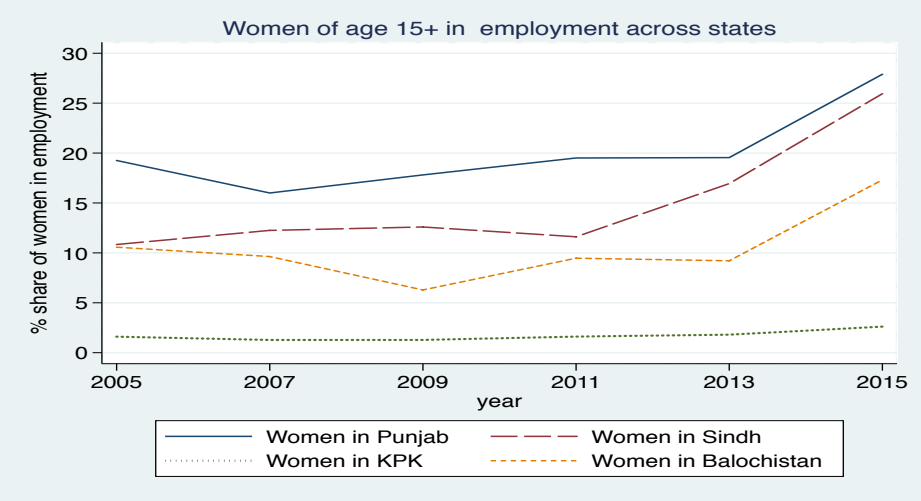
Table 1: Monthly Wages of Employees by Gender and Industry in Rupees, 2018

Major Industries	Men	Women
Agriculture; forestry and fishing	12159	6532
Manufacturing	19178	6857
Electricity, gas, steam and air conditioning supply	31150	27842
Water supply, sewerage, waste management	23465	.
Construction	17071	13638
Wholesale and retail trade, repair of vehicles	14465	14011
Transportation and storage	19561	23678
Accommodation and food service activities	17486	17869
Information and communication	31635	46201
Financial and insurance activities	44591	28025
Real estate activities	25465	7000
Public administration and defence, social security	32640	33888
Education	32621	21509
Human health and social work activities	31403	25708
Arts, entertainment and recreation	16006	.

Notes: Dots represent missing values. Source: (ILO, 2018). Monthly wages are reported in Pakistan rupees.

Figure 5 shows the employment pattern in different states of Pakistan. It shows the percentage of women employed in any state out of the total number of women in that state. It can be seen that Punjab and Sindh have the highest percentages for women's employment and KPK has the lowest. Women's employment in Punjab varied from 19% to 28% between 2005 and 2015, whilst the figure for KPK was below 3%. One reason for the low employment amongst women in KPK is the strong conservative culture prevailing in the province.

Figure 5: Women Employment Share in States of Pakistan



Data Source: Pakistan living and standard measurement survey (2005 to 2015)

2.3 Overview of Ownership Rights in Pakistan

The gender bias in inheritance rights is quite a significant phenomenon in Pakistan. Due to the nature of men dominant society in Pakistan, most of the household decisions related to education, employment and even marriages are taken by men (Ali et al., 2011). The Khyber-Pakhtunkhwa (KPK) province is considered to be the most conservative province of Pakistan in terms of attitude where women participation in both education and employment is least as compared to other provinces. KPK women are generally expected to strictly stay at home and perform domestic work, i.e., cooking, cleaning and looking after kids (Kamal and Woodbury, 2016). Considering these circumstances, in January 2012, KPK assembly passed an act called "enforcement of women ownership rights act, 2012". The idea was to secure and protect the right of ownership of women in the property. According to the act:

"*No person shall abridge, violate, curtail or obstruct the right of ownership or possession of a woman, nor shall he dispossess any woman of her property save in accordance with the law.*"

Whereas, punishment for violation of this law has been specified as:

"Whoever contravenes or abets in the contravention of the provisions of section 3 shall be punishable with imprisonment of either description for a term not exceeding five years and fine not exceeding fifty thousand rupees."

The law further dictates that if a woman files a lawsuit, then the court has to decide the case within six months and implement the decision within one month with the help of local police.

3. Review of Literature

There is an extensive body of literature that discusses the determinants of the gender gap across sectors and wages. This, however, is a selective review, picking up just two strands of the literature. The first deals with the socio-economic factors that determine employment choices and gender wage gap that would be used as controls in the model later in this chapter, and the second considers institutional factors such as the impact of inheritance and property rights on employment and wages. Since this thesis is specifically interested in Pakistan's labour market, the review will compare the studies focused on Pakistan with studies conducted at the international level. We begin by discussing research on employment choice in Section 3.1, then review the work on gender wage difference in Section 3.2. Lastly, Section 3.3. discusses the literature on the impact of inheritance and property rights on employment and wages.

3.1. Employment Choice

3.1.1. Determinants of Employment

The drivers of sectoral, occupational employment and participation in the labour force are similar. Overall, women are mostly concentrated in low productivity sectors which results in low wages (Das and Kotikula, 2019). This section will focus on studies relating to the effect of personal, household and institutional characteristics on labour market status and provides a summary of empirical estimation.

The literature has evaluated a wide range of determinants of sectoral and occupational employment. Education and experience are considered to be the primary determinants affecting the labour market status of men and women. There is a general consensus in the literature that education and experience have a positive impact on labour market outcomes in line with the

theories on human capital. For instance, Cunningham (2001) found that individuals with higher education and experience are more likely to be in formal employment as it signals the employer of their higher productivity. Similarly, Assaad and El-Hamidi (2001) also found a strong impact of education on all types of employment categories. Tansel (2005) also found that the probability of employment in public administration, private sector and state-owned enterprise (SOE) increases with an increase in the level of education. In contrast, the probability of employment in the informal sector, unpaid family worker and being self-employed decreases with the level of education. Besides, Tansel (2005) found that there is a positive association between years of experience and employment in all categories. Most recently, Lee et al. (2016) found that education has a positive impact on regular and self-employment and a negative impact on non-regular employment. The study also found that the probability of being employed in public sectors increases with higher education.

Similar to the international studies, majority of the studies focusing on Pakistan have also concluded that education is positively associated with female labour force participation (Chishti et al., 1989; Hafeez and Ahmad, 2002). For instance, Shaheen et al., (2011) analysed the female labour force participation for the province of Punjab and found that it is positively associated with higher education, whereas, primary and secondary education is negatively correlated with female labour force participation.

Besides education and experience, marital status and child-rearing are considered to be other important determinants of female labour force participation at sectoral and occupational level. Goldin (1988) argued that employers might discriminate against married women based on the assumption that a married woman may leave the job. As concerns child-rearing, its impact on female labour force participation is more substantial in developing countries where child-rearing is considered solely as women responsibility with limited provision of childcare

facilities. In such countries, women mostly participate in the informal sector i.e., agriculture. Cunningham (2001) argued that two key advantages of working in the agriculture sector is that it is quite flexible with timings, and it also provide the opportunity to women to take their children with them on work. Moreover, the location of work is usually nearer to the home in the agriculture sector.

Another important aspect of female labour force participation is the number of children. Women with higher number of children are more likely to join the labour force to ease the financial burden (Faridi et al., 2009). Not only the number, but the age group of children also seems to matter. For instance, labour force participation is expected to be higher among women with children of school-going age (i.e., 7 to 11 years). It is because women may utilize the school hours for participating in the labour force. Cunningham (2001) found that women with young children are more likely to be in informal entrepreneurship and women with school-going children are more likely to be in informal employment. Similarly, Patrick et al., (2016) found that women with young children are more likely to be self-employed due to the flexibility of timings and working from home. On the other hand, men with young children do not choose any particular sector; however, men with school-going children prefer working in the formal sector because of higher wages as compared to the informal sector.

As far as Pakistan is considered, Ejaz (2007) found that the number of children is negatively associated with female labour force participation in both urban and rural areas. Azid et al., (2010) disaggregated children by their gender and found some interesting results. For instance, boys in the age bracket of 5 to 15 years are found to be negatively associated with female participation. In contrast, girls in the age bracket of 5 to 15 years are positively associated with female labour force participation. It might be because of the cultural norm in Pakistan where

elder sisters are usually held responsible for taking care of younger siblings, providing an opportunity to mothers for taking part in the labour force.

Other household characteristics like husband's income, household head and regional differences are also found to play an important role in the labour market. For instance, Sloane et al. (2005) analysed the regional differences in the labour market across the Great Britain and found that 80% of the regional differences in employment is due to structural factors. It emphasised that both men and women in worst performing regions with the same qualification and other personal characteristics are less likely to be employed as compared to the individuals living in prosperous regions. Baffour (2013) investigated the determinants of sector employment in Ghana and Tanzania by focusing on non-labour income. The study found that non-labour income is positively associated with unemployment and negatively associated with self-employment. Furthermore, sector choice is not affected by non-labour income.

Alongside the above-mentioned indicators, some earlier studies focusing on Pakistan have analysed the impact of dependency ratio, child-women ratio and nuclear family on female labour force participation For instance, Shah et al., (1976) found that female participation is inversely related to child-women ratio and nuclear family and positively related with the dependency ratio. Besides, the education level of a household's head is also found to have a positive impact on female labour force participation. For instance, Bibi and Afzal (2012) found that as education level of husband increases, the probability of wife's participation in the labour market also increases.

