Labor Force Participation and Wages in Palestine for the Period 2000 to 2011

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LABOR FORCE PARTICIPATION AND WAGES IN PALESTINE
FOR THE PERIOD 2000 TO 2011

by

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ABSTRACT
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This study investigates the interaction between wages and labor force participation in Palestine for the period of 2000 to 2011. This period has witnessed series of severe economic and political shocks and moderate recoveries. There are three areas of interest this dissertation considers. The first area is the effect of adult employment and income on child labor supply. The second area is the effect of husbands’ income and employment status on wives’ labor force participation. The third area is return to education and wage inequality. The results show that parents’ income has a negative but weak effect on child labor; parents’ employment was found to have a positive effect on child labor in the West Bank but no effect in Gaza Strip. The study concludes that lack of employment opportunities and lack of employment opportunities with adequate income for adults is probably the underlying cause for child labor in Palestine. In addition, the results show that husband’s employment has a positive effect on wife’s labor force participation and husband’s second job has a strong positive effect on wife’s participation. Husband’s income was found to have a negligible negative effect on wife’s participation in the labor market. The study concludes that labor market conditions and the perception of finding employment have a stronger effect on wives’ participation in the labor market than husbands’ income and employment.
Moreover, the results show a positive and an increasing return to education despite increasing demand for higher education. The study also found a significant and increasing gender income inequality. The study concludes that increasing trends in return to education despite increasing demand for higher education reveals a strong demand for educated workers. In addition, the historically low rate of female participation in the labor market could be attributed to low wages offered to female workers and low market demand for female laborers.
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CHAPTER I
INTRODUCTION

This study investigates the interaction between wages and labor force participation in Palestine for the period of 2000 to 2011. Despite widespread demand for higher education by young Palestinians and improvements in human development indicators, the Palestinian labor market has been deteriorating since the start of the second Intifada in 2000. Primarily, unemployment rates have risen and real wages have declined (UNRWA 2011). Still, demand for higher education remains high and continues to increase mainly by young female Palestinians (Sayre and Al-Botmeh 2009). Although Palestine has seen heavy investment by donor countries in infrastructure and institutions, real wages have declined and unemployment and underemployment rates are still high, especially among the young educated Palestinians (Sayre and Al-Botmeh 2009).

In a broad sense, economic development involves making people’s lives better, primarily through improving their standard of living. Neoclassical economic growth theory asserts that investment in both physical and human capital should, holding other factors constant, raise per capita income and thus overall economic output (Jones 2002). Investment in education particularly is assumed to raise the productivity of the labor force and thus improve the aggregate income level in the economy (Mincer 1958). The four tigers of Asia, for example, have achieved their economic growth and have moved their societies to a higher income strata through, among other measures, heavy investment in education, particularly, female education (Gregory and Stuart 2004). The end result was a drastic increase in the stock of talented and skilled labor force and
increase in female labor force participation. In 2013, the average female labor force participation in Asian tigers was 50% (Roy 2013).

The Palestinian case, however, is unusual in that the predictions of neoclassical economic growth theory do not appear to hold. This is due to a unique interaction between the standard economic measures and political forces that alter the outcomes typically predicted by development theories. Since Palestine achieved partial independence in 1993 following the Oslo Accord, the Palestinian Authority has invested heavily in education for both boys and girls. For example, the budget for the ministry of education and culture increased from 7.6 million U.S. dollars in 1994 to 144 million U.S. dollars in 1999. In addition, net enrollment in primary and secondary education was 97.9% for males and 98.4% for females in 1998/1999 (Mahshi 2000). Moreover, demand for higher education has risen drastically since the start of the peace process, especially among female students. Still, unemployment rates among young college graduates are high. In 2006, unemployment rate among men aged 20-24 in the West Bank who completed 16 or more years of schooling was 36.4% compared to 26.6% for the same age group who completed 9-12 years of schooling (Sayre and Al Botmeh 2009). In 2007, only 15.7% of females participated in the labor market (Zidan 2009). In addition, 82% of the unemployed females are those with college education (World Bank 2010). Zidan (2009) attributes the low rate of female labor force participation to the unstable Palestinian labor market.

Moreover, a decrease in Israeli dependence on Palestinian unskilled laborers has caused a permanent increase in the supply of unskilled labor in the local economy, depressing wages for the primary labor force (usually husbands and older siblings)
(Miaari and Sauer 2006; Saleh 2004; Sayre and Al-Botmeeh 2009). The outcome has been a rising pressure on other family members, mainly women and children, to enter the labor market to make up for the reduction in family income (Saleh 2004). The interaction between the increase in the supply of educated laborers, the increase in demand for higher education for females, the decrease in utilization of unskilled workers by Israel, the restriction on outmigration to Arab countries for the educated labor force, and the decrease in real wages in the Palestinian territories provides a unique condition for studying the labor force in Palestine. Specifically, what is of interest is to study how the fluctuations of wages interact with the “composition” of labor force supply in the local market.

The current study is concerned with the interaction between wages and labor force participation in Palestine for the period from 2000 to 2011. Primarily, the effect of wages earned by some family members on the decision of other family members to enter the labor market, as well as the effect of education premium on the supply of educated workers. It is important to note that this period witnessed four major political events that had direct impact on labor force and wages. The first event was the start of the second Intifada in 2000, which lasted for nearly three years. One of the primary outcomes of this event was a 30% reduction in the overall employment of Palestinians in the Israeli labor market (Miaari and Sauer 2006). The second event was the election of Hamas government in 2006. Immediately after the outcome of the 2006 elections, the Israeli government held the Palestinian Authority’s (PA) monetary foreign aid for nearly 18 months, causing a contraction in the employment in the public sector as well as decline in economic activities. In addition, the PA was unable to pay its employees sufficiently and
on a regular basis for 18 months. Moreover, and as a result of Hamas government taking over Gaza Strip, Israel placed Gaza Strip under siege and isolated it from the rest of the world. The third event was the release of the PA’s foreign aid funds in 2008 that caused a moderate restoration to the economy and a spike in employment in the public sector. The fourth event was in December of 2008 that lasted for three weeks where Israel launched a major military assault on Gaza, destroying a large portion of its infrastructure and economic institutions.

Three areas of interest are considered and studied separately in this dissertation. First, the effect of adult employment and income on child labor force participation. Second, the effect of husbands’ income and employment status on wives’ labor force participation. Third, return to education and wage inequality. These research questions capture the family’s as well as the individual’s decision to enter the labor market in a period that has witnessed severe economic shocks and moderate recoveries. The major contribution of this study to the economics of labor is better understanding the fluctuations in labor force composition in an unstable and underdeveloped economy that is captive to, and dependent on, yet segregated from a highly developed Israeli economy. This study also adds to the understanding of the mechanism of the Palestinian labor force and labor market and their reaction to political events that have short-term as well as long-term effects on the well-being and functioning of the Palestinian economy.

The study uses panel data for the period from 2000 to 2011. The source of the data is the Palestinian Labor Force Survey (see Appendix A), which is a quarterly survey that is conducted by the Palestinian Central Bureau of Statistics (PCBS). Each quarterly survey is called a round. There are 45 rounds included in the data set (only one round for
the year 2011). The sample size for each round is 7,559 households. Each household remains in the sample over two consecutive rounds, rests for the next two rounds, and is represented again in the sample for another two consecutive rounds before it is dropped from the sample. The target population of the survey is all Palestinians aged 10 years and older. In total, there are over 1,276,383 observations in the dataset. However, only observations relevant to the specifications of the dependent variables will be selected. This research develops multiple regression models to test hypotheses and changes of labor force participation and wages over time.

The study conducts two separate analyses in each essay, one for each of the two regions that are known as Palestinian Territories. These regions are the West Bank and Gaza Strip. This approach is critical to understanding variations of labor force indicators in each region separately for the following reasons. First, the two regions are physically separated and mobility between them is highly restricted by the Israeli authorities. The West Bank is located on the east part of Palestine, while the Gaza Strip is located on the western part. The area between them is considered Israeli territory. Second, the two regions are politically segregated. The West Bank is governed by Fatah liberal movement, while Gaza Strip is governed by Hamas Islamist movement. The two governments are considered political opposition to one another and vary significantly in term of their political, ideological, and governing philosophies and approaches. Third, the sources as well as the quantities of funding for each government are different. The Palestinian Authority in the West Bank receives a large portion of its operational funding from foreign donors in pursuant to the 1993 Oslo Accord, while the Hamas government in the Gaza Strip does not receive foreign aid. Fourth, the composition and concentration
of population is different in each region. For example, about 27% of the total population that live in the West Bank are refugees, compared to 67% in Gaza Strip (PCBS 2013c). The refugee population in Palestine has a larger proportion of younger people than non-refugees. In 2012, 41% of refugees were under the age of 15 compared to 39% for non-refugees. In addition, the unemployment rate among refugees in 2012 was 28% compared to 20% for non-refugees (PCBS 2013c). Fifth, wages, labor force participation, and unemployment rates are significantly different in each region. For example, the average daily wages in 2013 was 88.3NIS in the West Bank and 59.3NIS in the Gaza Strip (PCBS 2013b). The unemployment rate in Gaza Strip was 32.5% compared to 19.1% in the West Bank in 2013 (PCBS 2013b). In addition, female labor force participation in the West Bank was 18.3% in 2007 compared to only 11% in the Gaza Strip (Zidan 2009). Finally, access to the Israeli labor market is less restricted for residents of the West Bank. In 2013, 16.8% of the employed workforce in the West Bank worked in Israel, compared to 0% in Gaza Strip (PCBS 2013b).

The underlying theory for child labor force participation study is Becker's (1974) social interaction theory. The central concept of Becker’s argument is "social income," which he defines as the sum of a person's own income and the monetary value to him of the relevant characteristics of others, which Becker calls the person’s social environment. Head of a family is defined as that member who transfers general purchasing power to all other members because he cares about their welfare. When one member cares sufficiently about other members to be the head, all members have the same motivation as the head to maximize family opportunities and to internalize fully all within-family "externalities."
The theory under consideration for the wives labor force participation study is the theory of consumption, developed by Milton Friedman in 1957. This theory states that the choices made by consumers regarding their consumption patterns are largely determined by a change in permanent income, rather than change in temporary (transitory) income. It was later extended by Heckman and MaCurdy (1980) to accommodate the effect of wage rates on income through their effect on labor supply. Heckman and MaCurdy (1980) developed a life cycle model of female labor supply to evaluate the response of married women’s labor supply to “transitory” shocks in income and wage rates.

Mincer’s (1958) human capital theory is considered for the return to education study. The theory assumes that education and skill accumulation increase the marginal productivity of workers and causes their income to rise (return to human capital). Since human capital accumulation takes time, wage increase for the skilled workers is a function of age. The older the skilled worker, the higher his or her earning is expected to be. In addition, as skilled workers age, their marginal productivity declines. Thus, the earnings life-cycle exhibits an inverted U-shaped pattern (Mincer 1958; Becker 1962).

The results from the effect of adult employment and income on child labor supply study show a negative effect of parents’ income on child labor in both regions. However, the effect is very small. Both parents’ years of schooling have a negative effect on child labor, but mother’s education was found to have a stronger effect than father’s education. One of the most surprising findings was the effect of parents’ employment status on child labor. In the West Bank, the effect of parents’ employment was positive, while in Gaza it has no relationship with child labor. In both regions, the study found child’s age and
gender, being male, to have positive effects on the probability of a child entering the labor market.

The results from the effect of husbands’ income and employment on wives’ labor force participation study show that husband’s employment has a positive effect on wife’s labor force participation. In addition, husband’s second job was found to have a strong positive effect on wife’s participation. Husband’s income was found to have a negative effect on wife’s participation the labor market; however, the effect was small. In both regions, wife’s years of schooling was found to have a strong positive effect on her participation in the labor market. Wife’s previous work experience was found to have a negative effect on her participation in the West Bank but a positive effect in Gaza Strip. Family size was found to have a positive relationship with wife’s labor force participation in both regions. Finally, inflation was found to have a strong positive relationship with wife’s labor force participation Gaza Strip but not statistically significant relationship in the West Bank.

The results from the return to education and wage inequality study show a positive and an increasing return to education in both regions. This is despite increasing demand for higher education in both regions. The magnitude of the effect of education on wages in Gaza Strip was found to be significantly higher than that in the West Bank. The study also found that employment and wages for workers with higher levels of education to be less sensitive to political downturns. Potential work experience was found to have a small positive relationship with wages. Also, the results show that as the level of educated attained increases, the return to education increases significantly. In both regions, the study found a significant and increasing gender income inequality but more
so in the West Bank. In addition, the study found that the drastic expansion of employment in the public sector that took place in 2009 corresponded with a significant increase in wages for employees in the public sector in Gaza but a decline in wages of employees in the public sector in the West Bank compared to wages offered by the private sector. Moreover, the study found a significant premium for employment in Israel compared to employment in the local market in the West Bank. In Gaza, the premium for working in Israel for the years 2009 to 2011 was absent since all workers in the sample reported employment in the Palestinian Territories for that period.

This study concludes that in both the West Bank and Gaza Strip, the lack of employment opportunities, as well as the lack of employment opportunities with adequate income for adults is probably the underlying cause for child labor in Palestine, especially during periods where wages are declining. As long as family income continues to decline due to either lack of employment opportunities for parents and/or lack of adequately paying jobs, families will be forced to demand the labor of their children to either work for no pay in family establishments or to seek whatever low paying job is available.

The study also concludes that labor market conditions and the perception of finding employment have a stronger effect on wives participation in the labor market than husbands’ income. This is consistent with the findings of Tella (1964) and Alban and Jackson (1976) where married women might be discouraged from entering the labor market if the likelihood of them obtaining employment is reduced by rising unemployment. Given the current high unemployment rates among the primary labor force in the Palestinian labor market, and given the ongoing decline in real wages, it is possible that married women enter the labor market when necessary due to severe
economic needs and leave when possible due to unhospitable labor market condition for them.

In addition, the study concludes that increasing trends of return to education despite increasing demand for higher education reveals a strong demand for educated workers. Wage inequality in the West Bank is a result of return to education, gender income inequality, and employment in Israel; while wage inequality in Gaza is a result of high return to education and employment in the public sector. The study also concludes that the historically low rate of female participation in the labor market could be attributed to low wages offered to female workers and low market demand for female laborers, despite their increased enrollment in the higher education system.

An important policy implication of consideration in light of the above findings is that improvement to the capacity of the local Palestinian economy to absorb the growing labor force is critical. Adequate wages are also necessary to control the potential negative long-term effects of the deterioration in the labor market. Chronic decline, as the study shows, in the labor market has a negative impact on children and female workers. Without improvement to the capacity of the Palestinian economy, investment in higher education among females will eventually decline and female workers will continue to withdraw from the labor force. In addition, as economic needs continue to grow, the need to send a child to the labor market will escalate and could potentially have a long-term negative effect on school enrollment. If the Palestinian economy to have a chance to thrive and to have a sustainable reason to invest in education, it should utilize its growing educated labor force, particularly female.
CHAPTER II
THE EFFECT OF FAMILY INCOME AND ADULT EMPLOYMENT ON CHILD LABOR IN PALESTINE

Introduction

One of the main challenges facing the Palestinian labor market is a declining real wage, which is caused by high unemployment, slow growth in the private sector, and high inflation (UNRWA 2011). Families’ decisions in the Occupied Palestinian Territories (OPT) to take their kids out of school and allow them to work after the second Intifada in 2000 was driven by hunger and dire economic conditions (UNICEF 2009). The results of 2010 Labor Force Survey show that in some cases, parents have one or two of their children, mainly boys, leave school to contribute to the family’s income to enable them to educate the other siblings (PCBS 2011).

The aim of this study is to estimate the effect of family income and adult employment on the probability of a child participating in the labor market. The current study utilizes a multiple regression model to test hypotheses using data from the Labor Force Survey conducted by the Palestinian Central Bureau of Statistics for the period from 2000 to 2011. Other factors such as location and type of adult employment, adult education, family size, and number of working adults in the family are included in the model since they have a direct effect on the income level of the household. It is important to note that children’s education in Palestine was not factored into the study’s model.

While most previous studies concerned with child labor in developing countries found children’s time to be either devoted to work or school, the case of Palestine is different due to the historically high literacy rate among children. According to the United Nations Children’s Fund (2009), the Palestinian literacy rate is around 99%. Since the two
Palestinian Territories, the West Bank and the Gaza Strip are geographically, politically, and economically separated, the study conducts analyses for each region separately.