The above review of literature on employment choice focusing on Pakistan has helped us in identifying several research gaps. For instance, majority of the studies have analysed overall

female labour force participation, ignoring the sectoral heterogeneity. Moreover, the majority of the studies (except for Ejaz, 2011) have limited their analysis to one district, city or province. In contrast, this study aims to examine the determinants of employment in agriculture, industry and services sector. Furthermore, we will cover six cross-sectional household surveys from all over Pakistan by splitting the sample at the regional as well as rural and urban level. It is important given the significant differences in cultural norms and structural composition among regions.

3.2. Gender Wage Gap

3.2.1. Determinants of Gender Wage Gap

A large number of empirical studies analysing gender wage gap have focused on the role of human capital. For instance, Mincer (1974) has proposed an empirical model of wage determination by analysing the natural log of wages as a function of education and experience The model has been applied to various datasets for a large number of countries and time periods, making it the most widely used model in labour economics. In developing countries, with no provision of free education from the state, the families with limited budgets prefer to educate their sons as compared to daughters. For instance, as per the cultural and social norms in Pakistan, financial spending on sons is considered to be a worthwhile investment as sons are expected to financially support their parents in the future. In contrast, daughters get married and live with their husbands and hence, they are not expected to contribute financially. This hypothesis has been tested by many researchers for the case of Pakistan by analysing the returns to education. The idea is to test whether lower level of education attainment of women is because of the social norms of the society or is it because of lower returns on education of females. Nasir (2002) estimated the returns on education through the Mincerian wage equation and found that the average return on education at primary, secondary, under graduation and

post-graduation level is higher for males. The study concluded that lesser investment in female education could be because of lesser returns from earning and not because of the cultural norm.

On the other hand, Aslam (2007) analysed the Pakistan Integrated Household Survey (PIHS) data for the year 2002 and found that women on average have a higher return for education as compared to men at every level of education. The author concludes that resourcing allocation for sons as compared to daughters could be because only 6% of the adult daughter of age 21 reside with their parents, whereas, all others are married and live with husbands. The study evaluated this hypothesis at the provincial level and found a consistent pattern throughout the four provinces.

Besides human capital characteristics, time allocation between home and market activities is also expected influence the gender wage gap. For instance, Firestone et al., (1999) estimated separate wage equations for men and women to analyse the impact of time allocated for household duties activities in wages. The results show that, after controlling for other determinants, household work and childcare accounts for 8.2% wage gap between men and women.

Moreover, the concentration of women in low pay occupations and sectors is also considered to be one of the important factors behind the gender pay gap. Hartmann et al., (2010) analysed the role of occupational segregation on females' earnings in the U.S. The study used the wage equation for estimating female earnings by using a female dummy, reflecting the gender gap in wages. The results show that women in low-skilled, medium-skilled and high-skilled occupations earn 73%, 79% and 66% of men earning respectively. This finding shows that the wage gap is more prominent in high-skilled occupations. Reilly and Hyder (2005) has analysed

the case of Pakistan and found that the gender wage gap in the high paid jobs is 32% and 33% in 1997 and 2006 respectively.

One strand of international studies has analysed the gender pay gap in wages by segregation in employment, for instance, public vs private sector. Overall, the gender wage gap in public sector is found to be than the private sector as the latter is more focused towards profit-making (Stewart, 2014). There are various factors influencing the gender wage gap in these sectors, for instance, return to employment after birth, support in maintaining the balance between work and care in public sector. Tansel (2005) analysed the gender wage difference in public and private sector in Turkey. The study emphasized that the public sector of Turkey constitutes a significant part of paid employment as compared to the private sector which could affect the wage-setting in the labour market. The study found that wages for both men and women are higher in the public sector as compared to the private sector. Moreover, after controlling for human capital characteristics (for example, education and experience), the study found a large gender gap in private-sector wages and no gender wage gap in the public sector.

In Pakistan, the public sector accounts for one half of wage employment. It could affect the wage setting in the labour market. Reilly and Hyder (2005) analysed the gender wage gap in the public and private sector by using the Labour Force Survey (LFS) for the year 2001. The study found that wages for both men and women are higher in the public sector as compared to the private sector. After controlling for human capital characteristics (education and experience), the study found a large gender gap in private sector wages and a smaller gender wage gap in the public sector. Furthermore, the high gender wage gap at 10^{th} percentile in the public and private sector shows the existence of sticky floor phenomenon in Pakistan's labour market. It is important to note that most of the empirical studies evaluating the gender wage gap in Pakistan during 1990s do not reflect the accurate picture of the labour market as they

have calculated the average gender wage gap. It has been established from empirical evidence that the gender wage gap varies across industries and distribution of income. Furthermore, sectoral and occupational segregation is also one of the important factors influencing gender wage gap.

3.3. The literature on Ownership Rights for Women

It has been widely discussed in the literature that institutional factors, for example, inheritance and property right play a crucial role in women's development (Agarwal, 1994; Roy,2008; Goyal et al., 2010; Peterman, 2011; Naaraayanan, 2019). Property rights increase the wealth and social status of women, consequently increasing the bargaining power of women (Klugman et al; 2014). The legal, cultural and ideological mechanism through which women have been excluded from land rights has been thoroughly discussed in Agarwal (1994) and Deere and Leon (2001). However, the focus of this literature is towards the relation between land rights (referred here as property and inheritance rights) and women's development, for instance, employment bargaining power.

Access to property not only provides economic opportunity to enter the labour market but also affects bargaining power within households. The women who own property have more bargaining power because they have a fall-back option as compared to the women who do not own any property. Furthermore, owning land can also increase the investment incentive that might boost the productivity of the land which can have a positive effect on women's earning (Roy, 2008).

In Africa, there is a substantial gender gap over ownership, use and control of property and land, which is considered as an important asset for poor people, especially in rural communities. For instance, Gaddis et al., (2018) found that after controlling for individual and

household characteristics, men are more likely to own property than women in Africa. They further argued that regional location also has an impact on ownership and the gender gap tends to increase up to 15% when men and women belong to a rural area and tend to decrease to 8% for those living in urban areas. In Kenya before 1981, most of the property rights are determined by the customary law of ethnic group, which gives unequal right to women (Harari, 2019). Harari analysed the impact of equal inheritance reform in Kenya for women's capital and concluded that, although the implementation of inheritance reform is not efficient, it still has a positive impact on women's education and women's employment. It shows that property laws and their effective implementation are crucial for promoting gender equality in developing countries.

A report by Human Rights Watch (HRW, 2017) documents that some women in Zimbabwe were evicted with children from their husband's house after becoming widow and left with no income and assets. It shows that the importance of property rights is not only linked to women's empowerment, but it also affects children's welfare. Peterman (2009) analysed the impact of women's property and inheritance right on women's welfare at the community level in Tanzania and shows that women's property and inheritance rights have a positive impact on their employment and earnings.

India is one country for which the impact of property and inheritance rights has been thoroughly discussed in the literature after the amendment in "Hindu Succession Act" (Roy, 2008, 2015; Goyal et al., 2010; Rosenblum, 2015; Heath and Tan, 2016; Bose and Das, 2017; Bhalotra et al, 2018). The basic law in India for property right is the Hindu Succession Act 1956 which governs four major religions in India i.e., Hindu, Sikh, Buddhist and Jain. Though the law gives equal inheritance right to sons and daughter, inequalities arise when the source of inherited property comes from a joint family. Both daughter and son have an equal share in the inherited

property of their father when that property comes from a separate family. However, in a joint family, where the inherited property come from their forefathers, that property share goes only to sons. The five states in India have amended this unequal inheritance clause of joint family in the constitution by giving equal inheritance share to daughters in a joint family. The amendment stated that women who get married after the reform could get benefit from this new inheritance rule.

An influential study of Roy (2008) analysed the impact of this inheritance law for married women's empowerment. As the law is only for the four major religions, it is crucial to construct a new variable which only represents those women who are living in the reform states and belongs to the four religions. Surprisingly, the results show that the impact of inheritance law is only statistically significant for Hindu women (17%) and insignificant for all other religious women. On the other hand, Deere et al., (2013) claim that one of the objectives of having equal property or inheritance rights is that women can survive and accumulate wealth for future without being dependent on their partners. Deere et al., (2013) investigated the impact of amendment on women's economic condition and concluded that even after the introduction of equal inheritance law in one of the states, Karnataka, 84% agriculture and housing and 84% residence belongs to men. It shows that the inheritance right law has failed to increase the economic opportunities for women. The robustness of this finding has been tested by other studies, for instance, Goyal et al., (2010) and Roy (2015). Both the studies have used a difference-in-difference model to investigate the impact of the inheritance rights law. They concluded that the state had not been able to implement the law efficiently and there existed gender inequality in the share of the inherited property for son and daughter. However, the studies found a positive impact of inheritance law on girl's education. It might be because fathers may prefer investing in daughters' education over giving them a share in the property.

Moreover, Roy (2011) found that parents who are not inheriting the property to their daughters are somehow compensating it by paying for their dowry.