As predicted by this study and consistent with the findings of Uhler and Kunin (1972), Basu (2000), Basu and Tzannatos (2003), and Edmonds (2009), parents’ income was found to have a negative relationship with child labor. However, the effect is very small. In addition, mothers’ income was found to have a stronger negative effect on child labor compared to fathers’ income. This is consistent with the findings of Amin et al. (2006) where mothers and children tend to be substitutes in the family labor supply decision.

The results also show that the effect of parents’ employment on child labor is positive in the West Bank. Parents’ employment type as irregular, self-employed, or unpaid family member was found to have a positive effect on child labor. However, parents’ employment status as well as their employment type has no relationship with child labor in the Gaza Strip. Also, the study found a positive trend in child labor participation throughout the study period in the West Bank but a negative trend in Gaza Strip. This is quite interesting since daily wages in Gaza is lower than that in the West Bank, and unemployment rates among adults are higher in Gaza. This could be an indication of a severe deterioration of the labor market in Gaza Strip where employment opportunities for all ages are very limited. The results from Gaza Strip are in contrary with established literature regarding the behavior of the primary and secondary labor force in response to changes in market conditions. Basu and Tzannatos (2003) argue that when there is market rigidity with low wages and where adult unemployment is expected to rise, child labor serves mainly as a substitute for adult labor. Moreover, if the family is
poor because of low adult wage or adult unemployment, the family will send out more
workers (i.e. wives and children) to secure their living (Basu 2000; Uhler and Kunin
1972). Basue (1999) argues that it is families with unemployed adults who usually send
their children to work.

In addition, the study found that both parents’ education has a negative effect on
child labor. However, mothers’ education was found to have a much stronger effect than
fathers’ education. Since female labor force participation in Palestine is low, and since
mother’s employment has no relationship with child labor in Gaza and has a positive
relationship in the West Bank, it is possible that even if not employed, educated mothers
do not value child labor.

The study concludes that in both regions, the lack of employment opportunities
for adults with adequate pay is probably the underlying cause for child labor in Palestine,
especially during periods where wages are declining. In other words, the income effect is
stronger on child labor than that of adult employment status. As long as family income
continues to decline due to lack of employment opportunities for parents with adequate
pay, families will be forced to demand the labor of their children to either work for no
pay in family establishments or to seek whatever low paying job is available.

Literature Review

Child Labor: An Overview

The International Labor Organization defines child labor as “work that deprives
children of their childhood, their potential and their dignity, and that is harmful to
physical and mental development.” Still, there is ambiguity and disagreement among
scholars about how to define a “child” and “child labor” (Fares and Raju 2007). Child
economic activity is defined as “all paid work and certain forms of unpaid work (e.g., unpaid work in own household enterprises). In line with the international definition of employment, the child is classified as economically active if the child performs such work for at least one hour in a stipulated reference week during the regular school year” (Fares and Raju 2007). In a broader content, a child labor refers to any activity, other than study and play, that is carried out by a person who is under the age of 15 (Cigno et al. 2002).

More than one in five children in the world are working and the majority of those working children live in poor countries (Edmonds and Schady 2009). Since the majority of working children in developing countries are non-paid household members, working on their family’s farm or enterprise, understanding the decision making process at the household level is important to explain child labor (Fors 2012). The subsistence requirement per household is affected by the number of children in the household. The higher the number of children, the higher the subsistence requirement, and the higher the incidence of child labor (Fors 2012).

Child labor is both a consequence of as well as a cause of poverty (ILO 2002). The general argument is that, extreme poverty pushes families to send their children to work instead of school. Pulling a child from school locks the children, their families, and the nation into a poverty trap, as lower human capital accumulation has a negative effect on national economic development (ILO 2002; Cigno et al. 2002). In addition to poverty, inadequate education system, the absence of welfare systems, inefficient labor market and productivity, and adult unemployment are among many factors that perpetuate child labor (ILO 2013).
While recent studies focus on the incidence of child labor in developing countries, such phenomenon was widely observed in now developed countries, such as Britain and the United States during the 18th and 19th centuries. In 1861 about 30% of the 10-14 age group children in Britain worked (Jafarey and Lahiri 2000). Willoughby (1890) argues that improved machinery in the 18th century in Britain led to a growth in the demand for child labor, and children were substituted for adult labor at lower wages. The introduction of improved machinery in America made the manufacturing sector appealing to poor children (Lindsay 1906). At the same time, the inability of working children to organize and/or negotiate wages was appealing to manufacturers (Willoughby 1890). Only after industrialization produced technological changes that reduced the demand for unskilled labor, and subsequently led to an increase in return to education, Western countries witnessed decline in child labor (Brown et al. 2002). This demonstrates the powerful effect of demand on the persistence, presence, and growth of child labor (Brown et al. 2002).

*Poverty and Family Income as Functions of Child Labor Supply*

There is a positive association between hours of child labor and poverty (Ray 2000). Poverty is a cause for child labor and child labor is also a cause for poverty (Jafarey and Lahiri 2000; Udry 2003; ILO 2002). Working children who do not attend school grow to become poor adults (Udry 2003); as a result, they themselves will send their children to work, creating a cycle known as a poverty trap (Jafarey and Lahiri 2000). Poverty resembles the economic constraint that parents face when choosing how to allocate their children’s time (Fares and Raju 2007). When parents are unable to substitute for the forgone income of their children, parents send their children to work
(Ranjan 1999). Brown et al. (2001) found that poverty is a substantial force that drives children to work. In economies where many people are poor, extreme poverty creates an equilibrium for child labor exploitation (Roger and Swinnerton 2002).

The variations in child labor as a result of poverty are the product of the interaction between family’s economic needs and its income level at a given time. Uhler and Kunin (1972) found that falling family income has a positive effect on other family members’ decisions to enter the labor market. A family’s decision to send a child to the labor market is usually caused by the family’s income dropping below the subsistence level without child labor (Edmonds and Schady 2009; Basu and Tzannatos 2003), regardless of how small the economic contribution of child labor (Edmonds and Schady 2009). Contrary to the above arguments, Swinnerton and Rogers (1999) argue that income inequality as a result of inadequate income distribution explains the presence of child labor. If income from non-labor is properly distributed, then low-wage market equilibrium where children work cannot exist. However, Basu and Van (1999) challenged this argument since economy-wide distribution of income leads to lower productivity, which in turn reduces the income of adult laborers, which increases child labor supply. However, Anker (2000) questions the accuracy of associating poverty with child labor. He supports his argument by pointing to the presence of variations of child labor supply across poor households within poor communities and across poor communities within poor countries. In addition, Bhalotra (2007) argues that while children of poor families are more likely to work, it is not necessarily accurate to state that poverty compels child labor. The author found that child labor is induced if, and only if, household subsistence needs are not met without child income. Bhalotra (2007) also
found that poverty usually compels boys to work, but its effect on girls entering the labor market is ambiguous. The author concluded that other factors such as family’s perceived return to girls’ education or the presence of family’s productive assets might induce child labor among young girls. Emerson and Souza (2003) challenged associating poverty with child labor. They found an intergenerational persistence of child labor in Brazil where parents who were child laborers send their children to work instead of school, even when they controlled for income.

**Asset Holding and Access to Credit Markets as a Function of Child Labor**

Family’s acquisition of wealth and access to credit market could have an effect on child labor supply even when poverty is not present. Bhalotra (2007) argues that land holding has a positive effect on child labor, mainly girls. More land holding, more girls will be pulled out of school and sent to work on family farms. The author also argues that the effect of land holding is stronger on girls even when poverty is not present due to the perception that return to girls’ work on family farm is higher than their return to schooling. Family’s land holding in developing countries increases the demand for child labor, especially when the labor market is imperfect where poor households who wish to send their children to work but are unable to do so because they have no access to labor market close to their homes (Basu et al. 2010). For those households, once they acquire productive asset such as land, their children are more likely to work on family farms since those households are able to provide their children with work close to home. The authors argue that as the land ownership by poor households rise, the demand for child labor will rise then decline with the increased level of asset holding (income effect). Thus, it is the interaction between the imperfect labor market and asset holding that
affects the supply of child labor (Basu et al. 2010). In addition, low levels of household wealth can raise the discount rate (low borrowing power) for poor households, which in turn enable them to borrow funds to send their children to school (Jafarey and Lahiri 2000). The authors argue that insufficient wealth and inaccessible credit is the mechanism where child’s schooling is traded for his or her work. On the other hand, periods of economic growth in households endowed with productive assets could lead to increase in family demand for child labor, especially if such assets complement the child labor in the household production function (Del Carpio and Loayza 2012).

Brown et al. (2002) argue that market failures, more than economic efficiency of child labor or economic interest of the family, give rise to child labor. If labor and land markets are perfect, then investment in child schooling should be positive. Therefore, child labor should be negatively associated with land holding through the income effect (Brown et al. 2002). Ranjan (1999) and Udry (2003) argue that in developing economies, child labor arises due to the imperfection in the credit market or poorly functioning financial market. If parents are able to borrow to send their kids to school, then parents will choose to invest in their children’s education rather than allowing them to work, especially if return to education is high. Ranjan (1999) concludes that poverty combined with lack of access to loans against future earnings by poor families is actually what generates child labor phenomenon. Cigno (2004) shows that in some cases, child labor can arise even when poor families’ survival is not an issue. In those cases, it is the families’ inability to borrow against their children’s future earning to invest in their education is what pushes the family to supply the market with child labor (Cigno 2004). In addition, Udry (2003) found that if the value of the immediate return from child’s
work outweighs the value of his/her future return, then poor families are forced to send their children to work, especially if they cannot borrow to finance their children’s education (Udry 2003).

**Adult Education, Child Education, and Child Labor Supply**

Parental education has a significant negative effect on child labor (Brown et al. 2002). Parents with more education are capable of absorbing reductions in household income since educated parents have more job options in the labor market (Hussain and Maskus 2003). Emerson and Souza (2003) found that in general, children are less likely to be child laborers the more educated their parents are, even when they controlled for the family’s income. Also, parents are more likely to choose to devote their kids’ time exclusively to school the more schooling they possess (Brown et al. 2001). Suryahadi et al. (2005) found that the higher (lower) the level of education attained by the head of the household, the lower (higher) the incidence of poverty and child labor. In addition, when studying the effect of parents’ education on child labor, Ray (2000), Brown et al. (2001), and Basu et al. (2010) found that mother’s education has a stronger negative effect on child labor supply than father’s education. This is due to the fact that children and mothers tend to be substitutes in the family labor supply decision (Amin et al. 2006).

The interaction between child schooling and child labor is multidimensional. Even if parents value their kids’ education, they might not be able to balance investing in education and nutrition for their children at the same time (Dessy and Pallage 2001). Since child education is considered a non-working time (leisure), demand for child education increases with the increase of the household income (Brown et al. 2002). However, family’s perception of return to education has a strong effect on their decision
of their child’s time allocation than family’s income (Fares and Raju 2007). When the
return to education in a given society is large, even unskilled and poor families will
choose to educate their children (Doepke and Zilibotti 2005). On the other hand, if
current income loss due to a child’s time in school is perceived to be higher than his/her
future income with education, families pull kids out of school and send them to work
(Brown et al. 2001; Cigno et al. 2002). The effect of the child’s perceived current income
compared to his/her perceived future earning on family’s decision to trade schooling for
work is even stronger in economies where demand for unskilled labor and child wages
are high, the authors argue.

The argument that child schooling and child labor are mutually exclusive is
inaccurate (Anker 2000). Rather than being a substitute, child labor and schooling may be
complements to each other, especially in economies where households are faced with
poverty and credit market imperfections (Fors 2012). Anker (2000) argues that
combining school and work —with exception to hazardous work— augments human
capital. In addition, allowing a child in poor countries to work part-time may enhance
human capital accumulation in the economy (Dessy and Pallage 2001; Basu 1999). Contrary to the findings of the previous authors, Suryahadi et al. (2005) and Hussain and
Maskus (2003) found that child labor has an adverse effect on the accumulation of human
capital, mainly, on academic participation and performance. Also, child labor is socially
inefficient since it has a negative impact on the child’s accumulation of human capital,
and thus a negative impact on the future earning of the child as an adult (Blad and
Robinson 2000).
Adult Income, Adult Unemployment, and their Effect on Child Labor

Alban and Jackson (1976) argue that market conditions influence the behavior of individuals in the labor market. When there is market rigidity with low wages and where adult unemployment is expected to rise, child labor serves mainly as a substitute for adult labor (Basu and Tzannatos 2003). If the family is poor because of low adult wage or adult unemployment, the family will send out more workers (i.e. wives and children) to secure their living (Basu 2000; Uhler and Kunin 1972). In other words, it is families with unemployed adults who send their children to work (Basu 1999). A rise of the adult wage can lead to a decline in child labor since parents are assumed to send their children to work only when they are compelled by poverty (Basu 2000). Diamond and Fayed (1998) argue that, adult employment and child labor are complementary to each other when male wages are inflexible, while adult female labor is a substitute for child labor since market wage rates for women in traditional society is low. Thus, the argument that reduction in child labor results in an increase in adult wage is inaccurate, Diamond and Fayed (1998) concluded.

Basu (1999) argues that, when the demand for labor intersects with the supply of labor in poor economies, two stable equilibria are possible, a low-wage equilibrium where children work and a high-wage equilibrium where all children go to school and only adults work. During economic downturns and high adult unemployment, mainly in developing countries with absence of effective welfare systems, families without assets rely on their supply of labor to compensate for the reduction of income due to external economic factors (Sharif 2000). In contrary, Brown et al. (2002) concluded that employment opportunities for children, when present, cause child labor supply to surge.
Moreover, an increase in adult wages does not necessarily imply that fewer children will work and attend school instead since adult wages and child wages tend to move in the same direction, and a rise in child wage induces a substitution effect that leads to an increase in child labor supply (Udry 2003). In contrary, Edmonds (2005) found that improvement of the household economic status in Vietnam was associated with a drastic decline in child labor, even in the face of rising economic opportunities for working children. However, such negative association between improvement in economic status and child labor is stronger in poorer households than richer ones (Edmonds 2005). In addition, Dessy (2000) found contradictory results especially in environments where the child’s time has economic value due to the existence of a demand for child labor. If child’s time has economic value and the cost of having children declines, then fertility rates increase, causing an increase in the rates of child labor supply. As a result, Dessy argues that adults’ income level and employment status become irrelevant factors that determine family’s supply of child labor when demand for child labor and is high and the cost of raising a child is low.

Labor Market, Wages, Child Labor, and Child Schooling in Palestine

Labor market and wages. Rosenfeld (2004) argues that the obstacles to allowing the development of a Palestinian industrial base, low agricultural productivity, high unemployment, and growing dependence on labor migration has led to almost complete dependency on the highly developed Israeli economy, which in turn led to the underdevelopment of the Palestinian economy. As a result of this economic dependency and the underdevelopment of the Palestinian economy, about one third of Palestinians work in Israel as day laborers, mainly in the construction and service sectors (Rosenfeld
After the occupation of the Palestinian Territories in 1967, Israel opened its labor market to the Palestinian labor force (Al Kafri 2002). Unskilled Palestinian workers earned higher income in the Israeli labor market than skilled and educated laborers in the local market, which induced a low return to education for Palestinians (Al Kafri 2002). Prior to the start of the second Intifada in the year 2000, one third of the Palestinian labor force worked in the Israeli labor market (Sayre and Al-Botme 2009). However, after the spark of the Intifada in 2000, entry of Palestinian laborers into the Israeli labor market was restricted due to the closure of Israeli borders and roadblocks between Palestinian territories, causing a sudden spike in unemployment in the local economy (Sayre and Al-Botme 2009). The closure of the Israeli labor market left many Palestinians jobless, faced with a bitter reality, loss of work and loss of education (Al Kafri 2002). The prolonged closure after the second Intifada induced Israeli employers to substituted Palestinian labor with foreign laborers, which produced a permanent effect on Palestinian unemployment (Miaari and Sauer 2006). According to Miaari and Sauer (2006), the overall reduction of Palestinian employment in Israel as a result of substitution with foreign workers is estimated to be 30%. In addition, wages offered by Israeli employers for those Palestinians who are able to enter Israel have decline significantly, reducing the mean monthly earnings for Palestinians (Aranki 2004; Miaari and Sauer 2006). Increased unemployment and underemployment in the Palestinian local economy, decline in wages, and macroeconomic depression increased the burden on the younger members of the family to join the labor market, leading to a child labor problem (Saleh 2004).