The above findings show that the gender gap exists in both developed and developing countries. This study focuses on the impact of institutional factors on the gender gap in employment and wages in Pakistan. More specifically, the study aims to exploit a 2012 policy change that took place in one province of Pakistan (KPK) where a constitutional amendment to the inheritance and property ownerships rights was made. The idea is to analyse the impact of Ownership Rights of Women Act on sectoral employment and wages using the difference-in-difference model. The majority of the recent studies evaluating the gender gap in Pakistan have used Labour Force Survey data which includes only human capital variables. However, household characteristics are very important for evaluating the gender gap in Pakistan due to the diversified social and cultural norms. This study will, therefore, make use of Pakistan Standard and Living Measurement (PSLM) dataset for years 2005-2015 to show not only the long-term trend but also the role of household characteristics.

4. Summary Statistics

The data used in this study is taken from Pakistan Social and Living Standards Measurement (PSLM) survey, which is obtained from the Federal Bureau of Statistics (FBS). The data is available from 2005 to 2015. "This survey was one of the main mechanisms for the monitoring of MDGs indicator as out of 16 targets and 37 indicators adopted by Pakistan, 6 targets and 15 indicators were monitored through PSLM Surveys, which were conducted at district level and at Provincial level respectively at alternate years. The survey covers all four province and Islamabad (capital city) rural and urban areas. Each city/town has been divided into enumeration blocks consisting of 200-250 households identifiable through sketch map. List of villages published by Population Census Organization obtained as a consequence of Population Census 1998 has been taken as rural frame"[9]. A two-stage stratified sample design has been adopted in this survey.

Selection of Primary Sampling Units (PSUs): Enumeration blocks and villages in urban and rural areas respectively, have been taken as Primary Sampling Units (PSUs). Sample have been selected from strata/sub strata with Probability Proportional to Size (PPS) method of sampling technique.

Selection of Secondary Sampling Units (SSUs): Households within sample PSUs have been taken as Secondary Sampling Units (SSUs). A specified number of households i.e. 16 and 12 from each sample PSU of rural & urban area have been selected, respectively using systematic sampling technique with a random start.

[9] Source: "https://www.pbs.gov.pk/content/pakistan-social-and-living-standards-measurement"

The database provides pooled data which is constructed from 2005-2015 (alternate years) cross-sectional household survey. The reason for using PSLM instead of the Labour Force Survey (LFS) is that it offers more detailed information on household characteristics at the micro-level. Furthermore, PSLM survey is conducted at the district and provincial level alternatively. Although both provincial and district level survey provides more detailed information on household characteristics than LFS, the number of observations (in terms of households) is much larger in district-level surveys. Thus, representing a better picture of the population at the micro-level.

The total sample size of the survey is 3,002,252. After restricting the age of men and women from 15-60 years old, the number of observations reduces to 1,620,438. Out of these, the total number of working-age men is representing 50.29% of the sample size. Whereas, the total number of working-age women is representing 49.71%. The definition of employment in this study is different from labour force participation. Employment definition for this study includes those who are employed either in paid or unpaid employment and not employed includes those who looking actively for work and those who are not looking actively for work or inactive.

Table 2: Women in Pakistan's Labour Market

	Women
Employment rate (paid or unpaid employed women)	15.47%
Unemployment rate (women looking for work)	43.21%
Inactivity rate (women not looking work	41.32%

Source: Generated by author by using PSLM data 2005 to 2015.

Table 3: Description of Variables

Variables	Description
Employment	Dummy variable =1 when employed; = 0 when unemployed
Paid employment	Dummy variable =1 when if a person is in paid employment; = 0 otherwise
Unpaid employment	Dummy variable =1 when if a person is in unpaid employment; = 0 otherwise
Self-employed(non-agriculture)	Dummy variable =1 when if a person is self-employed in non-agriculture; = 0 otherwise
Self-employed (agriculture)	Dummy variable =1 when if a person is self-employed in agriculture; = 0 otherwise
Employer	Dummy variable =1 when if a person is an employer; = 0 otherwise
Agriculture employment	Dummy variable =1 when if a person in agriculture employment; = 0 otherwise
Industry employment	Dummy variable =1 when if a person in industry employment; = 0 otherwise
Services employment	Dummy variable =1 when if a person in services employment; = 0 otherwise
Age	Age of women (15-60) and men (15-60) years
Year of education	Year of education shows 1 to 10= Years of schooling completed, 11= higher secondary school completed, 12= bachelor's in arts and science completed, 13= bachelor's in engineering completed, 14= bachelor's in medicine completed, 15= master's degree completed, 16= MPhil and PhD completed.
Married	Dummy variable =1 when married; = 0 when unmarried (Unmarried includes single, divorced and widowed women).
Household size	Number of people living in a household
No. of children	Number of children (0-5) years of age living in a household
Own house	Dummy variable = 1 if residing in own house, =0 otherwise (includes on rent, on subsidized rent and without rent).
Location	Dummy variable = 1 if belongs to rural areas, = 0 otherwise
Punjab	Dummy variable = 1 if belongs to Punjab area, = 0 otherwise.
Sindh	Dummy variable = 1 if belongs to Sindh area, = 0 otherwise.
Kpk	Dummy variable = 1 if belongs to Kpk area, = 0 otherwise.
Balochistan	Dummy variable = 1 if belongs to Balochistan area, = 0 otherwise.

Table 4 shows summary statistics for women who lived in all regions apart from KPK, and for women who lived in KPK only. The summary statistics will help us to analyse the impact of the ownership rights of women in the KPK region, where the act was passed, as compared to the rest of the country. It shows that average employment for women is 17% in Pakistan (excluding KPK), whereas average employment in KPK is only 9%. The average age is similar in both groups of women. With regards to education, women in other parts of Pakistan have achieved 3 years of education on average and it stood at 2 years for women in KPK. Household sizes are greater in KPK i.e., 9 as compared to 7 in other parts of Pakistan. Note that Table 4 shows that the characteristics of the KPK region differ from those of the rest of Pakistan and this could explain the difference in the gender gaps. However, since we are using difference-in-difference model, the difference in level will be addressed by controlling for socio-economic characteristics during estimation. Table 5 shows the log of wages for women in other province and log of wages for women in KPK only. It shows that women on average has higher log of wages in KPK then women in other province.

Before proceeding with the empirical estimation, we plotted women's wages in KPK and the rest of Pakistan in Figure 6 and women's employment in KPK and the rest of Pakistan in Figure 7. The idea is to show the overall trend for dependent variable (i.e., log of wages and employment) for the treatment and control group. Figure 6 shows that average log of wages of women in the treatment group (KPK state) is much higher than the average log of wages of women in rest of Pakistan. Whereas Figure 7 shows that there is a parallel trend between total employed women for KPK and total employed women for rest of Pakistan. Note that whether parallel trends assumption is held up or not, the parallel trends graph can be misleading (for details, see Bilinski and Hatfield, 2019). Recent papers have also suggested three solutions for the parallel trends' assumption (Rambachan and Roth, 2019; Bilinkski and Hatfield, 2019; and

Freyaldenhoven, Hansen and Shapiro; 2019). For instance, Freyaldenhoven, Hansen and Shapiro (2019) suggest that parallel trends violation can be fixed by including a suitable that is not influenced by the policy and by using 2SLS or GMM estimator. We aim to address this in future work. As for now, we have performed several robustness checks to ensure that our results are not driven by unaccounted time-varying unobserved state-level heterogeneity. For instance, we included state-specific linear trends (state level laws or initiatives) to understand if there are any confounding effects that would exhibit time-varying unobserved state-level heterogeneity if it exists. Furthermore, we analysed the impact of inheritance rights by different age cohorts of women. Lastly, we have also checked spill-over effects on other provinces.

Table 4: Summary Statistics (Women Aged 15-60)