*Child Labor.* The 2004 Child Labor Survey found that 71% of working children become economically active due to severe economic needs (PCBS 2004). More than half
of working children (51.4%) are unpaid and work in household projects (PCBS 2004), and more than 60% of child laborers work in family owned farms (Abu-Ghallous 2012). Al Kafri (2002) found that the percentage of economically active children dropped more than half (from 7% to 3.2%) in late 2001. However, this drop in child labor participation was a result of children leaving work unwillingly due to closures and/or destruction of businesses in Palestinian Territories, not due to the reduction of the need for children to work. Nandi and Di Maio (2010) found that job loss in Israel by a head of a household had a significant effect on child labor in Palestine. In addition, the increase of labor supply in the Palestinian local labor market also caused a downward pressure on adult wages (Di Maio and Nandi 2009). The resulting decline in the standard of living forced family members of the unemployed, who were not in the labor force before, to enter the job market in order to increase the probability of earning a living (Nandi and Di Maio 2010). Di Maio and Nandi (2013) concluded that the intensity of the conflict, which has adverse effect on the labor market, increases the probability of child labor in Palestine. The effect of conflict on the labor market has a long lasting effect on child labor participation. Abu-Ghallous (2012) found that even after the labor market recovered and conflict intensity declined in the years after the second Intifada of 2000, child labor persisted in Palestine. Probably one of the main consequences of the permanent deterioration of the Palestinian labor market is that, adult labor; especially home production and home enterprise activities become dependent on child labor, thus creating a complementary effect between adult and child labor. In other words, adult laborers are able and willing to accept low paying jobs if they can rely on child labor, mainly to run a low scale family owned enterprise (Abu Ghallous 2012).
Child Schooling. The literacy rate in Palestine is one of the highest in the region, around 99% (UNICEF 2009). Dropout rates, especially at the secondary education level, are generally low. In addition, the dropout rate declined from 10.9% to 8.6% in 2001 (Al Kafri 2002). The author attributes this decline in dropout rate to the decline in employment opportunities for children after the start of the second Intifada. Abu-Ghallous (2012) found similar trends for the period of 2000 to 2002 where the school dropout rate declined at a steady rate, from 4.5% in 2001 to 3.5% in 2007. Similar to Al Kafri’s (2002) argument, Abu-Ghallous (2012) attributes this decline in dropout rates to the shrinkage of job opportunities for children in both the Israeli and the local Palestinian job market. Abu-Ghallous (2012) concluded that there is no tradeoff effect in Palestine between child labor participation and child education. However, and while the supply of child labor in Palestine has not significantly affected child school enrollment or literacy rates, learning achievement rates have declined in recent years, particularly in Gaza Strip (UNICEF 2009).

Methodology

Research Question

Does the decline in parents’ wages and their unemployment induce children to enter the labor market in Palestine?

Theory

The underlying theory of this study is Becker’s (1974) theory of social interaction. The central concept of Becker’s argument is "social income," which he defines as the sum of a person's own income and the monetary value to him relevant to the characteristics of others, which Becker calls the person’s social environment. By using
the concept of social income, Becker analyzed the effect of changes in income on changes in expenditures at different prices, including the "price" of the social environment. In a family setting, "head" of a family is defined as that member who transfers general purchasing power to all other members because he cares about their welfare. Becker explains that, a family with a head is a highly interdependent organization that has two important properties. One is that, a redistribution of income among members does not affect the consumption or welfare of any member because it simply induces offsetting changes in transfers from the head. The second is that, a family acts "as if" it maximizes a consistent and transitive utility function subject to a budget constraint that dependent only on family variables. The family’s utility function is the same as the head's because his concern for the welfare of other members integrates all their utility functions into one consistent "family" function.

Moreover, the head maximizes a utility function that depends on the consumption of all family members subject to a budget constraint determined by family income and family consumption. Therefore, the effect of a change in relative prices of goods, or in aggregate family income (as well as in its distribution) on a family's consumption of different goods, could be predicted solely from the head's utility function and a budget constraint on family variables. More precisely, when one member cares sufficiently about other members to be the head, all members have the same motivation as the head to maximize family opportunities and to internalize fully all within-family "externalities."

Becker’s theory is relevant to studying the Palestinian family behavior in the labor market in response to changes in its income level, given the collective nature of the Palestinian society and the high economic dependency of family members on one
another. Since the social income, as Becker defines it above, is the sum of all incomes the family earns and consumes as one unit, then the family’s supply of labor is assumed to respond positively to externalities that affect the social income, mainly by altering the quantities of family’s labor supply. In this retrospect, a decline in income of the head of the household is predicted to induce other family members to enter the labor market to substitute the lost income in order to maintain the family’s utility. In such, the unemployment of the head of the household and/or a decline of his or her income would induce other family members to enter the labor market.

*Empirical Model*

The unit of study is the household since income level and employment status of members of a household influences the labor participation behavior of other household members. A regression model is developed to test the effect of family income and employment status of the parents and other adult family members on the probability of child labor. Income-related variables such as employment type of parents, educational attainment of the parents, location of employment, type of employment, source of income, number of working adults in the family, place of residence, family asset holding, and family size are also included in the model.

The regression model is utilized to conduct two separate studies, one for the Gaza Strip region and another for the West Bank region. This approach is necessary because both Gaza strip and the West Bank, though usually referred to as Palestinian Territories or Palestine, are economically, politically, geographically, and demographically separated. In fact each region is ruled by a different government.
It is important to note that children’s education as an independent variable was not included in the study’s model. Elementary and secondary enrollment in Palestine is very high among both boys and girls, and illiteracy rate is very low. The Palestinian literacy rate is around 99%, which is among the highest in the Arab World, especially among girls (UNICEF 2009).

The regression model developed for this study is similar to the model used by Ray (2000) to estimate child labor, child schooling, and their interaction with adult labor. However, and specific to the Palestinian case, additional variables are added and/or expanded to accommodate the specific characteristics of the labor market and social structures in Palestine. Below is a brief explanation for each of these variables.

The Father’s and Mother’s Employment Type: Three dummy variables were added for self, irregular, and unpaid family member employment types. These variables were assigned a value of 1 if observation’s employment type is applicable to the employment type under this variable, 0 otherwise. The excluded category for employment type is full-time regular employment. There are 12 types of employment specified in the PCBS’s Labor Force Survey. For the purpose of this study, the answers were grouped into four different categories (Employment Types).

The Number of Working Adults variable not only reflects the employment status of the parents and/or older siblings but also other adult relatives (uncles, aunts, cousins, grandparents, etc.) who live in the same household as the child. One of the characteristics of the Palestinian society is that adult children live with their parents until they are able to start their own family in a separate home. However, some of those adults who get
married and start their own family remain living with their parents and usually share their livelihood and pool their resources together as one household.

Locality of Residence: Two dummy variables were added for residency in either urban or rural areas. The excluded category is residency in a refugee camp. While in standard economic models residency is either in urban or rural areas, the Palestinian community has a third place of residency, refugee camps. According to PCBS (2013c), 42.1% of the total Palestinian population is refugees. In the West Bank, about 27% of the total population are refugees, while 67% of the total population living in the Gaza Strip are refugees.

Father’s and Mother’s Location of Employment: A dummy variable for employment in the Palestinian Territories. The excluded category is employment in Israel. There are two main labor markets that Palestinians could be employed in, Israel and the Palestinian Territories. Prior to 2000, which marks the start of the second Intifada, one third of the Palestinian labor force worked in the Israeli labor market (Sayre and Al-Botme 2009). However, the overall Palestinian employment in Israel was reduced by 30% post the second Intifada (Miaari and Sauer 2006). PCBS (2013b) estimated the number of Palestinians who work in Israel around 200,000 as of September of 2013. Moreover, the average daily wages in the Palestinian Territories is significantly lower than the average daily wages in Israel. The average daily wages in 2013 was 88.3 NIS in the West bank and 59.3 NIS in the Gaza Strip compared to 178.9 NIS for Palestinians who are employed in Israel (PCBS 2013b).

Asset Holding: A dummy variable to indicate the presence of family’s ownership of productive assets such as land, shop, factory, etc. A value of 1 was assigned if asset is
present and 0 otherwise. While the value or the presence of assets in the family is not specified on the PCBS’s Labor Survey questionnaire, households that reported the employment type of the head of the household as Employer is assumed to hold assets.

Multiple Wives: A dummy variable was added to indicate the presence of multiple wives in the household. This variable was added to capture the presence of an additional adult that might be able to contribute economically to the household. It is important to note that the PCBS Labor Force Survey questionnaire does not specify the relationship between the child and the female spouses in multiple wives household.

\[ Y = \beta_0 + \beta_1 FES + \beta_2 MES + \beta_3 FI + \beta_4 MI + \beta_5 FYE + \beta_6 MYE + \beta_7 FET-P + \beta_8 FET-S + \beta_9 FET-U + \beta_{10} MET-P + \beta_{11} MET-S + \beta_{12} MET-U + \beta_{13} NWA + \beta_{14} LOR-V + \beta_{15} LOR-C + \beta_{16} FLOE-P + \beta_{17} MLOE-P + \beta_{18} FS + \beta_{19} AH + \beta_{20} MW + \beta_{21} AGE + \beta_{22} DF + \mu \]

Variable Definition

1. Child labor Force Participation (Y): A dummy variable and is the study’s dependent variable. It includes the children whose labor force status in the dataset “in labor force,” whether employed or seeking employment. The variable takes on a value of 1 if in labor force and 0 otherwise.

2. Father’s Employment Status (FES): A dummy variable that takes on a value of 1 if father is employed and 0 otherwise.

3. Mother’s Employment Status (MES): A dummy variable that takes on a value of 1 if mother is employment and 0 otherwise.

4. Father Daily Income (FI): The child’s father reported nominal daily income in New Israeli Shekel (NIS).
5. Mother Daily Income (MI): The child’s mother reported nominal daily income in NIS.

6. Father’s Years of Education (FYE): The child’s father’s completed years of formal education.

7. Mother’s Years of Education (MYE): The child’s mother’s completed years of formal education.

8. Father’s Employment Type- Irregular Employment (FET-P): A dummy variable that takes on a value of 1 if father has irregular employment and 0 otherwise.

9. Father’s Employment Type-Self Employed (FET-S): A dummy variable for that takes on a value of 1 if father is self-employed and 0 otherwise.

10. Father’s Employment Type-Unpaid Family Member (FET-U): A dummy variable that takes on a value of 1 if father is unpaid family member and 0 otherwise.

11. Mother’s Employment Type- Irregular Employment (MET-P): A dummy variable that takes on a value of 1 if mother has irregular employment and 0 otherwise.

12. Mother’s Employment Type-Self Employed (MET-S): A dummy variable that takes on a value of 1 if mother is self-employed and 0 otherwise.

13. Mother’s Employment Type- Unpaid Family Member (MET-U): A dummy variable that takes on a value of 1 if mother is unpaid family member and 0 otherwise.
14. Number of Working Adults (NWA): This represents the number of all persons (parents, grandparents, siblings, second wife, family member, etc.) who are 16 years of age and older who are working and who reside in the same household as the child.

15. Location of Residence-Village (LOR-V): A dummy variable that takes on a value of 1 if child lives in a rural area and 0 otherwise.

16. Location of Residence-City (LOR-C): A dummy variable that takes on a value of 1 if child lives in an urban area and 0 otherwise.

17. Father’s Location of Employment (FLOE-P): A dummy variable that takes on a value of 1 if the father works in the Palestinian Territories and 0 if he works in Israel.

18. Mother’s Location of Employment (MLOE-P): A dummy variable that takes on a value of 1 if the mother works in the Palestinian Territories and 0 if she works in Israel.

19. Family Size (FS): Since there is no question on the PCBS’s Labor Force questionnaire that surveys the family size, the number of persons who were surveyed in the household and listed on the survey is used to represent the family size.

20. Asset Holdings (AH): A dummy variable that takes on a value of 1 if head of the household is an employer and 0 otherwise.

21. Multiple Wives (MW): A dummy variable that takes on a value of 1 if the head of the household has multiple wives and 0 otherwise.

22. Age (AGE): This represents the child’s age.
23. Female (DF): A dummy variable that takes on a value of 1 if child is female and 0 for male.

Dummy variables for years (YEARS) and quarters (QUARTERS) are also included in the model to capture the effect of major political and economic shocks such as the second Intifada, the election of Hamas in, the Israeli military assault on Gaza in 2009 on child labor, as well as the effect of harvest and olive picking season on child labor. The reference year is the year 2000 and the reference quarter is the first quarter.

Research Hypothesis and Assumptions

**Hypothesis.** Child labor in Palestine is inversely related to father’s and mother’s employment, income, years of education, father’s and mother’s employment type as regular/full employment, number of working adults, father’s and mother’s employment in Israel, residence in urban areas and refugee camps, and the presence of multiple wives.

Child labor in Palestine is positively related to father’s and mother employment type as irregular, self-employed, and unpaid family member, father’s and mother’s employment in the Palestinian Territories, residence in rural areas, family size, family asset holding, child’s age, and child’s gender being male.

**Assumptions.** The study predicts that the presence of employed adults in the household (such as parents, older siblings, grandparents, other family members) reduces the supply of child labor. Regarding the family asset holdings, the study predicts that child labor will be present if families have productive assets, even if there are other family members who are employed. Most residents of villages own land and/or livestock. Thus, being a resident of a village is predicted to have a positive effect on child labor.
The opposite is true for city and refugee camp residents. Refugees in Palestine usually do not own land and/or sizable enterprises.

Parents’ education is predicted to have a negative effect on child labor, the more years of schooling both parents have, the less likely their children are to enter the labor market. Family size, as the literature predicts, has a positive relationship with the family’s expenditures and subsistence requirement. The larger the family size, the more income the family needs to sustain its living. Location of employment of adults is expected to have significant effect on the level of family’s income. Parents who are employed in the Palestinian Territories usually earn lower wages than those who are employed in Israel and are expected to send their children to work.

Parent’s employment type is expected to have a direct effect on the probability of a child entering the labor market. If the parent’s employment type is regular full employment, which provides income consistency and security, then the probability of the child working is reduced. However, if the parent has an irregular job, self-employment, or is an unpaid family member, then the probability of the child entering the labor market increases. These categories of employment do not produce consistent or sufficient income to the family. The child’s age is expected to increase his or her probability to be economically active. Finally, being a male child is also expected to increase the probability of a child entering the labor market.

Data

Data Description

The source of data for this study is The Palestinian Labor Force Survey, a quarterly survey that was conducted by the Palestinian Central Bureau of Statistics.
(PCBS) for the period from 2000 to 2011. Each quarterly survey is called a round. There are 45 rounds included in the data set (four rounds for years 2000-2010 and only one round for the year 2011). The sample size for each round is 7,559 households. Each household remains in the sample over two consecutive rounds, rests for the next two rounds, and is represented again in the sample for another two consecutive rounds before it is dropped from the sample. The target population of the survey is all Palestinians aged 10 years and older. For the purpose of this research, only households that have members who are in the age group 10 to 15 years old are included in the study’s dataset.

Each household in the data is assigned a unique number by PCBS known as IDSAM. This number is indicated next to each individual surveyed for a given household. The original dataset contains 1,276,383 observations, 454,567 observations in Gaza and 821,816 in the West Bank. For the purpose of this study, only households with one or more parents who have children between the ages of 10 and 15 years old were included. Respondents were identified as parents if they reported “Head” or “Spouse” under “Relation to Head of Household.” The children were determined for a given household if they reported “Son or Daughter” under “Relation to Head of Household.” Only observations that are between the age of 10 and 15 and who are the son or daughter of the head of the household were included in the final working dataset. The final working dataset contains total observations of 306,766, in which 118,557 are in Gaza and 188,209 are in the West Bank.

Data Weaknesses

One of the major weaknesses of PCBS’s data is that it does not indicate the number of individuals living in the household, particularly the number of individuals
younger than 10 years old. It only surveys those who are 10 years of age. As a result, there is no accurate account for the family size and/or the dependency ratio. For the purpose of this study, the number of household members who were surveyed is used as the family size.

Another weakness is that for households that have multiple wives, where one husband is married to more than one wife, the survey does not specify which wife is the child’s mother. The options that the survey offers are the relationship to the head of the household. To overcome this obstacle, a new dummy variable was included in the model to indicate the presence of more than one wife in the household. If the employment status, education, income, location of employment, etc. of all wives were the same, then a value of 1 was assigned to all children in the household under those categories, otherwise a 0 value was assigned.