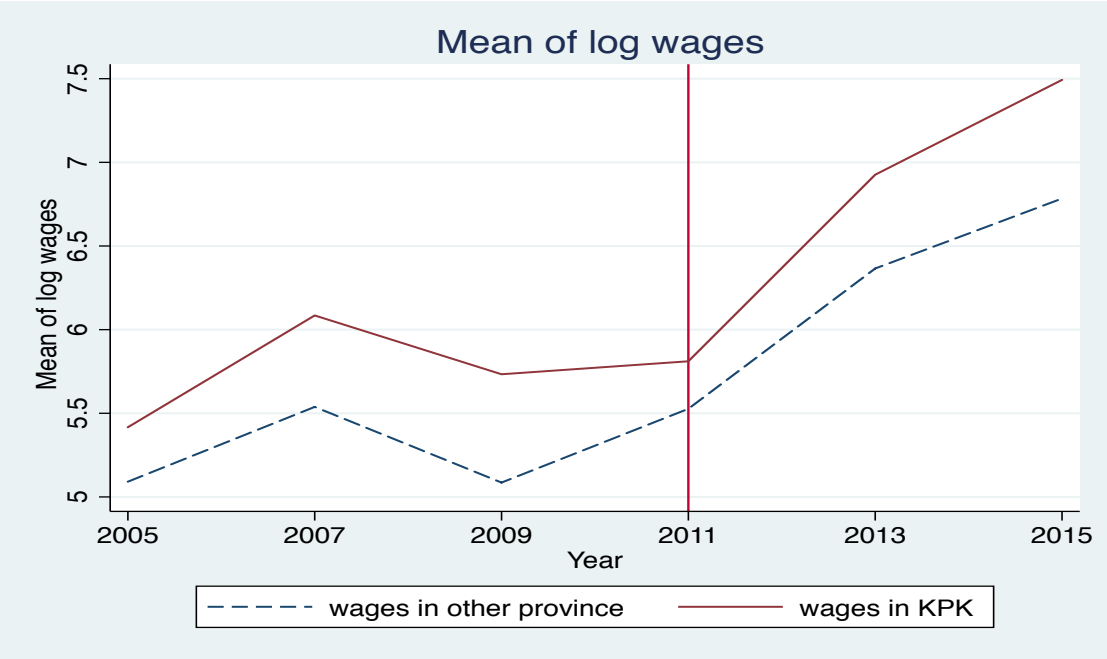
	Women in Pakistan (excluding KPK)				**Women in KPK only**			
	N (653143)				**N (152446)**			
	Mean	**St. Dev**	**Min**	**Max**	**Mean**	**St. Dev**	**Min**	**Max**
Employment	0.16	0.37	0	1	0.09	0.28	0	1
Paid employment	0.05	0.21	0	1	0.02	0.14	0	1
Unpaid employment	0.09	0.28	0	1	0.04	0.20	0	1
Self-employment (non-agriculture)	0.01	0.11	0	1	0.005	0.07	0	1
Self-employment (agriculture)	0.01	0.12	0	1	0.01	0.13	0	1
Employer	0.00	0.01	0	1	0.00	0.01	0	1
Agriculture employment	0.11	0.31	0	1	0.06	0.24	0	1
Industry employment	0.01	0.12	0	1	0.005	0.06	0	1
Services employment	0.03	0.18	0	1	0.02	0.14	0	1
Age	31.87	12.53	15	60	31.41	12.67	15	60
Age2	1172.95	891.95	225	3600	1147.64	901.25	225	3600
Year of education	3.25	4.42	0	16	2.28	4	0	16
Married	0.67	0.46	0	1	0.68	0.46	0	1
Household size	7.47	3.36	1	60	8.99	4.65	1	54
No. of child	1.05	1.28	0	17	1.46	1.62	0	15
Own house	0.88	0.31	0	1	0.88	0.32	0	1
Location	0.53	0.49	0	1	0.63	0.48	0	1

Table 5: Summary Statistics for log of Wages

Variable	Female wages	Female wages (except KPK)	Female wages (KPK only)
Observation	47028	42636	4392
Mean	5.731	5.723	5.814
St. Dev	1.451	1.399	1.885
Minimum	0.194	0.194	0.561
Maximum	11.395	11.395	10.925

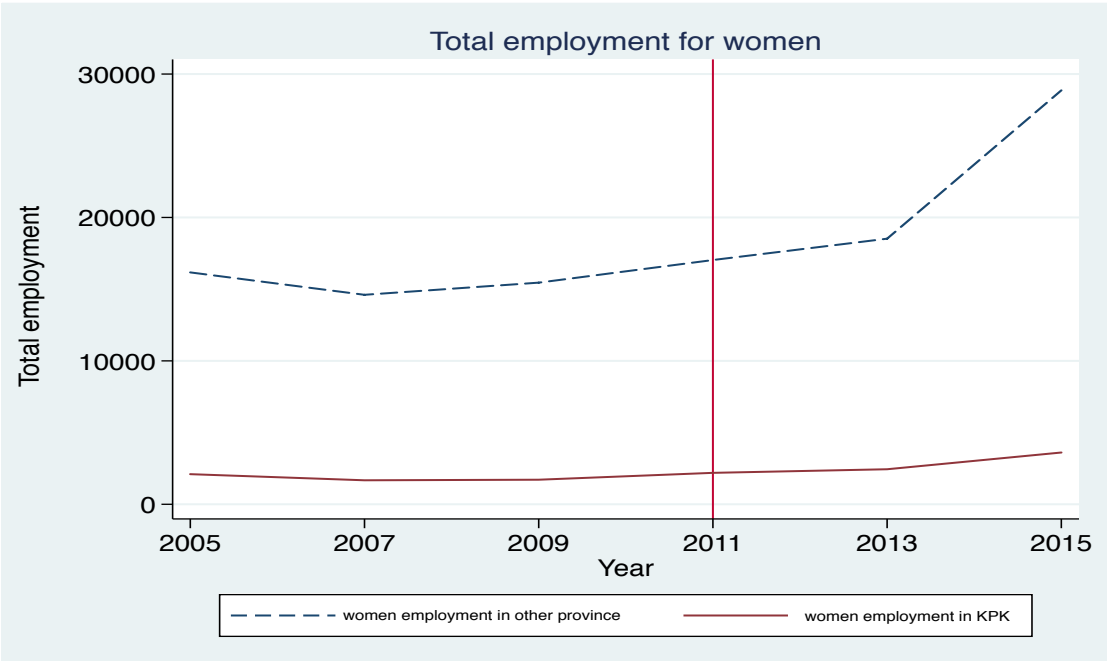
Notes: Real wages derived by dividing nominal wages with CPI (Consumer Price Index).
Source: Pakistan Bureau Statistics, generated from PSLM data.

Figure 6: Timeline Comparing Wages in KPK Province and the Rest of Pakistan for Women



Notes: Y-axis plots the mean of log wages (dependent variable) for women (age 15 to 60 years) and x-axis represents years. The vertical red solid line shows the year (2011) in which the inheritance and ownership rights was introduced in KPK.

Figure 7: Timeline Comparing Employment in KPK and the Rest of Pakistan for Women



Notes: Y-axis plots total employment (dependent variable) for women (age 15 to 60 years) and x-axis represents years. The vertical red solid line shows the year (2011) in which the inheritance and ownership rights was introduced in KPK.

5. Methodology

This section aims to empirically examine the impact of women's ownership right on women's employment and wages across sectors in KPK using the difference-in-difference approach. This approach requires the identification of a specific policy intervention against which, one could compare the difference in outcomes before and after the intervention for a treatment and a control group. To be beneficiary of this reform, a treated woman has to be lived in KPK state after year 2012. The individual in the control group are (1) women in all other states. Following equations will be estimated for analysing the impact of women's ownership right on women's condition in the labour market:

$$Emp_{ist} = \beta_0 + \beta 1KPK + \beta_2 Post + \beta_3 Post_t \times KPK_s + \beta_4 X_{ist} + \propto_s + \delta_t + \mu_{ist} \quad (1)$$

$$Wage_{ist} = \beta_0 + \beta 1KPK + \beta_2 Post + \beta_3 Post_t \times KPK_s + \beta_4 X_{ist} + \propto_s + \delta_t + u_{ist} \quad (2)$$

Where, *Emp and Wage* are the outcome variables of interest representing employment and wages at the sectoral level for woman '*i'* in province/state '*s'* in year '*t'*. We run separate regressions for each sector i.e., agriculture, industry and services. The idea is to analyse the impact of reform/ownership bill on employment and wages. KPK is a dummy variable which takes the value of 1 if the province is Khyber-Pakhtunkhwa and 0 otherwise. This variable captures the potential differences between the reform and non-reform states. *The post* is a dummy variable which takes the value of 1 if the year is greater than 2012 and 0 otherwise. Since the ownership bill was passed in the KPK province after the year 2012, we introduced an interaction term $Post \times KPK$ which takes the value 1 if the year is greater than 2012 and the province is KPK and 0 otherwise. This is our key explanatory variable which will measure the impact of the women inheritance and ownership bill. $\propto_s$ controls state specific unobserved

characteristics that could affect women's conditional in the labour market and δ_t reflects year fixed effects.

We assume that every individual has different characteristics for instance some women who are more educated their probability of getting employed or their wages must be higher than the women who are not educated or less educated. Furthermore, we assume that young women have high probability of getting employed than older women. Therefore, X_{ist} is the matrix of control variables that can have a potential impact on women's sectoral employment and wages, for example, age, years of education, marital status, household size and number of children; u_{ist} is the error term.

To address potential serial correlation issue in the error term and heteroscedasticity problems, I use robust standard errors clustered at state level (Bertand et al., 2004). Since there are few clusters, recent literature suggests that if the number of clusters are small then wild cluster bootstrapping is preferred (Cameron and Miller, 2015). As using wild cluster bootstrap does not assume normality, so it doesn't calculate standard error. So only P-values and 95% confidence interval are reported. The wild cluster bootstrap is run by using the "boottest" command (Roodman et al., 2019).

The common time-effects assumption underlying a difference-in-difference estimation holds if any difference that is to exist between reform and non-reform states is captured by δ_t and α_S. This assumption is advantageous as it controls for unobserved time-invariant state-level heterogeneity but, it does not control for time-varying unobserved state-level heterogeneity A concern with DID specifications is that there may be state or religion-specific or state-specific time-varying omitted variables that introduce endogeneity (Bhalotra, Brule and Roy, 2018). This would occur, for example, if some states had gender-progressive legislatures which passed a number of laws in this direction. This could invalidate the required assumption under the

difference-in-differences. Nonetheless, even though the assumption is not directly testable I include several robustness checks and ensure that our results are not driven by unaccounted time-varying unobserved state-level heterogeneity. For instance, I include state-specific linear trends (state level laws or initiatives) to understand if there are any confounding effects that would exhibit time-varying unobserved state-level heterogeneity if it exists. Furthermore, we analysed the impact of inheritance rights by different age cohorts of women. Lastly, we also checked spill-over effects on other provinces.