One more weakness in the dataset is that it does not indicate the household’s ownership of productive assets nor their values. Since the established literature found a strong link between child labor and family ownership of productive assets (land, shop, plant, etc.), a dummy variable for the presence of family asset was included in the model. The values for this variable were derived from the employment type of the head of the household. The assumption is that if the head of the household is an employer, then there is a high probability that the family has productive assets. A value of 1 was assigned to the members of the household where the head of household reported employment type as “Employer” and 0 otherwise.
Empirical Results

Gaza Strip

*Test of the goodness of fit of the model.* The model estimates the effects of various independent variables on the child’s participation in the labor market using probit regression model. The level of statistical significance is set at 5%. The results are reported in Table 1 below. Based on the regression outcome, the probability of Type I error (Prob>chi2) is 0.000, which indicates that the model is a good fit.

Table 1

*Probit Regression Results for Gaza Strip*

<table>
<thead>
<tr>
<th>Child labor force participation (Y)</th>
<th>Coef.</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father’s employment status</td>
<td>0.008</td>
<td>0.068</td>
</tr>
<tr>
<td>Mother’s employment status</td>
<td>0.424</td>
<td>0.322</td>
</tr>
<tr>
<td>Father daily income</td>
<td>-0.002</td>
<td>0.001</td>
</tr>
<tr>
<td>Mother daily income</td>
<td>-0.017</td>
<td>0.005</td>
</tr>
<tr>
<td>Father’s years of education</td>
<td>-0.025</td>
<td>0.004</td>
</tr>
<tr>
<td>Mother’s years of education</td>
<td>-0.039</td>
<td>0.004</td>
</tr>
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<td>Father’s employment type- Irregular</td>
<td>0.007</td>
<td>0.131</td>
</tr>
<tr>
<td>Father’s employment type-Self Employed</td>
<td>0.317</td>
<td>0.055</td>
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<td>Father’s employment type-Unpaid Family</td>
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<td>0.48</td>
</tr>
<tr>
<td>Mother’s employment type- Irregular</td>
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<td></td>
</tr>
<tr>
<td>Mother’s employment type-Self Employed</td>
<td>-0.047</td>
<td>0.264</td>
</tr>
<tr>
<td>Mother’s employment type-Unpaid Family</td>
<td>-0.384</td>
<td>0.255</td>
</tr>
<tr>
<td>Number of Working Adults</td>
<td>0.185</td>
<td>0.018</td>
</tr>
<tr>
<td>Location of Residence-Village</td>
<td>-0.399</td>
<td>0.061</td>
</tr>
<tr>
<td>Location of Residence-City</td>
<td>0.044</td>
<td>0.033</td>
</tr>
<tr>
<td>Father’s Location of Employment-Palestine</td>
<td>-0.01</td>
<td>0.056</td>
</tr>
<tr>
<td>Mother’s Location of Employment-Palestine</td>
<td>0.151</td>
<td>0.281</td>
</tr>
<tr>
<td>Family size</td>
<td>-0.028</td>
<td>0.006</td>
</tr>
<tr>
<td>Asset holdings</td>
<td>-0.099</td>
<td>0.066</td>
</tr>
<tr>
<td>Multiple Wives</td>
<td>0.144</td>
<td>0.09</td>
</tr>
<tr>
<td>Child’s Age</td>
<td>0.315</td>
<td>0.011</td>
</tr>
<tr>
<td>Child's Gender (1 Female, 0 Male)</td>
<td>-1.324</td>
<td>0.058</td>
</tr>
<tr>
<td>_cons</td>
<td>-5.734</td>
<td>0.169</td>
</tr>
</tbody>
</table>

| No. of Observations                | 118545 |
| Pseudo R Squared                   | 0.281  |
Test of the model’s explanatory power. The Probit regression model produces a Pseudo-$R^2$ of 0.281, which means that the independent variables are able to explain 28.1% of the child labor participation in Palestine. This is relatively low explanatory power for the model. While most of the variables that are used in most economic models to predict child labor participation are used in this study’s model, the model’s explanatory power is still low, indicating the possibility that other non-economic factors might have direct effect on child labor participation in the Gaza Strip.

Results and Test Hypotheses. Father’s and Mother’s Employment: Was not significant at the .05 level.

Father’s and Mother’s Income: The coefficient for father’s income was -.002, and the coefficient for mother’s income was -.017. This means that an increase in parents income reduce the predicted probability of child labor. The sign is as expected.

Father’s and Mother’s Years of Schooling: The coefficient for father’s years of schooling was -.025, and the coefficient for mother’s years of schooling was -.038. This means that an increase in parents’ education reduce the predicted probability of child labor. The sign is as expected.

Father’s and Mother’s Employment Type: The coefficient for father’s self-employment was .317. This means the probability of child labor increases if father is self-employed compared to regular employment. The sign is as expected. The father’s other employment types and all mother’s employment types were not significant at the .05 level.
Number of Working Adults: The coefficient was .184, indicating that an increase in the number of working adults in the family increases the probability of child labor. The sing is in contrary to what was expected.

Locality of Residence: The coefficient for residency in rural areas was -.399. The means the probability of child labor decreases if he or she lives in rural areas compared to living in a refugee camp. The sign is in contrary to what was expected. The coefficient for residency in urban areas was not insignificant at the .05 level.

Father and Mother Location of Employment: Was not significant at the 0.05 level.

Family Size: The coefficient was -.027. This means an increase in the family size decreases the probability of the child entering the labor market. The sing is in contrary to what was expected.

Asset Holdings: Was not significant at the .05 level.

Multiple Wives: The coefficient was .144. This means that households with more than one wife have higher probability of producing child laborers compared to households without multiple wives. The sign is in contrary to what was expected.

Child’s Age: The coefficient was .0314. This means that the older the child, the higher the probability he or she will work. The sign is as expected.

Female: The coefficient was -1.323. This means being a female reduces the probability of entering the labor market compared to being a male. The sign is as expected.

West Bank

Test of the goodness of fit of the model. The model estimates the effects of various independent variables on the child’s participation in the labor market using probit
regression model. The level of statistical significance is set at 5%. The results are reported in Table 2 below. Based on the regression outcome, the probability of Type I error (Prob>chi2) is 0.000, which indicates that the model is a good fit.

Table 2

Probit Regression Results for the West Bank

<table>
<thead>
<tr>
<th>Child labor force participation (Y)</th>
<th>Coef.</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father’s employment status</td>
<td>0.133</td>
<td>0.027</td>
</tr>
<tr>
<td>Mother’s employment status</td>
<td>0.612</td>
<td>0.03</td>
</tr>
<tr>
<td>Father daily income</td>
<td>-0.001</td>
<td>0.000</td>
</tr>
<tr>
<td>Mother daily income</td>
<td>-0.007</td>
<td>0.001</td>
</tr>
<tr>
<td>Father’s years of education</td>
<td>-0.018</td>
<td>0.002</td>
</tr>
<tr>
<td>Mother’s years of education</td>
<td>-0.021</td>
<td>0.002</td>
</tr>
<tr>
<td>Father’s employment type- Irregular</td>
<td>-0.038</td>
<td>0.043</td>
</tr>
<tr>
<td>Father’s employment type- Self Employed</td>
<td>0.116</td>
<td>0.023</td>
</tr>
<tr>
<td>Father’s employment type- Unpaid Family</td>
<td>0.388</td>
<td>0.094</td>
</tr>
<tr>
<td>Mother’s employment type- Irregular</td>
<td>0.667</td>
<td>0.124</td>
</tr>
<tr>
<td>Mother’s employment type- Self Employed</td>
<td>0.332</td>
<td>0.058</td>
</tr>
<tr>
<td>Mother’s employment type- Unpaid Family</td>
<td>0.67</td>
<td>0.055</td>
</tr>
<tr>
<td>Number of Working Adults</td>
<td>0.149</td>
<td>0.008</td>
</tr>
<tr>
<td>Location of Residence-Village</td>
<td>-0.022</td>
<td>0.025</td>
</tr>
<tr>
<td>Location of Residence-City</td>
<td>0.05</td>
<td>0.025</td>
</tr>
<tr>
<td>Father’s Location of Employment-Palestine</td>
<td>-0.053</td>
<td>0.021</td>
</tr>
<tr>
<td>Mother’s Location of Employment-Palestine</td>
<td>-0.243</td>
<td>0.055</td>
</tr>
<tr>
<td>Family size</td>
<td>-0.04</td>
<td>0.004</td>
</tr>
<tr>
<td>Asset holdings</td>
<td>0.033</td>
<td>0.026</td>
</tr>
<tr>
<td>Multiple Wives</td>
<td>0.117</td>
<td>0.059</td>
</tr>
<tr>
<td>Child’s Age</td>
<td>0.217</td>
<td>0.004</td>
</tr>
<tr>
<td>Child’s Gender (1 Female, 0 Male)</td>
<td>-0.949</td>
<td>0.017</td>
</tr>
<tr>
<td>cons</td>
<td>-4.587</td>
<td>0.074</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>188175</td>
<td></td>
</tr>
<tr>
<td>Pseudo R Squared</td>
<td>0.296</td>
<td></td>
</tr>
</tbody>
</table>

Test of the model’s explanatory power. The Probit regression model produces a Pseudo-$R^2$ of 0.296, which means that the independent variables are able to explain
29.6% of the child labor participation in Palestine. This is relatively low explanatory power for the model.

Results and test hypotheses. Father’s and Mother’s Employment: The coefficient for father’s employment status was .132 and .611 for the mother’s. This means that the probability of the child entering the labor market increases if the parents are employed compared to not being employed. The sing is in contrary to what was expected.

Father’s and Mother’s Income: The coefficient for father’s income was -.001, and the coefficient for mother’s income was -.006. This means that an increase in parents’ income reduces the predicted probability of child labor. The sign is as expected.

Father’s and Mother’s Years of Schooling: The coefficient for father’s years of schooling was -.018, and the coefficient for mother’s years of schooling was -.021. This means an increase in parents’ education reduces the probability of child labor. The sign is as expected.

Father’s and Mother’s Employment Type: The coefficient for father’s employment type as self-employed was .115 and for unpaid family member was .387. This means father’s employment type as self or unpaid family member increases the probability of child labor. The coefficient for mother’s employment type as irregular was .667. For self-employed it was .331, and for unpaid family member it was .670. This means that mother’s employment as irregular, self-employed, and unpaid family member increases the probability of child labor compared to regular full-time employment. The sign is as expected. Father’s employment type as irregular was insignificant at .05 level.
Number of Working Adults: The coefficient was .148, indicating that an increase in the number of working adults in the family increases the probability of child labor. The sign is in contrary to what was expected.

Locality of Residence: The coefficient for residency in urban areas is .050. This means living in urban areas increases the probability of child being a laborer compared to living in refugee camps. The sing is in contrary to what was expected. Residency in rural areas was not insignificant at the .05 level.

Father and Mother Location of Employment: The coefficient for father’s location of employment was -.053, and the coefficient for mother’s location of employment was -.243. This means that the probability of child labor decreases if parents are working in the Palestinian Territories compared to working in Israel. The sign is in contrary to what was expected.

Family Size: This coefficient was -.040. An increase in the family size decreases the probability of the child entering the labor market. The sign is in contrary to what was expected.

Asset Holdings: Was not statically insignificant at the .05 level.

Multiple Wives: The coefficient was .116. The probability of the child entering the labor market increases if the household has multiple wives compared to households without multiple wives. The sign is in contrary to what was expected.

Child’s Age: The coefficient was .0217. This means that the older the child, the higher the probability he or she will work. The sign is as expected.
Female: The coefficient was -.948. This means being a female reduces the probability of entering the labor market compared to being a male. The sign is as expected.

Results Discussion

**Gaza Strip Results**

Parents’ employment has no relationship with child labor. This outcome is in contrary to the findings of Uhler and Kunin (1972), Basu (2000), and Basue and Tzannatos (2003) where child labor serves as a substitute for adult labor when adults are unemployed. It is possible that full-time regular employment opportunities for adults are limited in Gaza, where most parents have either work for no pay (unpaid family member), or have irregular jobs where they experience frequent periods of unemployment. This explanation is consistent with the findings in this study where the parents’ employment type, with exception to father’s self-employment having positive effect, has no relationship with child labor compared to parent’s regular full-time employment. The results show that parents’ location of employment in Palestinian Territories has no statistically significant relationship with child labor. A possible explanation is that there were no variations in parents’ employment location where majority of parents work inside Gaza.

Consistent with the findings of Basu (2000), the results show parents’ income to have a negative effect on child labor; however, the effect is low. This could be due to the fact that a large portion of the employed parents are either self-employed and/or unpaid family members. Another explanation is that the income level is low across the study
population and/or wages increased at a very low rate. A supporting fact to the above explanation is that only 25% of working parents in the dataset reported daily income.

Consistent with the findings of Brown et al. (2002) and Hassain and Maskus (2003), the results show that parents’ years of schooling have significant negative effect on child labor. Particular to the labor market in Gaza, it is possible that parents with more education have more employment opportunities than parents with less education. Moreover, the results show that mothers’ education has a stronger negative effect on child labor than fathers’ education. This is consistent with the findings of Basu et al. (2010), Brown et al. (2001), and Ray (2000). However, since mother’s employment status have no relationship with child labor as shown above, it is possible that educated mothers dedicate their children’s time to education rather than sending them to work.

One of the interesting findings is that, the higher the number of working adults in the family, the higher the probability of a child entering the labor market. This could be explained by the characteristics and structure of the Palestinian families and the economic codependency of its members on each other. More working adults in the family possibly means more families live in one house. This is consistent with the theory presented in this paper where family members are utility maximizers for one another. Also, it is very customary in Palestine to have one or more married sons and their families live at the grandparents’ house. This means increasing the economic burden on the children’s parents to provide for their own children and their own aging parents. This could induce families to send children to work.

Residency in rural areas was found to have strong negative relationship with child labor compared to living in a refugee camp. A possible explanation is that families who
live in rural areas have productive assets (land and/or livestock) that substitute the need for children to work.

Contrary to the study’s prediction, family size has a negative effect on child labor. A possible explanation is that larger households where more than one family live in one household have more working adults than smaller families, reducing the need for children to work. Still, this explanation is weak as the number of working adults in this study was found to have a positive relationship with child labor.

Inconsistent with the findings of Basu et al. (2010), asset holdings was found to have no relationship with child labor. For the purpose of this study and due to data limitations, the value of the dummy variable for asset holding was assigned based on the head of the household reporting his or her employment type as “employer.” It is possible that this approach is inadequate.

Child’s age has a positive effect on the probability of the child entering the labor market. This finding is consistent with the social values of the Palestinian society where older children are chosen to enter the labor market if a family has to send a child to work rather than younger children. Moreover, the study found that male children are more likely to enter the labor market than female children. This is also consistent with the social values of Palestinians rather than an economically calculated decision. If a male child is present where the family needs to send a child to work, an older male child is more likely to be sent to work rather than his sister or younger sibling.

To capture the effect of political and economic events on child labor, dummy variables for the years were incorporated in the model. The results show that the years 2002, 2004, 2005, 2006, and 2010 have the strongest negative effect on child labor
compared to the reference year 2000. Those years mark the aftermath of major political downturns in the Gaza Strip that significantly impacted economic activities in that region. For example, the year 2002 was after the start of the second Intifada and the reeducation of Israel’s dependency on Palestinian laborers. Also, Hamas government was elected in 2006, which induced Israel to place Gaza under siege, which caused severe economic sanction. In addition, Israel waged a severe military assault on Gaza at the end of 2009 and through 2010 where most of the economic infrastructure was completely destroyed. Al Kafri (2002) found that after the start of the second Intifada in 2000, 50% of the economically active children left the labor market unwillingly as a result of closures and/or destruction of business in the Palestinian Territories.

Moreover, results for the quarter’s dummy variables show that the third quarter, which coincides with the children’s summer break, has the strongest positive effect on the probability of child labor. It is possible that children who are off school are more likely to work on their families farms since summer time is usually the harvest and fruit picking season.

**West Bank Results**

The results show that parents’ employment has a positive effect on child labor, which is consistent with the findings of Diamond and Fayed (1998). Diamond and Fayed found that adult employment and child labor are complementary to each other when male wages are inflexible. However, and inconsistent with Diamond and Fayed’s findings where adult female employment is a substitute for child labor, this study found that mother’s employment has a positive effect on child labor. One possible explanation to this finding is that, large portion of working adults in the West Bank do not secure
regular full-time employment. Parents who work as unpaid family members on family enterprise or home production demand more of their children’s time to work on such establishments. An alternative explanation is that even if parents are employed and earn income, their income level is very low.

The results also show that both parents’ employment type have positive relationship with child labor compared to parents’ full-time regular employment. One possible explanation is that most employed parents either have irregular jobs without sufficient pay or work for no pay at family enterprises. In fact, the data used in this work show that only 25% of all parents have regular jobs, and only 21% of all parents reported daily wages.