6. Results

The results are divided into two sections. We begin by estimating the impact of inheritance and ownership rights on sectoral employment in Section 6.1. Next, we investigated the impact of inheritance and ownership rights on sectoral wages in Section 6.2.

Our empirical analysis proceeds in four steps. As a first step, we include socio-economic factors as control variables in first model. It includes age, level of education, marital status, and household characteristics (i.e., household size, ownership of house, number of dependents). As a next step, we control for year fixed effects in second model and for both year and state fixed effects in third model. Lastly, we include a state linear trend term in fourth model. All sectoral employment and wages has four models, where first is the basic model and last is the model with full specification as explained above.

6.1 Results for Sectoral Employment

Table 6 presents the difference-in-difference estimates for the impact of inheritance and ownership rights on the agricultural employment of women in KPK. $Post \times KPK$ is our key variable of interest. The co-efficient on this variable in Model 1 did not turn out significant, reflecting that the inheritance and ownership rights failed to have an impact on agriculture employment of women in KPK. However, we have not yet controlled for year and state fixed effects. After including these in Model 2 and Model 3, the coefficient on our key variable of interest ($Post \times KPK$) only flipped its sign in Model 3 but remains insignificant.

As discussed in Section 5, the difference-in-difference estimator does not control for time-varying unobserved province level heterogeneity. Thus, the results presented in Model 1-3 could be due to unobserved differences across provinces that vary across year. One way to deal with this issue is to allow for province-specific time trends. When accounting for province-linear trend in Model 4, the magnitude and significance of the co-efficient almost remains the same. As a further robustness check, we disaggregated our sample into 3 age groups i.e., 16-24; 25-40; 41-60. The idea is to see if inheritance and ownership rights has affected the employment women of different ages. In line with the key results, the coefficients for different age cohorts also appear insignificant. In addition, I have also inspected whether the effect of inheritance and ownership rights vary for individuals with different education levels. The results for different education levels i.e., primary, secondary and tertiary education are presented in Appendix 1. No impact of inheritance rights is observed on the agricultural employment of women in KPK across any of the educational groups. Lastly, we have checked for the spill-over effects of inheritance and ownership rights on other provinces in Appendix 2. The results are consistent with the prior set of results. One reason behind no spill-over effects on other provinces is the legislative structure of Pakistan where the four provinces have

separate parliaments and legislative bodies. Legislations in one province is therefore unexpected to affect decision making in other provinces.

Based on all above findings, we can conclude that the introduction of reform in KPK failed to influence the agriculture employment for women. The lack of significance of the variable $Post \times KPK$ might be because of the sticky social norms within Pakistan where the decision making related to women employment is mostly done by the male head of household i.e., husband or father (Sapkal, 2017). Therefore, women are still dependent on them for deciding whether or not to participate in the labour force regardless of the ownership bill. Moreover, women in Pakistan often have no (or very limited) childcare options. On one hand, women need support from their partners to share childcare responsibilities with them in order to join the workforce. On the other hand, government need to design childcare policies to support women in employment.

Table 6 Model 5-8 presents the results for industrial employment. Contrary to our expectations, the effect of ownership rights on industrial employment of women in KPK is negative in all specifications. More specifically, we find that the probability of a woman being employed in industrial sector in the reform state decreases by an average of 0.03% as compared to non-reform states (see Model 5). This coefficient is statistically significant at the 5% level. However, after controlling for year and state fixed effects, the size of the coefficient decreases and it also loses significance (see Model 6 and Model 7). The coefficient becomes statistically significant at the 0.1 level in Model 4 with the most rigorous specification, reflecting that the probability of women being employed in industrial sector in reform state decreases by 0.02%. The negative effects are not robust across all model specifications and it is particularly significant for the age groups 25-40 and 41-60 (see Model 8). One explanation of this negative

effect may be due to the income effect. As suggested by Heath and Tan (2020), an increase in women's unearned income decreases their labour supply because they would like to spend more time on leisure. However, it is difficult to explain why such an enigma might occur for industrial sector only. A promising avenue for future research is to further investigate the link between women's age and employment related reforms in question.

Moving on to Table 6, Model 9-12 shows the results for employment in the service sector. The co-efficient on $Post \times KPK$ is negative and statistically insignificant across all models. Adding different control variables does not change the direction or significance of the effect. The only two exceptions are the disaggregated results by some age cohorts. For instance, the employment of KPK women aged 16-24 in Model 1 and those aged 25-40 in Model 5 seems to have decreased by 0.01% and 0.05% respectively. The latter effect is barely significant at the 0.1 percent level. Overall, we can conclude that inheritance and ownership rights in KPK state failed to increase the employment of women in the services sectors. Legal reforms in the form of inheritance and property rights alone may do little to influence female labour supply, particularly in the context of Pakistan where social and cultural norms oppose women holding property. Therefore, strong legal enforcement is needed to effectively implement the inheritance and property rights.

Table 6: Estimation for Sectoral Employment of Women

	Agriculture Employment				Industry Employment				Services Employment			
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**
Post×KPK	-0.073	-0.001	0.001	0.003	-0.030**	-0.022	-0.022	-0.020*	-0.009	-0.003	-0.003	-0.001
	(0.038)	(0.015)	(0.014)	(0.012)	(0.008)	(0.012)	(0.012)	(0.008)	(0.005)	(0.003)	(0.003)	(0.001)
Post×KPK (16-24)	-0.067	-0.001	0.001	-0.008	-0.031*	-0.022	-0.022	-0.022	-0.010**	-0.001	-0.001	-0.001
	(0.03)	(0.009)	(0.008)	(0.010)	(0.010)	(0.016)	(0.016)	(0.012)	(0.002)	(0.003)	(0.003)	(0.001)
Post×KPK (25-40)	-0.081	-0.001	-0.001	0.006	-0.034**	-0.027*	-0.027*	-0.023**	-0.006	-0.004	-0.004	-0.005*
	(0.044)	(0.020)	(0.020)	(0.016)	(0.007)	(0.011)	(0.011)	(0.006)	(0.005)	(0.003)	(0.003)	(0.002)
Post×KPK (41-60)	-0.068	0.002	0.005	0.014	-0.022**	-0.017	-0.017	-0.014*	-0.011	-0.001	-0.001	-0.003
	(0.044)	(0.016)	(0.015)	(0.011)	(0.005)	(0.008)	(0.008)	(0.005)	(0.009)	(0.002)	(0.002)	(0.001)
Control Variables Socio economic factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effect	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Year fixed effect	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
State linear trend	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Constant	0.018	0.076*	0.056	0.056	-0.007	-0.002	-0.001	-0.001	-0.080**	-0.067**	-0.069**	-0.062**
	(0.021)	(0.029)	(0.028)	(0.029)	(0.007)	(0.006)	(0.007)	(0.008)	(0.014)	(0.018)	(0.02)	(0.016)
Observations (16-24)	265,167	265,167	265,167	265,167	249,167	249,167	249,167	249,167	253,079	253,079	253,079	253,079
Observations (25-40)	297,145	297,145	297,145	297,145	264,249	264,249	264,249	264,249	272,365	272,365	272,365	272,365
Observations (41-60)	204,845	204,845	204,845	204,845	180,719	180,719	180,719	180,719	183,817	183,817	183,817	183,817
Observations	767,157	767,157	767,157	767,157	694,135	694,135	694,135	694,135	709,261	709,261	709,261	709,261
R-squared	0.052	0.074	0.083	0.083	0.012	0.013	0.013	0.013	0.071	0.073	0.074	0.074

Different models have been run for different age groups. The models have been run separately for age 16-24, age25-40 and age 41-60.
Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1

6.2 Results for Sectoral Wages

Table 7 presents the results for evaluating the impact of ownership and inheritance rights on women's wages in agricultural, industrial and services sector. Starting with our key variable of interest in Model 1, the coefficient on $Post \times KPK$ shows that after the introduction of inheritance bill, women employed in the agriculture sector in KPK are getting 47% higher wages than those employed in the agriculture sector in other states. The coefficient is significant at 10 percent level. However, after including state fixed effects, the magnitude of coefficient decreases from 47% to 39%. It rises again to 50% after adding year fixed-effects and state linear trend term (see Model 3 and Model 4). The results by different age groups also show a similar story. More specifically, it shows that inheritance rights in KPK have a positive impact on increasing women's wages in agriculture sector across all age groups. It also shows that the impact of inheritance rights on increasing wages is relatively lower for higher age groups, reflecting the inverted U-shaped relationship of wages with age.

Table 7 presents the results for the impact of inheritance and ownership rights on women's industrial wages in KPK. The coefficient on our variable of interest is insignificant across the first three model, reflecting that inheritance and ownership rights have no significant impact on industrial wages (see Model 5-Model 7). However, after including state linear trend term in Model 8, the coefficient on $Post \times KPK$ appears positive and significant. More specifically, we find that after the introduction of inheritance rights women's wages in industry increases by 29%. Furthermore, the results from different age groups show that industrial wages for young women aged between 15 to 24 years increases by 43% in model 8 (full-specification model). Whereas, the industrial wages for middle-aged women (aged between 25 to 40) increases by 16% in KPK as compared to the women in other states.