Parents’ income was found to have a negative effect on child labor. This is consistent with the findings of Uhler and Kunin (1972), Basu (2000), Basu and Tzannatos (2003), and Edmonds and Schady (2009). However, the findings show a very small effect for income on child labor. In addition, the results show that mothers’ income has a stronger negative effect on child labor compared to father’s income. There is a possibility that the substitution argument holds only when the mother has a full-time paying job. This is supported by the findings in this study where mother’s employment type, other than full-time regular employment, has a positive effect on child labor. These results support the notion that families will send their children to work only if their income drops very low, regardless of the employment status of the parents.

Parents’ location of employment in the Palestinian Territories produced results in contrary to what was expected. The results show that both parents’ employment in the Palestinian Territories decreases the probability of child labor compared to parents who
are employed in Israel. This is quite interesting considering the pay scale being much higher in Israel than it is in the Palestinian Territories. One possible explanation for these results is that, while pay scale in Israel is higher than that in Palestinian Territories, employment in Israel is not reliable where workers experience disruption to their commute to the Israeli labor market, possibly due to political downturns. The results above suggest that parents who work in the Palestinian Territories and who secure a full-time regular employment are less likely to send their children to work. In other words, being an employed parent is not a strong factor to minimize child labor but rather the type of employment, particularly, employment that produces consistent and sufficient income.

The results show that parents’ years of education have negative effects on child labor, with the mother’s education having a stronger effect than the father’s education. This is consistent with the findings of Ray (2000), Brown et al. (2001), and Basu et al. (2010). This is due to the fact that children and mothers tend to be substitutes in the family labor supply decision and educated mothers have more market opportunities than uneducated mothers (Amin et al. 2006). In addition, Zidan (2009) found that education has a positive effect on females’ decision to enter the labor market. However, the low rates of female labor participation in Palestine do not support the presence of a strong substitute effect. One possible explanation is that educated mothers do not value child labor.

Similar to the findings in the Gaza Strip study, the relationship between number of working adults and child labor is positive. More working adults in the household indicate that more families are living within the same household with immediate and possibly other extended family members, which increases the demand for labor time from
all members of the household. Similar results are found in households with multiple wives where the presence of multiple wives increases the probability of child labor, possibly for the same reason as the number of working adults.

Consistent with the findings of Basu et al. (2010), asset holdings has a negative effect on child labor; however, the relationship was statistically significant. Moreover, the results show that residency in rural areas has no relationship with child labor while residency in cities has a positive effect on child labor compared to residency in refugee camps. This is in contrary to what the study predicted. A possible explanation is that more work opportunities are available in cities than villages.

Child’s age and gender (being male) are positively related to child labor. An older male child is more likely to enter the labor market than a younger or female child. This is consistent with the social norms of the Palestinian society where the family would demand the labor of their older male child than younger or female child. It also indicates that the burden on children to work and support their families increases as the child ages.

When studying child labor trends over time, the results are mixed. For the years following the start of the second Intifada, 2001-2005, child labor declined compared to the year 2000. This is consistent with Al Kafri (2002) findings where the percentage of economically active children dropped more than half (from 7% to 3.2%) in late 2001. Al Kafri attributes this decline to closures and destruction of Palestinian business where economically active children left the labor market unwillingly. During the years following the second Intifada, particularly after the election of Hamas in 2006, the trends of child labor became positive. This is consistent with the findings of Abu-Ghallous (2012) where child labor and adults’ employment moved in the same direction in the
years following the end of the second Intifada, producing a complementary effect between adult and child labor. While the years following the election of Hamas in 2006 witnessed a political decay, they also witnessed a decline in economic activities and a decline in the amount of international aid received by the Palestinian Authority. In those years, child labor became more necessary to sustain the family’s living, reflecting a continuing deterioration of the labor market and wages for adults in the West Bank. The results also show that child labor was positive for the second, third, and fourth quarter compared to the first quarter. However, child labor increased more in the third quarter. This indicates the possibility that child labor increases during the school summer break, which coincides with the fruit harvest season.

Results Comparison: Gaza Strip vs. West Bank

Parents’ employment in Gaza Strip has no effect on child labor, while it has a positive effect in the West Bank. Moreover, parents’ employment type in Gaza Strip has no relationship with child labor, with exception to self-employment having a positive relationship. In the case of the West Bank, all parents’ employment types, with exception to father’s irregular employment type having no relationship, have positive effect on child labor. The absence of parents’ employment effect on child labor in Gaza Strip suggests that large portion of parents are employed or have low quality jobs with low or no pay. In the West Bank, it is possible that more parents are employed; however, the pay rates are low suggesting a complementary relationship between child labor and adult labor, mainly mothers. This is consistent with the findings of Diamond and Fayed (1998) where adult employment and child labor are complementary to each other when male wages are inflexible.
Moreover, parents’ income in both regions has a negative effect on child labor, however, the effect is very low, and it is even lower in Gaza Strip than that in the West Bank. This could be due to low wages across the working class in both regions. These findings suggest that it is not the parents’ employment status but rather the lack of adequately paying jobs that induces child labor in both regions. Child labor in the Gaza Strip could be induced by the severe lack of employment opportunities in general and lack of adequately paying jobs for adults. While employment rates for adults in the West Bank might seem higher than that in Gaza, employed parents are more likely to be unpaid family members working on the families’ farms or small establishments. Thus, child labor in the West Bank could be induced by the lack of adequately paying jobs for adults.

Throughout the study’s period, child labor has moved in different directions in both regions. In the Gaza Strip, the coefficients for the years’ dummy variables are negative, indicating a decline in child labor over time. While this might be viewed as a positive indicator for child labor, the reality is that during those years the Gaza Strip’s economy deteriorated severely due to frequent political shocks. The fact that fewer children are working (or able to find employment) is a symptom of a severe decline in economic activities where employment became difficult to obtain for the primary labor force, let alone the secondary labor force. This explanation is consistent with the findings of Al Kafri (2002) where the decline in the percentage of economically active children (from 7% to 3.2%) in late 2001 was due to lack of employment opportunities. In addition, Abu-Ghallous (2012) found that for the period 2000 to 2006, child labor force participation rates and national unemployment rates moved in the opposite direction. In other words, when unemployment among adult laborers rose, child labor declined.
For the West Bank, the trends of child labor over time, especially after the election of Hamas government in 2006, shows a gradual increase in child labor supply, which suggests gradual decline of adults’ wages and economic activities on a much slower basis than in the Gaza Strip. The Gaza Strip has not had the chance to recover or start a recovery process due to repeated military assaults by Israel and due to the tightening of economic isolation. In fact the data in this work show that 0% of the Gaza sample reported employment in Israel for the period 2009 to 2011. It is possible that access to the Israeli labor market by children is another factor that has an effect on child labor trends in each region.

Conclusion

This study’s aim was to investigate the relationship between adults’ employment and adults’ income and child labor in the Gaza Strip and the West Bank regions in Palestine between the years 2000 to 2011. The time period selected for the study witnessed major political events that had a direct effect on economic activities in both regions. The study results indicate variations of interaction between the variables selected for the study model and child labor for each region.

The underlying theory of this study is Becker’s (1974) social interaction theory. Becker explains that a family with a head is a highly interdependent organization that has two important properties. One is that, a redistribution of income among members does not affect the consumption or welfare of any member because it simply induces offsetting changes in transfers from the head. The second is that, a family acts to maximize a consistent and transitive utility function subject to a budget constraint that depended only
on family variables. Families will produce labor quantities in response to externalities that affect their income.

The results from the West Bank data are somehow consistent with social interaction theory but not much so for the Gaza Strip. The negative relationship between family’s income and child labor supply in the West Bank, as well as the steady increase in child labor participation throughout the years indicate child labor responds positively to a decline in family income. The results also show that child labor is strongly influenced by the type of parents’ employment. Households with parents who secure full-time employment tend to have lower incidence of child labor. In Gaza Strip, however, parents’ employment in general has no effect on child labor, indicating a lack of quality as well as “quantity” of adequately paying jobs.

The results show that in both regions, parents’ income has a negative effect on child labor; however, the size of this effect is very small. This suggests a low wage levels for adults in both regions. Parents’ years of schooling was found to have a negative effect on child labor, which is consistent with established literature. In addition, mothers’ education was found to have a larger negative effect on child labor than fathers’ education. Given the low rates of female labor force participation in Palestine, it is possible that educated mothers do not value child labor.

Moreover, the years that witnessed a decline in economic activities due to political shocks show negative trends in child labor in Gaza Strip. This outcome is in contrary to the social interaction theory where family members act collectively to maximize each other’s utility function. An alternative explanation to this outcome is that economic activities and the labor market in Gaza Strip have deteriorated so severely that
employment opportunities for both adults and children are limited. This is also supported by the absence of relationship between parents’ employment status as well as employment type and child labor.

The steady positive trends in child labor in the West Bank reveals a steady decline in the economy due to the deterioration of the peace process. Child labor became necessary to substitute the loss or decline of family income due to the rising cost of living and/or due to lower wages of the working parents. In the Gaza Strip, however, the steady negative trends in child labor on the one hand, and the limited employment opportunities for adults on the other, reveals a *deepening* of the deterioration of the labor market. The labor market is so deteriorated that even adults are unable to find employment or employment with adequate pay.

The study concludes that child labor in Palestine is a symptom of chronic decline in both employment opportunities and wages for adult laborers. The absence of relationship between child labor and parents’ employment in the Gaza Strip indicates that employments opportunities and wages for adults are low across the population. In the West Bank, parents’ employment has a positive effect on child labor, indicating the absence of *quality* jobs with sufficient pay for adults.

A future study that incorporates family spending on a micro level as well as accounting for variations of family wealth, an accurate account of family’s productive assets, child’s income, parents’ employment sector, and sector specific wages for parents might be a better fit for this topic. A study with this focus could reveal a more robust association between child labor and income variations in Palestine.
CHAPTER III
THE EFFECT OF HUSBANDS’ INCOME AND EMPLOYMENT ON WIVES’ LABOR FORCE PARTICIPATION IN PALESTINE

Introduction

Wives participation in the labor market is determined by many interrelated forces that interact at variety of levels and strengths at different points in time in their lives. Probably the most powerful of those forces are market demand that resembles the pull factor and extreme economic needs that resemble the push factor. On average, women spend less than half of their lifetime in the labor market after marriage (Mincer and Plachek 1974). Generally, the need for mothers to dedicate their time to raising their children forces them to drop out of the labor market (Schram and Dunsing 1981), and the presence of younger children has a strong negative effect on wives’ labor force participation (Blundell and Walker 1992).

Generally speaking, education increases married women’s participation in the labor market (Khawaja 2002). However, education has a positive effect on wives’ entry to the labor market only to the extent that market opportunities and wives’ earning power are high, which could only be a result of high market demand (Robinson 2005). As return to their education increases, wives’ demand for education increases as well (Bloom et al. 2009). However, as more educated married women enter the labor market, they cause an increase in the supply of educated labor force in the labor market. This increase in the supply of educated labor force causes return to education to decline. Family’s economic conditions play another factor in determining wives’ participation in the labor market. If the family’s income decreases due to the unemployment of husbands or due to reduction to their income, then wives are more likely to enter the labor market (Uhler and Kunin
(1972), and they are less likely to enter the labor market if husbands’ income is high (Mincer 1962). However, wives’ earning power has a stronger effect on their participation than husbands’ income (Mincer 1962). Moreover, if there is an economy wide decline where husbands’ unemployment rates are high and wives are less likely to find a job, more wives will become discouraged and will exit the labor market since the prospect of finding a job declines (Alban and Jackson 1976).

The aim of this study is to investigate the effect of husbands’ income and employment on the probability of married women participating in the labor force in Palestine. This study sheds some light on factors and forces that push, motivate, and/or stimulate married women to work. It also aids in understanding the reasons why some married women work while others do not. In addition, another aspect of the study is to find how the choice to go to college affects the choice to enter the labor market among married women in Palestine, knowing that college enrollment among young women in Palestine is very high and increasing, but their participation rates in the labor market are very low. Primarily, this study adds to the knowledge about the extent of economic factors that affect married women’s decision to enter the labor market in an unstable and volatile economy.

What makes studying wives’ labor force participation in Palestine important is the fact that despite their increased demand for higher education, women in Palestine continue to have low rates of participation in the labor market. The rates of female participation in the Palestinian labor market are actually lower than those in other Arab countries. The average female participation rate in the labor force in the Arab world is 26%, which is well below the 39% of that in low and middle income countries (World
Bank 2010). In 2007, female labor force participation in Palestine was 15.7% compared to 25.4% in Jordan, 21.7% in Egypt, and 31% in Lebanon. In addition and since the signing of Oslo Accord in 1993, there has been drastic increase in female demand for higher education in Palestine. For example, the female to male ratio for college enrollment was 0.86 in 1995, but by 2011, the ratio rose to 1.33 (PCBS 2011). Moreover, and since the start of the second Intifada in 2000, Israel restricted the flow of Palestinian workers to its labor market, causing a permanent excess supply of labor, primarily male workers, in the Palestinian Territories. This increase in labor supply caused a downward pressure on wages and contracted employment opportunities for Palestinians (Di Maio and Nandi 2009).

Contrary to the findings of Uhler and Kunin (1972), the results show husband’s employment to have a strong positive effect on wives’ participation in the labor market, especially if the husband has a second job. One possible explanation is that, rising unemployment discourages married women from entering the labor market and the perception of finding a job increases their participation (Tella 1964; Alban and Jackson 1976). In addition, husbands’ income was found to have a negative effect on wives’ labor force participation; however, the effect is very small. The results also show wives’ personal characteristics such as age, years of schooling, and previous work experience have a strong effect on their participation. Schooling was found to have a stronger positive effect than age, however. The effect of previous work experience was found to have a positive effect in Gaza Strip; however, the effect in the West Bank was found to be negative. In addition, inflation was found to have a positive effect on participation in
Gaza Strip, while it was found to have a negative but statistically insignificant relationship with wives’ participation in the West Bank.

The study concludes that labor market conditions and the perception of finding employment have a stronger effect on wives’ participation in the labor market than husbands’ income. This is consistent with the findings of Tella (1964) and Alban and Jackson (1976) where married women might be discouraged from entering the labor market if the likelihood of them obtaining employment is reduced by rising unemployment. Given the current high unemployment rates in the Palestinian labor market among the primary labor force, and given the ongoing decline in real wages, it is possible that married women enter the labor market when necessary due to severe economic needs and leave when possible due to unhospitable labor market conditions for them.

Without long term growth of the labor market in Palestine for the primary work force, the secondary work force will remain unutilized since there is low economic incentive for them to enter the labor market.

Further research is needed to analyze married women’s labor force participation by breaking down the data into groups such as age, education, income, employment status, and family size to better understand the mechanism of labor force participation at each level. Also, a study that incorporates the number and ages of younger children in the family to better assess the child’s effect on married women’s decision to enter the labor market could produce more robust results. More importantly, incorporating wives’ income in relation to their husbands’ income could shed the light on the effect of market
wages offered to married women on their decision to enter, remain, or exit the labor market.

Literature Review

Income and the Demand Effect

Traditionally, married women were economically active in agrarian communities either on their farms or in home production. Urbanization changed the composition of the workforce in labor markets in the U.S. during the 1930 and 1940s (Reid 1943; Mahoney 1961). It was not until World War II due to a shortage of labor force in the U.S. when married women were encouraged to enter the labor market. In fact Mincer (1962) found that 90% of the rise of the labor force participation by married women postwar was due to increased demand for labor. This effect of demand was so powerful that offered wages were high, weekly working hours were reduced, and working conditions in factories were improved to accommodate the physical specifications of women (Reid 1943). The labor force participation rate of married women in the U.S. continued to increase even in the postwar era where, Mahoney (1961) argues, the economic needs were less critical for married women to enter the labor market. Personal and family welfare were of greater consideration Mahoney concluded. Contrary to Mahoney’s findings, Niemi and Lloyd (1981) argue that the rise of the two-earner family phenomenon in the U.S. was a result of rising prices, reduction in growth of real wages, and the expectation that significant inflation increase will continue in the future. Brusentsev (2006) concluded in his study of the evolution of female labor force participation in the U.S. that, the primary reason behind women’s increased participation in the labor market was the expansion of labor market opportunities for women.
**Income and the Supply Effect**

The rise in earnings in the labor market induces other members in the family to reduce their consumption of leisure time and supply the market with their labor time since time has economic value (Becker 1965). On the contrary, Uhler and Kunin (1972) suggest that falling family income as a result of wage decrease or unemployment of the primary worker (husband) influences other family members, mainly wives, to enter the labor market to maintain family income. However, Brusentsev (2006) finds that the availability of a primary income from an employed husband adversely affects married women’s decisions to enter the labor market. Also, an increase in family income without the wife working reduces her participation as well (Heckman and Willis 1977). Yet Mincer (1962) found that while wives’ labor force participation responds negatively to the income level of their husbands, he also found that their participation responds positively to their earning power and has a stronger effect on their labor force participation than the husbands’ income. Moreover, Blundell and Walker (1992) found that female labor supply becomes more responsive to changes in female market wages in the presence of constraints on male labor supply.