Moving on to Table 7, Model 9 to 12 shows the impact of ownership rights on the wages of services sector for women. The coefficient on the key variable of interest is insignificant in Model 9, suggesting that the ownership bill has no significant impact on womens' services' wages in KPK. However, when we look across the results of different age groups, we find positive and significant effects for older women (aged between 41 to 60 years) across all models except for Model 10. It shows that the bill has increased the services' wages for older women in KPK by 18%.

Furthermore, we also analyse the impact of inheritance rights on women's sectoral wages by education level. The results are qualitatively similar to the main results. It shows that women who have secondary level education their agriculture and industry wages is increased by 2.8 and 0.58 percentage points. However, women with tertiary level education their services wages are increased by 0.10 percentage points. This shows education has a positive impact on sectoral wages of women. (see appendix A1 to A2).

In addition, we analysed the impact of inheritance rights on all other three states i.e. Punjab Sindh and Balochistan. The results show that there is no spillover effect of inheritance rights in KPK on any other state (see Appendix B1 to B2).

We have also reported the results of full specification model for all dependent variable by using wild cluster bootstrap method for addressing the serial correlation and heteroscedasticity. We have only mention P-values and 95% CI interval for our main variable $Post \times KPK$. The results are qualitatively similar to our main model results (See Appendix C1).

Overall, the above result shows that inheritance and ownership rights alone failed to increase the sectoral employment of women in KPK as compared to other states. This is in contrast with the findings of a closely related study of Heath and Tan (2020) for the case of India. The study has found that in a noncooperative household model, unearned income or asset through Hindu Succession Act improves the autonomy of women in household resulting in an increase in their labour supply. The differences in our results arise because of various reasons. One obvious reason is that we are analysing a similar amendment in a completely different country i.e., Pakistan whose deep-rooted conservative culture seems to overcome the women bargaining power in a household. We cannot directly compare our results with any other study as, to the best of my knowledge, no other study has investigated the impact of inheritance and property rights on women's employment and wages in Pakistan. Moreover, there are various supply and demand side factors which effect the women's sectoral employment choice in labour market such as flexible working options, childcare, and women's decision making in household etc. Analysing these factors are beyond the scope of this study due to data limitations. Future studies can investigate the role of these factors through using mixed method technique.

It is important to note that women who are already doing paid job in agricultural, industrial or services sector in KPK are being benefitted from the inheritance and ownership rights bill in terms of increase in wages. This may be because employed women tend to be more empowered and aware of their rights than other women. Thus, after the introduction of inheritance rights they have got extra income or asset as backup which provided them with confidence and a fall-back option to demand for higher wages from their employee. To sum up, the introduction of inheritance and property rights in KPK has increased women wages across sectors. However, it is important to note that inheritance rights alone is not sufficient for reducing the gender gap in labour market of Pakistan. Policy makers need to address a wide range of issues prevailing

in Pakistan (for example, childcare funding, flexible working hours, part-time opportunities) for increasing women representation in labour market.

Table 7: Estimation for Sectoral Wages of Women

	Agriculture Wages				Industry Wages				Services Wages			
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**
Post×KPK	0.475***	0.393***	0.469***	0.509***	0.167	0.144	0.194	0.298***	0.108	-0.031	0.009	-0.011
	(0.016)	(0.045)	(0.032)	(0.010)	(0.111)	(0.089)	(0.089)	(0.015)	(0.054)	(0.023)	(0.018)	(0.018)
Post×KPK (16-24)	1.970***	1.882***	1.923***	2.693***	0.233	0.146	0.261**	0.430***	0.05	-0.154**	-0.091	-0.125**
	(0.039)	(0.044)	(0.036)	(0.019)	(0.118)	(0.069)	(0.073)	(0.048)	(0.071)	(0.044)	(0.040)	(0.029)
Post×KPK (25-40)	0.463***	0.447***	0.517***	0.670***	0.062	0.059	0.119	0.169**	0.137	-0.013	0.017	-0.038
	(0.016)	(0.057)	(0.045)	(0.018)	(0.111)	(0.114)	(0.103)	(0.033)	(0.060)	(0.015)	(0.017)	(0.019)
Post×KPK (41-60)	0.272***	0.109**	0.246***	-0.121**	0.199	0.245**	0.182	0.026	0.090**	0.047	0.083**	0.184***
	(0.014)	(0.034)	(0.017)	(0.022)	(0.105)	(0.057)	(0.081)	(0.020)	(0.017)	(0.031)	(0.018)	(0.012)
Control variables												
Socio economic factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effect	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Year fixed effect	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
State linear trend	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Constant	4.645***	4.645***	3.977***	4.148***	4.450***	4.389***	4.469***	4.077***	3.544***	3.498***	3.787***	3.381***
	(0.062)	(0.057)	(0.099)	(0.103)	(0.234)	(0.153)	(0.117)	(0.153)	(0.137)	(0.089)	(0.062)	(0.094)
Observations (16-24)	3,393	3,393	3,393	3,393	3,131	3,131	3,131	3,131	6,527	6,527	6,527	6,527
Observations (25-40)	5,302	5,302	5,302	5,302	3,676	3,676	3,676	3,676	11,828	11,828	11,828	11,828
Observations (41-60)	3,207	3,207	3,207	3,207	1,672	1,672	1,672	1,672	5,738	5,738	5,738	5,738
Observations	11,902	11,902	11,902	11,902	8,479	8,479	8,479	8,479	24,093	24,093	24,093	24,093
R-squared	0.615	0.62	0.651	0.651	0.416	0.441	0.487	0.487	0.54	0.549	0.582	0.582

Different models have been run for different age groups. The models have been run separately for age 16-24, age25-40 and age 41-60.
Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1

7. Conclusion

This thesis investigates the impact of inheritance and property rights on women's situation in the labour market of Pakistan. This study examines the impact of the inheritance and property rights act, which was introduced in only one province (Khyber-Pakhtunkhwa (KPK)), on women's sectoral employment and wages. According to the act, no person can curtail or obstruct the right of ownership of women. If any person violates this law, then he/she shall be punishable with imprisonment for a maximum of five years and receive a fifty thousand rupee fine. Using the difference-in-difference model, this study finds that inheritance and ownership rights have significantly increased agriculture, industry and services wages but failed to increase the employment of women in all three sectors.

The reason for the growth in wages could be attributed to an increase in sources of income for women following the passing of the bill. Possibly they are able to earn money by renting the residential or commercial properties they own, or they generate income from inherited farmland. It seems that the ownership bill has provided women with some financial security. Consequently, they are in a better position to bargain for higher wages in the market. However, it shows that inheritance rights failed to impact of women's employment in different sector. There are multiple factors which can be the reason of this failure, for instance, low or no decision-making power in household, no childcare facility, no part time or time flexibility options and gender biasness of employer towards women.

Overall, this study adds to the growing body of literature on the impact of inheritance and property rights on women's condition in the labour market. It broadly highlights the role of

institution on the bargaining power of women in the household and market. From the policy perspective, it suggests that along with the property rights of women the policy makers also need to focus on other policies like free or subsidized childcare, legislation for minimum representation of women in any industry and any other policy that can positively effect women to increase their participation in the market.

References

Agarwal, B., 1994. Gender and command over property: A critical gap in economic analysis and policy in South Asia. *World development*, *22*(10), pp.1455-1478.

Ahmed, A.M. and Hyder, A., 2008. Sticky floors and occupational segregation: Evidence from Pakistan. The Pakistan Development Review, 47(4 –II), pp.837 –849.

Ali, T.S., Krantz, G., Gul, R., Asad, N., Johansson, E. and Mogren, I., 2011. Gender roles and their influence on life prospects for women in urban Karachi, Pak0istan: a qualitative study. *Global health action*, *4*(1), p.7448.

Arulampalam, W., Booth, A.L. and Bryan, M.L., 2007. Is there a glass ceiling over Europe? Exploring the gender pay gap across the wage distribution. ILR Review, 60(2), pp.163-186.

Ashraf, B. and ASHRAF, J., 1996. Evidence on Gender Wage discrimination from the 1984-85 HIES: a Note. Pakistan Journal of Applied Economics, 12(1), pp.85-94.

Ashraf, J. and ASHRAF, B., 1998. EARNINGS IN KARACHI: Does Gender Make a Difference? Pakistan Economic and Social Review, pp.33-46.

Ashraf, J., 2011. New evidence on rates of return to education in Pakistan. Global Journal of Business Research, 5(3), pp.113-120.

Ashraf, J., Ashraf, B. and Ahmed, A.M., 1993. An Analysis of the Male-Female Earnings Differential in Pakistan [with Comments]. The Pakistan Development Review, 32(4), pp.895-904.

Aslam, M., 2007. Rates of return to education by gender in Pakistan.

Assaad, R. and El-Hamidi, F., 2001. Is all work the same? A comparison of the determinants of female participation and hours of work in various employment states in Egypt. In The economics of women and work in the Middle East and North Africa (pp. 117-150). Emerald Group Publishing Limited.

Azid, T., Ejaz Ali Khan, R. and Alamasi, A.M., 2010. Labour force participation of married women in Punjab (Pakistan). International Journal of Social Economics, 37(8), pp.592-612.

Barón, J.D. and Cobb-Clark, D.A., 2010. Occupational segregation and the gender wage gap in private-and public-sector employment: a distributional analysis. Economic Record, 86(273), pp.227-246.

Berniell, M.I. and Sánchez-Páramo, C., 2012. Closing the Access Gap: Recent Advances in Female Labour Force Participation. Background paper for the WDR.

Bertrand, M., Duflo, E. and Mullainathan, S., 2004. How much should we trust differences-in-differences estimates?. *The Quarterly journal of economics*, *119*(1), pp.249-275.

Bhalotra, S., Brulé, R. and Roy, S., 2018. Women's inheritance rights reform and the preference for sons in India. *Journal of Development Economics*, p.102275.

Bibi, A. and Afzal, A., 2012. Determinants of married women labour force participation in Wah Cantt: A descriptive analysis. Academic research international, 2(1), p.599.

Bilinski, A. and Hatfield, L.A., 2018. Nothing to see here? Non-inferiority approaches to parallel trends and other model assumptions. *arXiv preprint arXiv:1805.03273*.

Blau, F.D. and Kahn, L.M., 2007. The gender pay gap: Have women gone as far as they can?. Academy of Management Perspectives, 21(1), pp.7-23.

Blinder, A.S., 1973. Wage discrimination: reduced form and structural estimates. Journal of Human resources, pp.436-455.

Bose, N. and Das, S., 2018. Intergenerational Effects of Improving Women's Property Rights: Evidence from India. *Available at SSRN 3074636*.

Brixiová, Z. and Kangoye, T., 2013. Working Paper 175-Youth Employment in Africa: New Evidence and Policies from Swaziland (No. 472).

Cameron, A.C. and Miller, D.L., 2015. A practitioner's guide to cluster-robust inference. *Journal of human resources*, *50*(2), pp.317-372.

Card, D. and Lemieux, T., 2001. Can falling supply explain the rising return to college for younger men? A cohort-based analysis. *The Quarterly Journal of Economics*, *116*(2), pp.705-746.

Chishti, S., Lodhi, A. and Rashid, S., 1989. Female Labour Participation Behaviour: A Case Study of Karachi. Pakistan Journal of Applied Economics, 8(2), pp.157-165.

Cotton, J., 1988. On the decomposition of wage differentials. The review of economics and statistics, pp.236-243.

Cunningham, W., 2001. Breadwinner versus caregiver: Labour force participation and sectoral choice over the Mexican business cycle. The economics of gender in Mexico: Work, family, state, and market, pp.85-132.

Das, S., Kotikula, A. and Carranza, E., 2019. Gender-Based Employment Segregation: Understanding Causes and Policy Interventions.

Deere, C.D. and Leon, M., 2001. Land and Property Rights in Latin America: Empowering Women.

Deere, C.D., Oduro, A.D., Swaminathan, H. and Doss, C., 2013. Property rights and the gender distribution of wealth in Ecuador, Ghana and India. *The Journal of Economic Inequality*, *11*(2), pp.249-265.

Ejaz, M., 2007. Determinants of female labour force participation in Pakistan an empirical analysis of PSLM (2004-05) micro data. The Lahore Journal of Economics, 12(S), pp.203-235.

Ejaz, M., 2010. Determinants of Female Labour Force Participation in Pakistan: An Instrumental Variable Approach (Doctoral dissertation, © Lahore School of Economics).

Faridi, M.Z. and Rashid, A., 2014. The Correlates of Educated Women's Labour Force Participation in Pakistan: A Microstudy.

Faridi, M.Z., Chaudhry, I.S. and Anwar, M., 2009. The socio–economic and demographic determinants of women work participation in Pakistan: evidence from Bahawalpur District.

Firestone, J.M., Harris, R.J. and Lambert, L.C., 1999. Gender role ideology and the gender based differences in earnings. *Journal of Family and Economic Issues*, *20*(2), pp.191-215.

Freyaldenhoven, S., Hansen, C. and Shapiro, J.M., 2019. Pre-event trends in the panel event-study design. *American Economic Review*, *109*(9), pp.3307-38.

Hafeez, A. and Ahmed, E., 2002. Factors determining the labour force participation decision of educated married women in a district of Punjab. Sustainable Development Policy Institute.

Watch, H.R., 2017. World report 2017–events of 2016. *New York: Human Rights Watch*.

Gaddis, I., Lahoti, R. and Li, W., 2018. *Gender Gaps in Property Ownership in Sub-Saharan Africa*. The World Bank.

Goldin, C., 1988. Marriage bars: discrimination against married women workers, 1920's to 1950's.

Gul Khattak, S.S., 2018. Revisiting Gender And Feminism: Global And Pakistani Perspectives. *Pakistan Journal of Gender Studies*, *17*.

Harari, M., 2019. Women's inheritance rights and bargaining power: Evidence from kenya. *Economic Development and Cultural Change*, *68*(1), pp.189-238.

Heath, R. and Tan, X., 2020. Intrahousehold bargaining, female autonomy, and labor supply: Theory and evidence from India. *Journal of the European Economic Association*, *18*(4), pp.1928-1968.

Heckman, J.J., 1976. The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. In Annals of Economic and Social Measurement, Volume 5, number 4 (pp. 475-492). NBER.

Heckman, J.J., 1979. Sample selection bias as a specification error. Econometrica: Journal of the econometric society, pp.153-161.

Heckman, J.J., Lochner, L.J. and Todd, P.E., 2003. Fifty years of Mincer earnings regressions (No. w9732). National Bureau of Economic Research.

Hegewisch, A., Liepmann, H., Hayes, J. and Hartmann, H., 2010. Separate and not equal? Gender segregation in the labour market and the gender wage gap. IWPR Briefing Paper, 377.

Hyder, A. and Reilly, B., 2005. The public and private sector pay gap in Pakistan: A quantile regression analysis. The Pakistan Development Review, pp.271-306.

ILO., 2018 " Global Wage Report 2018/19: What lies Behind Gender Pay Gaps".

Irfan, M., Anwar, S., Akram, W. and Waqar, I., 2013. Occupational gender segregation and its determinants, an analysis of Pakistan labour force market. American Journal of Educational Research, 1(7), pp.221 –224.

Kamal, A. and Woodbury, L., 2016. Emerging Opportunities for Women in Khyber Pakhtunkhwa: Industry (Manufacturing and Construction), Mining, Tourism, and Agriculture.

Kapsos, S., Bourmpoula, E. and Silberman, A., 2014. Why is female labour force participation declining so sharply in India?(No. 994949190702676). International Labour Organization.

Khan, F.S. and Toor, I.A., 2003. Changes in returns to education in Pakistan: 1990-2002.

Khattak, S.S.G., 2018. Hearing silent voices and listening to perceptions and experiences of Pukhtun women on higher education: Opportunities for women in Pakistan. *Pakistan Journal of Women's Studies: Alam-e-Niswan*, *25*(1), pp.35-58.

Klasen, S. and Pieters, J., 2015. What explains the stagnation of female labour force participation in urban India?. The World Bank.

Klugman, J., Hanmer, L., Twigg, S., Hasan, T., McCleary-Sills, J. and Santamaria, J., 2014. *Voice and agency: Empowering women and girls for shared prosperity*. The World Bank.

Kucharski, L. and Kwiatkowski, E., 2006. Multinomial Logit Model and Its Application in Labour Market Position Analysis of Individuals in Poland.

Lee, Y.J. and Sabharwal, M., 2016. Education–job match, salary, and job satisfaction across the public, non-profit, and for-profit sectors: Survey of recent college graduates. *Public Management Review*, *18*(1), pp.40-64.

Mookerjee, S., 2015. *Gender-Neutral Inheritance Laws, Family Structure, and Women's Social Status in India*. Mimeo. Georgetown University.

Mincer, J. and Polachek, S., 1974. Family investments in human capital: Earnings of women. Journal of political Economy, 82(2, Part 2), pp.S76-S108.

Naaraayanan, S.L., 2019. *Women's inheritance rights and entrepreneurship gender gap*. Working paper.

Nagarajan, H., Goyal, A. and Deininger, K., 2010. *Inheritance law reform and women's access to capital: evidence from India's Hindu succession act*. The World Bank.

Naqvi, Z.F., Shahnaz, L. and Arif, G.M., 2002. How do women decide to work in Pakistan? [with comments]. The Pakistan development review, pp.495 –513.

Nasir, Z.M. and Nazli, H., 2000. *Education and Earnings in Pakistan. Pakistan Institute of Development Economics*. Islamabad. (Research Report No. 177.).

Nasir, Z.M., 2005. An analysis of occupational choice in Pakistan: A multinomial approach. The Pakistan Development Review, pp.57 –79.

Neumark, D., 1988. Employers' discriminatory behaviour and the estimation of wage discrimination. Journal of Human resources, pp.279-295.

O'Leary, N.C., Murphy, P.D., Latreille, P.L., Blackaby, D. and Sloane, P.J., 2005. Accounting for differences in labour market outcomes in Great Britain: A regional analysis using the Labour Force Survey. *Available at SSRN 673502*.

Patrick, C., Stephens, H. and Weinstein, A., 2016. Where are all the self-employed women? Push and pull factors influencing female labor market decisions. *Small Business Economics*, *46*(3), pp.365-390.

Peterman, A., 2009. Essays in maternal health and human rights: evidence from sub-Saharan Africa.