**Market Condition: Unemployment and Opportunities**

Variations in demand for labor have historically been responsible for increases as well as decreases in labor force participation (Tella 1964). Tella argues that the decision to enter or remain in the labor force is also affected, among other things, by the perceptions of job opportunities. Alban and Jackson (1976) conclude that the probability of finding employment determines labor force participation. Female laborers might be discouraged from entering the labor market if the likelihood of them obtaining
employment is reduced by rising unemployment. The exit rate from the labor force is inversely related to the probability of obtaining employment (Uhler and Kunin 1972). The longer the job search, the higher the search cost, and the lower female labor participation (Blundell et al. 1998). Tansel (2002) found a considerable discouraging effect of national unemployment on female participation in the labor market. He concluded that the discouraged-worker hypothesis has stronger effect on female labor participation in Turkey than the added-worker hypothesis. More interestingly, the added-worker effect could exasperate the adverse conditions in the labor market. If the primary wage earner is facing unemployment risk and the spouse decides to join the labor market, this may generate higher aggregate unemployment. In such, there is a positive link between overall unemployment and female labor force participation (Wasmer 2009).

Moreover, Simler and Tella (1968) argue that at a given level of labor demand, increased participation by secondary workers (female) causes an excess supply of labor, which negatively affects wage rates. The authors concluded that an improvement in labor market condition can only be accomplished through increasing labor demand that draws down the labor reserve (primarily female).

**Education, Children, and Age Effect on Female Labor Force Participation**

The interaction between married women’s education, age, and childbearing is of significance when it comes to her decision to enter, remain, or exit the labor market. Female education increases the age of marriage (Khawaja 2002) and potential earnings; it also increases the cost of not working (Tansel 2002). As a result, education leads to higher labor force participation and is found to significantly affect fertility rates (Narayan 2006). Childbearing might cause married women to drop out of the labor market (Schram
and Dunsing 1981), and the presence of younger children has a strong negative relationship with wives’ labor force participation (Blundell and Walker 1992). However, the authors found such effects to diminish as children age. Contrary to the previous argument, the effect of childbearing on mothers’ labor supply is found to be absent among college educated women (Angrist and Evans 1998). Similar results were also found for women who are economically active in home production (Reid 1943). Moreover, mother’s age, child age, and labor force participation are found to be strongly related. Mahoney (1961) found the participation rate in the labor market among married women with children to be higher in the older age group.

Increased female labor participation increases their return to education, which leads to increased demand for education by female laborers (Bloom et al. 2009). However, Robinson (2005) argues that education and female labor force participation cannot be positively associated unless there is a change in the aggregate demand for labor that increases wages and the probability of finding a job. Tansel (2002) found a strong positive relationship between female education and labor force participation in Turkey. Moreover, education was found to positively affect wives’ asking market wages (Heckman 1974), and the probability of them entering the labor market (Heckman and Willis 1977). Female labor force participation was also found to have increased across the Arab world due to the improvement of female education (Winckler 2002). However, Mahoney (1961) argues that education did not have the strongest effect on the rise of labor force participation among married women in the U.S. in the 1940 and 1950s. Contrary, Eckstein and Wolpin (1989) and Brusentsev (2006) find that education has the largest positive impact on labor force participation of married women in the U.S.
Income, Family Size, and Mother’s Labor Force Participation

Family size may increase the mother’s labor force participation due to family’s increasing expenditures or may decrease participation due to the need for her to be a full-time homemaker (Mahoney 1961). Narayan (2006) argues that the cost of raising a child is determined by the loss of income associated with the time the mother needs to spend with her children, and the mother’s time is of economic value only if she is participating in the labor force (Panopoulou and Tsakloglou 1999). Mahoney (1961) found that number of children effect becomes negligible as the children age, and as a result, mothers’ participation in the labor market increases. Angrist and Evans (1998) found no effect of family size on wives’ labor force participation among educated mothers. On the contrary, they found family size to have a severe negative effect on the labor force participation of poor and less educated mothers.

Female Labor Force Participation in Palestine and MENA Countries

Female labor force participation in the Middle East and North Africa (MENA) is lower than any other region in the world (Robinson 2005). The rate of participation is 26%, which is well below the 39% of that in low and middle income countries (World Bank 2010). More interestingly, the lowest labor force participation is among young females, especially those with higher education. In fact female labor force participation rates in the Middle East are the lowest of any region in the world, and only 30% of women aged 15 to 29 are active in the labor market (Dhillon et al. 2009). The authors argue that the women’s choice to stay out of the labor market is a result of poor labor market and women’s frustration with the lack of prospect of finding employment. In a survey conducted by Gallup in 22 Arab countries in 2011, the results show that about one
in three Arab young women between the ages of 23 to 29 participate in the labor force compared to eight in ten young Arab men in the same age group (Crabtree 2012). This low rate of female participation is attributed mainly to the chronic job shortages in the economy. In addition, the Arab region has the highest unemployment rates for women than any other region in the world (AbouZeid 2010). Assaad and Barsoum (2009) found that in Egypt, the decline in women labor force participation in 2006, compared to 1998, was caused by the increased discouragement effect that leads most women, particularly the educated, to withdraw from the labor market. The authors attribute this increase in female withdrawal from the labor market to increased unemployment among women. Fakih and Ghazalian (2013) found that high level of gender inequality in MENA countries exert a negative effect on women’s overall participation in the labor market. Contrary to the argument that poor economic performance and weak labor have a negative effect on law female labor force participating in Arab countries, Caris and Hayo (2012) argue that social norms are the primary reason behind the low rates of participation. The authors suggest that dominant traditions and social norms prevent women from engaging in paying jobs outside their homes.

One of the reasons behind high unemployment in the Middle East is the demographic transition after WWII. Even child mortality has fallen since then, still fertility rates remained high. This causes the region’s population to grow faster than any other part of the world (Robinson 2005). Moreover, entry of females into the labor market due to improvement in their educational attainment has accelerated the growth of the labor force, thus accelerating aggregate unemployment in the region. Moreover, the slow in growth of economic institutions that are unable to absorb the growing labor force
in the region, especially educated females, made the labor market more challenging for new entrants (Ianchovichina et al. 2012). The educated youth with secondary degrees and higher make up the majority of entrance to the labor market in Arab countries. As a result they face the highest rates of unemployment (Dhillon et al. 2009). In the past, Arab states guaranteed employments in the public sector for secondary and university graduates, which was part of a state sponsored welfare initiative. In recent years, however, the withdrawal of employment guarantee in the public sector for university graduates and the partial deregulation of employment in the formal private sector are among the main reasons behind limited opportunities in the labor markets in most Middle Eastern countries (Dhillon et al. 2009).

While the overall female labor force participation is low in the MENA region, female labor force participation in Palestine is even lower among youth with higher education. For example, in 2007, 82% of the unemployed women in Palestine were those who have high education, compared to only 12% in Jordan (World Bank 2010). In 2007 the Labor Force Survey conducted by the Palestinian Central Bureau of Statistics show that female labor force participation in Palestine was 15.7% (18.3% in the West Bank and 11% in Gaza Strip) compared to 25.4% in Jordan, 31% in Lebanon, and 21.7% in Egypt (Zidan 2009). Zidan stresses the role of education among Palestinian women in their decision to enter the labor market. Zidan concluded that the low rate of female labor force participation compared with other countries in the MENA region is due to unstable Palestinian labor market. In addition, Sayre and Al-Botmeh (2009) found that for the period 1995 to 2006, the average labor force participation rate of young women aged 15 to 29 was 6% in Gaza Strip and 11% in the West Bank. The authors attributed the low
levels of participation to the fact that young women in this age group were either still in school or already starting families. The authors also found that nearly three quarters of young women who are not employed and who do not seek employment after they complete their college education either get married and/or become homemakers. Moreover, Sayre and Al-Botmeh found that younger women are more likely to be unemployed if they are in the labor market than older women. For the period 1995 to 2006 and compared to unemployment rate of older women, young women were two to five times more likely to be unemployed in Gaza Strip and two to three times in the West Bank.

Palestinian Labor Market

The Palestinian labor force grew 4% per year and is expected to continue to increase before it falls (Sayre and Al-Botmeh 2009). Labor force participation rates are expected to rise due to rising female demand for higher education and due to the scarcity in migration opportunities (Sayre and Al-Botmeh 2009). During political upheaval, such as the 2000 Intifada, Israel blocks Palestinian laborers from entering the Israeli labor market, creating temporary high unemployment for the duration of hostilities and beyond (Sayre 2009). One consequence of border blockade is diminished earnings (Miaari and Sauer 2006). Another consequence is the replacement of Palestinian workers with immigrants from other countries, which tend to be less volatile and at times becomes permanent (Miaari and Sauer 2006). The consequence has been the deterioration of job availability for Palestinians and a decline in real wages (UNRWA 2011). The resulting decline in the standard of living forces family members of the unemployed, who were not in the labor force before, to enter the job market in order to increase the probability of
earning a living. The economy-wide consequence is the increase in unemployment due to augmented labor force. One evidence in support of this argument is the 1.8% increase in the labor participation in the second quarter of 2010 (UNRWA 2011). The UNRWA report concludes that one of the main challenges facing the Palestinian labor market is declining real wages, which is caused by high unemployment, slow growth in the private sector, and high inflation.

Methodology

Research Question

Do married women not work because their husband’s income is relatively high? Do they go to work when husbands’ income goes down and/or when their husbands are unemployed?

Theory

The theory of consumption, developed by Friedman (1957), states that the choices made by consumers regarding their consumption patterns are largely determined by a change in permanent income, rather than change in temporary (transitory) income. It was later extended by Heckman and MaCurdy (1980) to accommodate the effect of wage rates on income through their effect on labor supply.

Derived from the permanent income theory, Heckman and MaCurdy (1980) developed a life cycle model of female labor supply to evaluate the response of married women’s labor supply to transitory shocks in income and wage rates. Their model found that transitory fluctuations in earnings have less effect on married female participation decisions than do permanent fluctuations and no response of female labor supply to transitory fluctuation of husbands’ income. Moreover, Heckman and MaCurdy’s (1980)
work revealed that non-market time at one age is not a perfect substitute for non-market
time at any other age, labor supply is inversely related to lifetime wealth measures,
children affect lifetime labor supply decisions, and future values of variables determine
current labor supply decision.

If the family’s consumption level is \( Y \), and husband’s income is \( X \) at time \( t \), then a
permanent decline of \( X \) at time \( t+1 \) would produce an additional labor supply by the
family that is equal to \( Y-X \). In such, wives will supply the market with their labor when \( X \)
is less than \( Y \), where changes in \( X \) are permanent.

**Empirical Model**

An expansion of Mahoney’s (1961) regression model is developed to estimate the
effect of husbands’ wages and their employment status on the probability of wives
entering the labor market. Other variables are included such as wife’s education and age,
number of persons in the family, employment type of husband, and inflation.

The study estimates six models to measure the effect of husband’s employment
and husbands’ income using a variety of approaches. The main method of analysis is
fixed-effects logistic regression including husband’s income and husband’s employment
status variables (Model 1 below). This approach is appropriate for studying changes in
wives’ employment status over time since the study utilizes panel data. It also
accommodates the dependent variable being a binary variable.

Model 1 uses fixed-effects logistic regression, and it includes husband’s daily
wage variable and a dummy variable for husband’s employment status. Model 2 and
Model 3 also use fixed-effects logistic regression analysis; however, model 2 includes only
husbands who are employed and who have reported positive wages to study the effect of
wage rate on wives’ labor force participation, where model 3 excludes husband’s daily wage and includes a dummy variable for husband’s employment status. Model 4 uses logistic regression without the fixed-effects to estimate the effect of all variables, including husband’s employment status and his daily wage, on wives’ labor force participation for the entire sample. Model 5 and Model 6 use logistic regression without the fixed-effects as well, but Model 5 includes only husbands who are employed and who have reported positive daily wage. Model 6 includes a dummy variable for husband’s employment status and excludes the husband’s daily wage variable.

Two separate studies will be conducted for each region, one for the Gaza Strip and the other for the West Bank. The two regions are geographically, politically, economically, and demographically separated, and they function as two separate economies.

The model variables were expanded to include husbands’ employment type. There are 12 types of employment specified in the PCBS’s Labor Force Survey. For the purpose of this study, the answers were grouped into four different categories (Employment Types). Three dummy variables were added for self, irregular, and unpaid family member employment types. The excluded category is regular full-time employment.

\[
Y = \beta_0 + \beta_1 \text{AGE} + \beta_2 \text{WYS} + \beta_3 \text{WPE} + \beta_4 \text{NPF} + \beta_5 \text{HLF} + \beta_6 \text{HES} + \beta_7 \text{HSJ} + \beta_8 \text{HET-HW} + \beta_9 \text{HET-SE} + \beta_{10} \text{HET-UP} + \beta_{11} \text{HDW} + \beta_{12} \text{INQ} + \mu
\]
Variable Definition

1. Wife force Participation (Y): A dummy variable and is the study’s dependent variable. The variable takes on a value of 1 if in the labor force and 0 otherwise.

2. Age (AGE): This represents wife’s age.

3. Wife’s Number of Years of Schooling (WYS): Number of years the wife completed as of the date of the survey.

4. Wife’s Previous Employment (WPE): A dummy variable that takes on a value of 1 if the wife has ever worked in the past and 0 otherwise.

5. Number of Persons in the family (NPE): Number of people who live in the same household as the wife.

6. Husband’s Labor Force Status (HLF): A dummy variable that takes on a value of 1 if the husband is in the labor force and 0 if he is out of the labor force.

7. Husband’s Employment Status (HES): A dummy variable that takes on a value of 1 if the husband is employed and 0 otherwise.

8. Husband’s Second Job (HSJ): A dummy variable that takes on a value of 1 if the husband has a second job and 0 otherwise.

9. Husband’s Employment Type- Irregular Hourly Wage (HET-HW): A dummy variable that takes on a value of 1 if the husband has irregular employment and 0 otherwise. The excluded category is husband’s full-time regular employment.

10. Husband’s Employment Type- Self-Employed (HET-SE): A dummy variable that takes on a value of 1 if the husband is self-employed and 0 otherwise.
11. Husband’s Employment Type- Unpaid Family Member (HET-UP): A dummy variable that takes on a value of 1 if the husband is an unpaid family member and 0 otherwise.

12. Husband’s Wage per Day (HDW): The husband’s nominal daily income measured in New Israeli Shekel.

13. Inflation (INQ): Inflation rate obtained from the consumer price index change in each region for a given quarter in a year.

Dummy variables for years (YEARS) are included in the model to capture the variations of wives’ labor force participation over time and to also capture the potential effects of political and economic shocks and recoveries on their participation in the labor market. The reference year is 2000.

Research Hypothesis and Assumptions

Hypothesis. Wives’ labor force participation in Palestine is inversely related to husbands’ employment status, husbands’ employment type as full-time employee, husbands’ second job, and husbands’ income.

Wives’ labor force participation in Palestine is positively related to their age, years of schooling, their previous employment, husbands’ status in labor force, husbands’ employment type as irregular, self, or unpaid family member, number of persons in the family (family size), and inflation.

Assumptions. The secondary labor force (wives and children) literature predicts that wives’ entry to the labor market responds positively to the head of the household (husband) being unemployed. In such, if the husband is employed, then the probability of the wife entering the labor market is reduced. In addition, if the husband is active in the
labor force, employed or unemployed, the wife is more likely to be active in the labor market as well. The study predicts that the wife is more likely to enter the labor market if the husband has irregular employment, is self-employed, or is unpaid family member compared to regular full-time employment. The former types of employment are usually associated with irregular flow of income where wives’ entry to the labor market becomes necessary to substitute income loss or low income. A husband’s second job is predicted to have a negative effect on the probability of the wife entering the labor market. The presence of a second job for the husband is assumed to have a positive effect on the level of the family’s income and thus reduces the need for the wife to go to work. Husbands’ daily nominal wage is predicted to have a negative effect on their wives’ decision to work. The higher the husband’s income, the less likely the wife will need to work.

The study also predicts that older wives are more likely to work since the need to spend more time at home caring for younger children is reduced. Older wives usually have older children. Wife’s years of schooling is predicted to have a positive effect on her decision to enter the labor market since educated wives have more employment opportunities in the labor market. In addition, wife’s previous employment is predicted to increase wives’ opportunities in the labor market and thus increasing their labor force participation.

Number of persons in the family is predicted to have a positive effect on the wife’s decision to enter the labor market. Larger families require higher level of income to sustain their living. Moreover, inflation, through its effect on the purchasing power of the family, is predicted to have a positive effect on the wife’s decision to enter the labor
market. The higher the inflation in a given quarter in a given year, the more likely the wife will enter the labor market in that quarter.

Data

Data Description

The study uses a panel data for the period of 2000 to 2011. Each observation was surveyed between 1 to 4 times. The source of the data is the Palestinian Labor Force Survey, which is a quarterly survey that is conducted by the Palestinian Central Bureau of Statistics (PCBS). The survey collects demographic and labor force related data. Each quarterly survey is called a round. The sample size for each round is 7,559 households. Each household remains in the sample over two consecutive rounds, rests for the next two rounds, and is represented again in the sample for another two consecutive rounds before it is dropped from the sample. The target population of the survey is all Palestinians aged 10 years and older. For the purpose of this research, only married couples are included.

Respondents were identified as couple if they reported “Married” under marital status, and “Head,” “Spouse,” “Son/Daughter,” or “Son/Daughter’s Spouse” under “Relation to Head of Household.” Only matched observations (couples) that are married and reported their relationship to the head as head or spouse, and son/daughter and son/daughter’s spouse were used to compute variables’ values for the final dataset. In addition, for household that have multiple wives (one husband who is married to more than one wife), the husband’s labor force status, employment status, employment type, and his income were assigned for each wife, and each wife was included in the study as
an independent observation. The final working dataset contains total observations of 274,264, in which 92,876 are in Gaza Strip and 181,388 are in the West Bank.

*Data Weaknesses*

One of the major weaknesses of PCBS’s survey is that it does not collect data about the number of individuals living in the household, particularly the number of individuals younger than 10 years old. It only surveys those who are 10 years of age and older who live in the same household. As a result, there is no accurate account for the family size and/or the dependency ratio. For the purpose of this study, the number of household members who were surveyed is used as the family size.

In addition, the data does not have the number and ages of younger children, primarily children below the school age. In most female labor studies, the presence of younger children in the family has a strong effect on the mother’s decision to enter or leave the labor market. The absence of such information in the data utilized in this study is expected to affect the predictability power of the models used.

The data also does not specify the number of years of past work experience. Instead, the survey asks if the respondent ever worked in the past for at least two weeks regularly. A dummy variable is included in the model to indicate whether or not the wife has worked in the past.

Daily wages are not specified based on whether the source of employment is the primary or the secondary job. The “Husband Daily Wage” variable that is included in the model refers to the husband’s daily wage from all employments.

The data does not specify who is married to whom in households that have multiple couples living in the same house (married children living with their parents
and/or several married siblings living together in the same house). Instead, the data refers to the subjects in terms of their relationship to the head of the household. Several methods were used to determine the exact relationship between couples, including matching ages and the order of the persons in the family listed in the survey results. The latter is more accurate since PCBS usually surveys the husband first, then his wife, and then their children, if any, before moving on to the next family in the same household.

**Empirical Results**

**Gaza Strip**

*Test of the goodness of fit of the model.* Model 1 estimates the effects of various independent variables on the wife’s participation in the labor market using a fixed effects logistic regression. The results of Model 1 and the results of the other 5 models are reported in Table 3 below. The $F$ statistic indicates that the model is a good fit. The level of statistical significance is set at 5%.
Table 3

Fixed-Effects Logistic Regression and Logistic Regression Results for Gaza Strip
(Standard errors are reported in parentheses below the estimated coefficient)

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
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<td>(0.032)</td>
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<td>(0.001)</td>
<td>(0.002)</td>
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<td>Wife Years of Schooling</td>
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<td>0.664</td>
<td>0.314</td>
<td>0.330</td>
<td>0.630</td>
<td>0.324</td>
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<td></td>
<td>(0.024)</td>
<td>(0.075)</td>
<td>(0.024)</td>
<td>(0.005)</td>
<td>(0.010)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Wife Previous Employment</td>
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<td></td>
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<td>(0.049)</td>
<td>(0.068)</td>
<td>(0.049)</td>
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<td>(0.031)</td>
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<td>(0.031)</td>
<td>(0.005)</td>
<td>(0.008)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Husband Labor Force Status</td>
<td>0.226</td>
<td>0.214</td>
<td>0.180</td>
<td>0.173</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>(0.106)</td>
<td>(0.052)</td>
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</tr>
<tr>
<td>Husband Employment Status</td>
<td>0.488</td>
<td>0.317</td>
<td>0.319</td>
<td>0.195</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>(0.107)</td>
<td>(0.091)</td>
<td>(0.046)</td>
<td></td>
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<tr>
<td>Husband Second Job</td>
<td>1.377</td>
<td>1.258</td>
<td>1.367</td>
<td>0.722</td>
<td>0.630</td>
<td>0.690</td>
</tr>
<tr>
<td></td>
<td>(0.223)</td>
<td>(0.311)</td>
<td>(0.223)</td>
<td>(0.100)</td>
<td>(0.128)</td>
<td>(0.100)</td>
</tr>
<tr>
<td>Husband Employment Type-Irregular</td>
<td>-1.012</td>
<td>-2.324</td>
<td>-0.981</td>
<td>-0.485</td>
<td>-0.567</td>
<td>-0.438</td>
</tr>
<tr>
<td></td>
<td>(0.351)</td>
<td>(0.857)</td>
<td>(0.350)</td>
<td>(0.144)</td>
<td>(0.211)</td>
<td>(0.144)</td>
</tr>
<tr>
<td>Husband Employment Type-Self-Employed</td>
<td>0.101</td>
<td>0.640</td>
<td>0.212</td>
<td>-0.087</td>
<td>-0.133</td>
<td>-0.035</td>
</tr>
<tr>
<td></td>
<td>(0.097)</td>
<td>(0.340)</td>
<td>(0.090)</td>
<td>(0.035)</td>
<td>(0.054)</td>
<td>(0.034)</td>
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<tr>
<td>Husband Employment Type-Unpaid Family</td>
<td>0.058</td>
<td>16.273</td>
<td>0.033</td>
<td>-0.156</td>
<td>-1.491</td>
<td>-0.116</td>
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<tr>
<td></td>
<td>(0.763)</td>
<td>(1265.175)</td>
<td>(0.781)</td>
<td>(0.341)</td>
<td>(1.133)</td>
<td>(0.343)</td>
</tr>
<tr>
<td>Husband Daily Income</td>
<td>-0.004</td>
<td>-0.002</td>
<td>-0.002</td>
<td>-0.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.000)</td>
<td>(0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation-Quarterly</td>
<td>0.096</td>
<td>0.096</td>
<td>0.095</td>
<td>0.022</td>
<td>-0.016</td>
<td>0.022</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.060)</td>
<td>(0.034)</td>
<td>(0.019)</td>
<td>(0.029)</td>
<td>(0.019)</td>
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<tr>
<td>_cons</td>
<td></td>
<td></td>
<td></td>
<td>-8.609</td>
<td>-11.782</td>
<td>-8.523</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.131)</td>
<td>(0.199)</td>
<td>(0.129)</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>8979</td>
<td>2844</td>
<td>8979</td>
<td>92876</td>
<td>36516</td>
<td>92876</td>
</tr>
<tr>
<td>Pseudo R2</td>
<td>0.2343</td>
<td>0.3582</td>
<td>0.2338</td>
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</tr>
</tbody>
</table>

Results and Test Hypotheses. The results of the fixed-effects logistic regression and the results of the other 5 models are reported in Table 3. There are 28,173 groups (83,897 observations) dropped from the dataset using the fixed-effects logistic regression. Those observations were either in the labor force or out of the labor force during all the
rounds in which they were surveyed. The data dropped in this model account for 90% of the total observations in the dataset.

The purpose of using six models is to perform a comparison to examine the validity of the effect of husbands’ income and employment on wives participation in the labor market. This approach is helpful considering a large portion of the employed adults in Palestine have irregular employments or are unpaid family members. The results of Model 1 will be analyzed and discussed for this study. The results of the other models will be discussed if they have different signs or if they are significantly different than those results produced by Model 1.

Age: For every year increase in age, the log odds of labor force participation increases by .025. The sign is as expected.

Wife’s number of years of schooling: For every year increase in schooling, the log odds of labor force participation increases by .322. The sign is as expected.

Wife’s previous employment: Having worked in the past increases the log odds of labor force participation by 1.081 compared to no previous employment. The sign is as expected.

Number of persons in the family: For every one person increase in family size, the log odds of labor force participation increases by .070. The sign is as expected.

Husband’s labor force status: Having a husband who is in the labor force increases the log odds of labor force participation by .226 compared to having a husband who is out of the labor force. The sign is as expected.
Husband’s employment status: Having a husband who is employed increases the log odds of labor force participation by .448 compared to having a husband who is unemployed. The sign is in contrary to what was expected.

Husband’s second job: Having a husband who has a second job increases the log odds of labor force participation by 1.377 compared to having a husband who does not have a second job. The sign is in contrary to what was expected

Husband’s employment type: Having a husband who has irregular employment decreases the log odds of labor force participation by 1.12 compared to having a husband who has full-time regular employment. The sign is in contrary to what was expected.

Husband’s self and unpaid family member employments were not significant at .05 level.

Husband’s wage per day: For every one New Israeli Shekel increase in a husband’s daily wage, the log odds of labor force participation decreases by .004. The sign is as expected.

Inflation: For every one percentage increase in quarterly inflation, the log odds of labor force participation increases by .096. The sign is as expected.

West Bank

Test of the goodness of fit of the model. Model 1 estimates the effects of various independent variables on the wife’s participation in the labor market using a fixed effects logistic regression. The results of Model 1 and the results of the other 5 models are reported in Table 4 below. The $F$ statistic indicates that the model is a good fit. The level of statistical significance is set at 5%. 
Table 4

**Fixed-Effects Logistic Regression and Logistic Regression Results for the West Bank**
*(Standard errors are reported in parentheses below the estimated coefficient)*

<table>
<thead>
<tr>
<th>Model</th>
<th>Wife Age</th>
<th>Wife Years of Schooling</th>
<th>Wife Previous Employment</th>
<th>Number of Persons in the Family</th>
<th>Husband Labor Force Status</th>
<th>Husband Employment Status</th>
<th>Husband Second Job</th>
<th>Husband Employment Type-Irregular</th>
<th>Husband Employment Type-Self-Employed</th>
<th>Husband Employment Type-Unpaid Family</th>
<th>Husband Daily Income</th>
<th>Inflation-Quarterly</th>
<th>_cons</th>
<th>No. of Observations</th>
<th>Pseudo R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>0.039</td>
<td>0.165</td>
<td>-2.057</td>
<td>0.057</td>
<td>0.103</td>
<td>0.827</td>
<td>1.743</td>
<td>0.120</td>
<td>0.829</td>
<td>0.358</td>
<td>-0.001</td>
<td>-0.005</td>
<td>-5.601</td>
<td>32411</td>
<td>0.1235</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.016)</td>
<td>(0.046)</td>
<td>(0.025)</td>
<td>(0.072)</td>
<td>(0.058)</td>
<td>(0.072)</td>
<td>(0.243)</td>
<td>(0.053)</td>
<td>(0.270)</td>
<td>(0.000)</td>
<td>(0.016)</td>
<td>(0.053)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 3</td>
<td>0.042</td>
<td>0.272</td>
<td>-1.400</td>
<td>0.025</td>
<td>0.101</td>
<td>0.768</td>
<td>2.172</td>
<td>-0.121</td>
<td>0.198</td>
<td>-0.604</td>
<td>0.000</td>
<td>0.015</td>
<td>0.001</td>
<td>7792</td>
<td>0.2251</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.033)</td>
<td>(0.082)</td>
<td>(0.053)</td>
<td>(0.072)</td>
<td>(0.052)</td>
<td>(0.119)</td>
<td>(0.463)</td>
<td>(0.177)</td>
<td>(0.584)</td>
<td>(0.001)</td>
<td>(0.031)</td>
<td>(0.053)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 5</td>
<td>0.039</td>
<td>0.164</td>
<td>-2.063</td>
<td>0.057</td>
<td>0.345</td>
<td>0.504</td>
<td>1.740</td>
<td>0.116</td>
<td>0.892</td>
<td>0.390</td>
<td>0.000</td>
<td>-0.004</td>
<td>-0.560</td>
<td>32411</td>
<td>0.1235</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.015)</td>
<td>(0.046)</td>
<td>(0.025)</td>
<td>(0.072)</td>
<td>(0.026)</td>
<td>(0.072)</td>
<td>(0.244)</td>
<td>(0.045)</td>
<td>(0.270)</td>
<td>(0.000)</td>
<td>(0.016)</td>
<td>(0.053)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td>0.039</td>
<td>0.150</td>
<td>-1.224</td>
<td>0.013</td>
<td>0.345</td>
<td>0.504</td>
<td>1.787</td>
<td>-0.133</td>
<td>0.475</td>
<td>0.169</td>
<td>0.000</td>
<td>0.008</td>
<td>-0.001</td>
<td>181388</td>
<td>0.1235</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.002)</td>
<td>(0.026)</td>
<td>(0.003)</td>
<td>(0.032)</td>
<td>(0.026)</td>
<td>(0.031)</td>
<td>(0.118)</td>
<td>(0.018)</td>
<td>(0.084)</td>
<td>(0.000)</td>
<td>(0.008)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 4</td>
<td>0.055</td>
<td>0.334</td>
<td>-1.081</td>
<td>-0.017</td>
<td>0.293</td>
<td>0.475</td>
<td>1.992</td>
<td>-0.059</td>
<td>0.293</td>
<td>-0.984</td>
<td>0.026</td>
<td>0.008</td>
<td>-5.601</td>
<td>66518</td>
<td>0.2251</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.004)</td>
<td>(0.040)</td>
<td>(0.005)</td>
<td>(0.029)</td>
<td>(0.018)</td>
<td>(0.045)</td>
<td>(0.163)</td>
<td>(0.029)</td>
<td>(0.029)</td>
<td>(0.013)</td>
<td>(0.008)</td>
<td>(0.053)</td>
<td></td>
<td></td>
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<tr>
<td>Model 6</td>
<td>0.039</td>
<td>0.149</td>
<td>-1.226</td>
<td>0.013</td>
<td>0.341</td>
<td>0.470</td>
<td>1.782</td>
<td>-0.133</td>
<td>0.507</td>
<td>-0.183</td>
<td>0.000</td>
<td>0.008</td>
<td>-5.591</td>
<td>181388</td>
<td>0.1235</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.026)</td>
<td>(0.005)</td>
<td>(0.032)</td>
<td>(0.026)</td>
<td>(0.031)</td>
<td>(0.118)</td>
<td>(0.015)</td>
<td>(0.084)</td>
<td>(0.000)</td>
<td>(0.008)</td>
<td>(0.053)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Results and Test Hypotheses.* The results for the fixed-effects logistic regression and the results of the other 5 models are reported in Table 4. There are 48,268 groups (148,977 observations) dropped from the dataset using the fixed-effects logistic regression. Those observations were either in the labor force or out of the labor force.
during all the rounds in which they were surveyed. The data dropped in this model account for 82% of the total observations in the dataset.

Age: For every year increase in age, the log odds of labor force participation increases by .039. The sign is as expected.

Wife’s number of years of schooling: For every year increase in schooling, the log odds of labor force participation increases by .165. The sign is as expected.

Wife’s previous employment: Having worked in the past decreases the log odds of labor force participation by 2.057 compared to no previous employment. The sign is contrary to what was expected.

Number of persons in the family: For every one person increase in family size, the log odds of labor force participation increases by .057. The sign is as expected.

Husband’s labor force status: Was not significant at .05 level.

Husband’s employment status: Having a husband who is employed increases the log odds of labor force participation by .827 compared to having a husband who is unemployed. The sign is in contrary to what was expected.

Husband’s second job: Having a husband who has a second job increases the log odds of labor force participation by 1.743 compared to having a husband who does not have a second job. The sign is contrary to what was expected.

Husband’s employment type: Having a husband who is self-employed increases the log odds of labor force participation by .829 compared to having a husband who has full-time regular employment. The sign is as expected. Husband’s irregular and unpaid family member employments were not significant at the .05 level.
Husband’s wage per day: For every one New Israeli Shekel increase in the husband’s daily wage, the log odds of labor force participation decreases by .001. The sign is as expected.