Peterman, A., 2011. Women's property rights and gendered policies: Implications for women's long-term welfare in rural Tanzania. *The journal of development studies*, *47*(1), pp.1-30.

Pham, T.H. and Reilly, B., 2007. The gender pay gap in Vietnam, 1993–2002: A quantile regression approach. Journal of Asian Economics, 18(5), pp.775-808.

Polachek, S.W., 1975. Differences in expected post-school investment as a determinant of market wage differentials. International Economic Review, 16(2), pp.451-470.

Polachek, S.W., 1976. Occupational segregation among women: a human capital approach. Dept. of Economics, the University of North Carolina at Chapel Hill.

Rambachan, A. and Roth, J., 2019. An honest approach to parallel trends. *Unpublished manuscript, Harvard University.[99]*.

Roodman, D., Nielsen, M.Ø., MacKinnon, J.G. and Webb, M.D., 2019. Fast and wild: Bootstrap inference in Stata using boottest. *The Stata Journal*, *19*(1), pp.4-60.

Rosenblum, D., 2015. Unintended consequences of women's inheritance rights on female mortality in India. *Economic Development and Cultural Change*, *63*(2), pp.223-248.

Roy, S., 2008. Female empowerment through inheritance rights: evidence from India. *London School of Economics, London*.

Roy, S., 2015. Empowering women? Inheritance rights, female education and dowry payments in India. *Journal of Development Economics*, *114*, pp.233-251.

Sabir, M. and Aftab, Z., 2007. Dynamism in the gender wage gap: evidence from Pakistan. The Pakistan development review, pp.865-882.

Sapkal, R., 2014. From Mother to Daughter: Do Equal Inheritance Property Laws Reform Improve Female Labour Supply, Educational Attainments in India?. *Educational Attainments in India*.

Sapkal, R.S. and Sundar, K.S., 2017. Determinants of precarious employment in India: an empirical analysis. In *Precarious Work*. Emerald Publishing Limited.

Shah, N.M., Abbasi, N. and Alam, I., 1976. Interdistrict and interprovincial differentials in correlates of female labour force participation, 1961. The Pakistan Development Review, 15(4), pp.424-445.

Shaheen, R., Shabir, G., Faridi, M.Z. and Yasmin, F., 2015. Determinants of female employment status in Pakistan: A case of Sahiwal District. Pakistan Journal of Commerce.

Shaheen, S., Sial, M.H. and Awan, M.S., 2011. Journal of Social and Development Sciences. Journal of Social and Development Sciences, 2(3), pp.104 –110.

Shelton, B.A. and Firestone, J., 1989. Household labour time and the gender gap in earnings. *Gender & Society*, *3*(1), pp.105-112.

Siddiqui, R., Siddiqui, R. and Akhtar, M.R., 1998. A Decomposition of Male-Female Earnings Differentials [with Comments]. The Pakistan Development Review, pp.885-898.

Siddiqui, R. and Hamid, S., 2003. *Gender, poverty, and occupational choice in poor and non-poor households: An analysis based on the household survey data of Pakistan* (No. 2003: 17). Pakistan Institute of Development Economics.

Stewart, M., 2014. Why is the Gender Pay Gap Higher in the Private Sector. *Warwick: University of*.

Tansel, A., 2005. Public-private employment choice, wage differentials, and gender in Turkey. Economic development and cultural change, 53(2), pp.453-477.

Twumasi Baffour, P., 2013. Determinants of urban worker earnings in Ghana and Tanzania: The role of education (No. 13/01). CREDIT Research Paper.

WB., "Migration and Development Brief 31".

WEF., 2018 "Global Gender Gap Report 2018".

Woetzel, J., 2015. The power of parity: How advancing women's equality can add $12 trillion to global growth (No. id: 7570).

World Bank, 2011. World development report 2012: Gender equality and development. World Bank Publications.

Yasin, G., Chaudhry, I.S. and Afzal, S., 2010. The determinants of gender wage discrimination in Pakistan: econometric evidence from Punjab Province. *Asian Social Science*, *6*(11), p.239.

Appendix:

A1: Sectoral Employment across education level

	Agriculture employment			Industry employment			Services employments		
VARIABLES	primary	Secondary	Higher & Tertiary	primary	Secondary	Higher & Tertiary	primary	Secondary	Higher & Tertiary
Post×KPK	-0.008	-0.008**	-0.006**	-0.017*	-0.007**	-0.008**	0.001	0.005***	-0.012*
	(0.017)	(0.002)	(0.002)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Control variables									
Socio Economic factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State linear trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.009	-0.044	-0.013	-0.010	-0.048***	-0.033*	-0.016	-0.145***	-0.671***
	(0.032)	(0.023)	(0.007)	(0.011)	(0.007)	(0.011)	(0.007)	(0.007)	(0.082)
Observations	86,528	138,210	53,857	81,597	136,693	53,926	81,862	140,115	64,158
R-squared	0.037	0.019	0.006	0.015	0.009	0.006	0.015	0.022	0.072

Notes: The above table shows the policy variable impact on sectoral employment across different education level.
Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1

A2: Sectoral wages across education level

	Agriculture wages			Industry wages			Services wages		
VARIABLES	primary	Secondary	Higher & Tertiary	primary	Secondary	Higher & Tertiary	primary	Secondary	Higher & Tertiary
Post×KPK	-0.161*	2.800***	0.119	0.040	0.589***	0.519	0.195**	0.134*	0.105***
	(0.056)	(0.147)	(1.269)	(0.059)	(0.06)	(0.253)	(0.040)	(0.046)	(0.009)
Control variables									
Socio Economic factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State linear trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.551***	4.345***	1.706	3.545***	4.098***	5.409***	3.706***	4.096***	3.456***
	(0.127)	(0.079)	(3.676)	(0.213)	(0.334)	(0.428)	(0.045)	(0.162)	(0.137)
Observations	1,049	411	61	1,514	1,400	382	1,795	4,665	10,391
R-squared	0.617	0.611	0.648	0.460	0.375	0.248	0.414	0.491	0.528

Notes: The above table shows the policy variable impact on sectoral employment across different education level.
Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1

Spillover Effects:

Table B1: Sectoral employment across Province

	Agriculture employment			Industry employment			Services employments		
VARIABLES	Balochistan	Punjab	Sindh	Balochistan	Punjab	Sindh	Balochistan	Punjab	Sindh
Post×state	-0.021	-0.017	0.035**	0.034*	-0.006	-0.001	-0.001*	0.002**	-0.001
	(0.011)	(0.012)	(0.004)	(0.003)	(0.011)	(0.009)	(0.001)	(0.001)	(0.001)
Control variables									
Socio Economic factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State linear trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.050	-8.948*	0.058	0.004	3.297*	0.002	-0.062**	3.297*	-0.060**
	(0.024)	(3.131)	(0.032)	(0.008)	(1.184)	(0.007)	(0.016)	(1.184)	(0.017)
Observations	767,157	767,157	767,157	694,135	694,135	694,135	709,261	694,135	709,261
R-squared	0.084	0.083	0.083	0.017	0.013	0.012	0.074	0.013	0.074

Notes: The above table shows the policy variable impact on sectoral employment across different state. Where in Agriculture, Industry and Services employment column 1 state is Balochistan, column 2 state is Punjab and column 3 state is Sindh.
Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table B2: Sectoral wages across province

	Agriculture wages			Industry wages			Services wages		
VARIABLES	Balochistan	Punjab	Sindh	Balochistan	Punjab	Sindh	Balochistan	Punjab	Sindh
Post×KPK	0.212*	-0.049	0.022	0.459*	0.014	0.053	0.169**	0.010	-0.053**
	(0.062)	(0.029)	(0.035)	(0.050)	(0.070)	(0.057)	(0.024)	(0.032)	(0.012)
Control variables									
Socio Economic factors	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State linear trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.147***	-50.104	4.132***	4.076***	-79.317	4.015***	3.386***	2.350	3.374***
	(0.102)	(27.296)	(0.080)	(0.150)	(38.099)	(0.114)	(0.099)	(4.433)	(0.088)
Observations	11,902	11,902	11,902	8,479	8,479	8,479	24,093	24,093	24,093
R-squared	0.651	0.651	0.652	0.487	0.490	0.492	0.582	0.582	0.582

Notes: The above table shows the policy variable impact on sectoral wages across different state. Where in Agriculture, Industry and Services employment column 1 state is Balochistan, column 2 state is Punjab and column 3 state is Sindh.
Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table C1: Treatment effect on final outcomes

(1) Agriculture employment	(2) Industry employment	(3) Services employment	(4) Agriculture wages	(5) Industry wages	(6) Services wages
0.003	-0.020*	-0.001	0.509***	0.298***	-0.011
(0.750)	(0.078)	(0.375)	(0.001)	(0.000)	(0.500)
[-0.143 0.096]	[-1.642 0.022]	[-0.006 0.005]	[0.418 0.579]	[0.255 0.348]	[-1.322 0 .411]

Notes: Column (1-6) treatment effect on final outcomes. Row 1 shows the coefficient of our main variable Post×KPK. Wild bootstrap cluster p-values are reported in parentheses and wild bootstrap cluster 95% confidence intervals are reported in square brackets, generated using boottest command in Stata 15 (Roodman et al., 2019).