Quarterly Inflation: was not significant at the .05 level.

Results Discussion

Gaza Strip Results

The fixed-effects logistic regression and logistic regression without the fixed-effects produced almost identical results when both employment status and daily wages were included, and when employment status only was included. However, the results were different when only husbands who reported positive daily wages were included.

Consistent with the findings of Mahoney (1961), the wife’s age is positively related to her labor force participation. When only husbands with positive daily wages were included in the model, the age coefficient was lower than when both wages and employment status were included. Generally speaking, the age of the married woman is an indication of the presence or absence of younger children in the family who demand more of the mother’s time at home and away from the labor market. Blundell and Walker (1992) found that the presence of younger children has a strong negative effect on wives’ labor force participation. However, this effect gradually dies off as the child ages.

The results show that a wife’s years of schooling has a positive relationship with her labor force participation. The effect of schooling was much larger (almost double), using only husbands who reported positive daily wages in both the fixed-effects logistic and the logistics without fixed-effects model. This suggests that the effect of education on wives labor force participation is stronger if they have husbands who work for pay. This
could be a reflection of the importance of market opportunities on wives labor force participation, especially if they are educated. The positive relationship between wives’ years of schooling and their labor force participation is consistent with the findings of Mahoney (1961) and Eckstein and Wolpin (1989) where education was found to have a positive effect on wives’ market earnings.

A wife’s previous employment was found to have a strong positive effect on her labor force participation across the 6 models. This suggests validity in this effect. It is possible that wives with previous work experience are more attractive to employers compared to wives with no previous work experience. However, given the low rates of employment among women, it is possible that most wives who stated that they have worked in the past on the survey are actually those who were employed at the time of the survey.

The study found a positive effect of family size on wives’ decision to enter the labor market. This is consistent with the findings of Mahoney (1961) where larger families have a positive effect on married women’s decision to enter the labor market due to increasing family expenditures. The size of the coefficient for family size was relatively close across the 6 models. However, using only husbands who reported positive daily wages in the fixed-effects logistic model, family size and wives’ labor force participation were found to have no relationship.

Contrary to the findings of Uhler and Kunin (1972), the study found a positive relationship between a husband’s employment status and a wife’s labor force participation. The effect of husbands’ employment was relatively close across the 6 models, with exception to the 2 models that utilized only husbands with positive daily
wages. One possible explanation is that, most husbands who are employed are unpaid family members or self-employed where income is not secured. An alternative explanation is that wives’ participation responds positively to the reduction in unemployment of the primary labor force. This is consistent with the findings of Alban and Jackson (1976) and (Uhler and Kunin 1972) where the probability of obtaining employment has a positive relationship with female labor force participation. The results also show that a husband’s labor force status (in labor force) has a positive effect on wife’s labor force participation. This finding also suggests that large portions of husbands who are either employed or unemployed are unpaid family member or self-employed working on family owned enterprise. In fact, only 41% of employed husbands in the dataset reported regular employment.

Contrary to the prediction of this study, the probability of a wife entering the labor market increases significantly if her husband has a second job. This effect was consistent across all models. It is possible that when the husband seeks a second employment it is because the family is facing extreme economic hardship where the wife’s work becomes necessary. Moreover, husband’s employment type as self-employed and/or unpaid family member has no effect on wives’ labor force participation compared to full-time employment. The husband’s irregular employment has a strong negative effect compared to full-time employment. When only husbands with positive income are included in the fixed-effects logistic analysis (model 2), the negative effect of a husband’s irregular employment increases significantly, revealing the strength of the effect of this type of employment on wives’ participation. This outcome is also inconsistent with the prediction of this study. Irregular employments are associated with
low and inconsistent flow of income. A possible explanation is that a large portion of workers who reported irregular employment work in Israel where wages are higher than those in the Palestinian Territories.

Consistent with Heckman and Willis (1977) and Brusentsev (2006), the results show that the husband’s daily nominal income has a negative effect on a wife’s labor force participation. However, what was surprising is the negligible size of such effect, even when only employed husbands who reported positive income were included in the models. There are several possible explanations for this outcome. One is that husbands’ nominal wages in Gaza Strip are rigid and have not varied significantly during the study period. Another explanation is that since the relationship between married women’s labor force participation and the employment status as full employment for their husbands is positive, the demographic characteristics of married couple and their professional preferences determine the wives’ decision to enter the labor market more than income. A third possible explanation is that the husband’s income is sufficient and high enough that small variations -up or down- have only minor effects on wives’ labor force participation.

Consistent with the study’s prediction, inflation was found to have a positive relationship with wives’ decision to enter the labor market. In addition, when only husbands’ employment status without their wages was included in the model, the effect of inflation was identical to that in Model 1. However, when only husbands who are employed and who reported positive daily wages were included, the relationship was not statistically significant. These results suggest that husbands’ wages are rigid and do not change due to changes in prices.
The three years following the start of the second Intifada, 2001-2003, have no relationship with wives’ labor force participation compared to the year 2000. This outcome is contrary to the prediction of this study since periods of political and economic downturn were expected to increase the need for wives to work as a result of reduction in the husbands’ income or loss of their employment. One possible explanation is that many wives exited the labor market during the years of the second Intifada as a result of rising unemployment. In addition, wives’ labor force participation was positive during the period 2004 to 2011. However, when only husbands who are employed and who reported positive daily wages were included in the model, the effect was negative but statistically insignificant. This outcome is another indication of the effect of employment type, rather than income, on wives’ labor force participation.

West Bank Results

Consistent with the findings of Mahoney (1961) where the participation of married women in the labor market is higher among older age groups, this study found a positive relationship between a wife’s age and her participation in the labor market. This suggests the strong negative effect of younger children, usually associated with young mothers, on mothers’ labor force participation as Blundell and Walker (1992) concluded. Consistent with the findings of Eckstein and Wolpin (1989) and Brusentsev (2006), wives’ education has a strong effect on their decision to enter the labor market. This is also consistent with the positive effect of a wife’s age on her labor force participation. Khawaja (2002) found that female education increases the age of marriage. When only husbands who are employed and who reported positive daily wages were included, the effect of years of schooling was much larger. One possible explanation is
that educated women who enter the labor market are influenced by the prospect of market opportunities their husbands enjoy.

Contrary to the findings of Eckstein and Wolpin (1989) and the findings of the Gaza Strip results in this study, a wife’s work experience has a strong negative effect on her labor force participation. One possible explanation is that, during the years where the labor market declined sharply and rapidly due to political violence that constrained the Palestinian economy, working married women suffered significant job losses. It is possible that married women’s labor force participation was higher during periods of economic progress. However, when the economy deteriorated and the job market declined, it seems they exited the labor market and had not returned, possibly due to increased unemployment and lack of employment opportunities. Brusentsev (2006) found that opportunities in the labor market have a strong positive effect on married women’s participation in the labor market.

Family size has a positive effect on wives decision to enter the labor market. This is consistent with the study’s prediction and the findings of Mahoney’s (1961) where a family’s expenditures increase as its size increases; thus, more labor is supplied to the market by larger families.

Husbands’ employment status and second job have positive effects on their wives’ labor force participation. The effect is even larger when using a logistic regression model with no fixed-effects. While this finding is in contrary to the study’s prediction, it is consistent with the findings of Alban and Jackson (1976) where the probability of finding employment encourages married women to enter the labor market, especially if there is a decline in unemployment rates. Specific to the Palestinian labor market
composition, one possible explanation is that the majority of working husbands are unpaid family members or have irregular or self-employments.

A husband’s second job was found to have a positive effect on a wife’s participation in the labor market. This is in contrary to the study’s prediction. The effect of a husband’s second job was stronger when only husbands who are employed and who reported positive daily wages were included. Once possible explanation is that the need for the husband to seek a second job is driven by severe economic needs where income from the primary job is not sufficient. This is supported by the fact that husband’s self-employment has a positive effect on wives’ entry to the labor market compared to husbands who have full time regular employment. In addition, when only husbands who are employed and who reported positive income were included in the model, the relationship between husbands’ self-employment and wives’ labor force participation was not statistically insignificant. This is also another indication that variations of wives’ labor force participation are more likely to be present if husbands have jobs other than regular employments.

As initially predicted by the study and consistent with the findings of Mincer (1962), Uhler and Kunin (1972), and Brusentsev (2003), husbands’ incomes have a negative effect on wives’ labor force participation. However, the effect of income is very small. In addition, when only husbands who are employed and who reported positive daily wage were included, the effect was negligible. One possible explanation is that married couples who are educated seek professions in the labor market to match their educational attainment regardless of the husband’s level of income. This explanation does not consider income as the primary drive for wives’ labor force participation weighing
personal preferences and values more than economic needs. Another possible explanation is that wages in the West Bank are rigid and do not vary significantly over time to either induce or encourage married women to enter or exit the labor market.

Contrary to the prediction of this study, inflation has no effect on wives’ participation in the labor market across the 6 models used in this study. When husbands who reported positive daily wages were included, the effect was positive but statistically insignificant. It is tempting to claim that husbands’ wages in Palestine are sufficient enough where variations in price levels have negligible effects on wives’ labor force participation. However, given the fact that the Palestinian economy has been experiencing a decline in real wages since the start of the second Intifada including high unemployment, slow growth in the private sector, and high inflation, this claim does not hold. On the contrary, the results in the West Bank suggest a severe stagnation in the labor market, rigidity in wages, and declining standards of living where inflation might impact employment opportunities for married women.

The two years following the start of the second Intifada, 2001-2002, had negative effects on wives’ labor force participation when compared to the year 2000. These results are not surprising given the sharp decline in the economy during that period. After the election of Hamas in 2006, wives’ participation increased. This is possible due to the fact that after Hamas was elected, the Palestinian economy experienced a sharp decline in its activities due to Israel holding the Palestinian Authorities’ foreign aid for nearly 18 months.
**Results Comparison: Gaza Strip vs. West Bank**

In both regions, wives’ ages and years of schooling have positive effect on their participation in the labor market. When married women enter the labor market, it is more likely that they are older and more educated.

In addition, the results show that in both regions, wives’ previous employment has a strong effect on their participation in the labor market. However, the effects take different directions in each region. In the Gaza Strip region, the effect of wives’ previous employment was positive, while in the West Bank region, it was negative. Given the low female labor force participation in the Gaza Strip compared to the West Bank, it is possible that work experience besides education is required for married women to be able to enter the labor market. In the West Bank, it seems that a large portion of previously employed married women exited the labor market possibly due to lack of employment opportunities. This could be the result of the deterioration of the labor market after the second Intifada started where opportunities for women in the labor market contracted severely.

In both regions, husbands’ employment and husbands’ second employment were found to have a positive effect on their wives’ entry to the labor market, with husbands’ second employment having a stronger positive effect. It is possible that the wives’ need to enter the labor market mirrors the need for the husband to seek a second employment. In other words, declining real wages -rather than low wages- possibly drive wives to seek employment in both regions.

Wives’ labor force participation responds negatively to husbands’ income in both regions. However, the effect of income is very low. Given the relationship between
wives’ labor force participation and their husbands’ employment status and their second job, husbands’ income is not a strong predictor of wives’ participation.

The two years following the start of the second Intifada in 2000 have a negative effect on wives’ participation in the labor market in both regions compared to the year of the Intifada. In addition, the years following the election of Hamas government show an increase in wives’ labor force participation. Wives’ participation during the years after the start of the second Intifada declined. This was due to the discouraging effects of economic decline on their participation. The economic decline following the election of Hamas was less severe and more gradual than during the years of the Intifada; however, the continued decline in the standard of living and declining wages could have pushed married women to enter the labor market. This suggests that in the current Palestinian labor market state, wives’ participation in the labor market responds positively to economic decline probably more than market opportunities.

Conclusion

The aim of this study was to investigate the mechanism behind married women’s decisions to enter the labor market in the Gaza Strip and the West Bank regions. In particular, the goal was to study the effect of changes of husbands’ employment and income on the changes of wives’ labor force participation.

The panel data used in this study produced results that are, for the most part, contrary to previous findings and hypotheses related to the mechanism behind married women’s decisions to participate in the labor market. The results show that wives are likely to enter the labor market if their husbands are employed, but even more likely if their husbands have a second job. At the same time, a husband’s income does not have a
strong effect on a wife’s labor force participation. It is possible that wives’ participation does not respond do husbands’ income due to rigidity in husbands’ wages. Moreover, it is possible that educated married women work regardless of the level of their husbands’ income, and education is a strong factor that determines the wives’ decisions to enter the labor market. In addition, and given that it is more likely for a married woman to be active in the labor market when their husbands have full-time employment, personal orientation toward the value of work might be present. However, data limitations and the method of investigation utilized in this study are not sufficient to support such a conclusion.

The majority of previous studies found that wives’ previous work experience have a strong positive effect on their decision and ability to enter the labor market. Since previous work experience has economic value, educated married women with prior work experience are motivated to enter the labor market to earn higher wages. Moreover, once the demand for their time at home is reduced due to the aging of their young children, married women with prior work experience re-enter the labor market. The results in this study show that married women’s prior work experience has one of the most significant effects on their decision to enter the labor market. However, the effect in the West Bank was negative while it was positive in Gaza Strip. The findings suggest that the share of employment opportuneness for married women in the West Bank shrunk significantly after the Intifada. The majority of those women who were employed before the Intifada lost their jobs when the Intifada started and have not been able to find employment even after the Intifada ended. The discouraged worker effect could be behind their exit from the labor market. In the Gaza Strip, it is possible that market opportunities for women
require higher levels of human capital (education and experience). This is supported by the larger effect of years of schooling on married women’s participation in Gaza when compared to the West Bank.

Limited employment opportunities and low wages for married women in the Palestinian labor market have created a chronic discouraging effect that limits their labor force participation. They are more reactionary to external factors, primarily the rise of the cost of living or declining real wages, in their decision to participate in the labor market.

The study concludes that labor market conditions and the perception of finding employment have a stronger effect on wives’ participation in the labor market than husbands’ income. This is consistent with the findings of (Tella 1964) and Alban and Jackson (1976) where married women might be discouraged from entering the labor market if the likelihood of them obtaining employment was reduced by rising unemployment. The labor market for women in Palestine generally is very fragile and is very sensitive to political shocks that have adverse effect on economic activities. Given the current high unemployment rates in the Palestinian labor market among the primary labor force, and given the ongoing decline in real wages, it is possible that married women enter the labor market when necessary due to family’s economic needs and leave when possible due to uns hospitable labor market condition for them.

The findings in this study are not explained by the theory adopted in this work. Friedman’s (1957) permanent income hypothesis and Heckman and MaCurdy’s (1980) model of the life cycle of female labor supply predicts that married women labor force participation does not respond to temporary fluctuations in their husbands’ wages. A husband’s transitory income fluctuations, according to this theory, do not affect wife
labor force supply. The results in this study show that wives’ participation in the Palestinian labor force responds to transitory shocks in the economy that affect husbands’ wage purchasing power.

Further research is needed to analyze married women’s labor force participation by breaking down the data into groups such as age, education, income, employment status, and family size to better understand the mechanism of labor force participation at each level. Also, a study that incorporates the number and ages of younger children in the family to better assess children’s effects on married women’s decision to enter the labor market could produce more robust results. More importantly, incorporating wives’ income in relation to their husbands’ income could shed some light on the effect of market wages offered to married women on their decision to enter, remain, or exit the labor market.
CHAPTER IV
RETURN TO EDUCATION AND WAGE INEQUALITY IN
PALESTINE FOR THE PERIOD 2001-2011

Introduction

The theory of human capital assumes that higher wages are awarded to laborers who accumulate more knowledge (work experience and education). In competitive markets, workers with more education are expected to be more productive, which drives the value of their economic time (wages) high (Mincer 1991). Since the process of knowledge accumulation takes time, human capital is a function of age (Mincer 1958). In such, older skilled workers are expected to earn higher wages compared to younger and less skilled workers, creating a wage gap between the two labor groups.

Using data from the Palestinian Central Bureau of Statistics, this study examines the effect of education on earning and wage inequality during the time period 2001-2011 in the West Bank and the Gaza Strip. While education is usually the primary cause of wage inequality in competitive markets, labor market forces such as supply and demand for specific skills play a significant role in wage differentials as well.

What makes the study of return to education and wage inequality in Palestine a unique case is the structure and volatility of the Palestinian labor market. Periodic political events such as the start of the second Intifada, the election of Hamas, the Israeli military assault on Gaza, and the stagnation in the peace process negotiations directly impact the labor market composition, wages, and supply of and demand for laborers. At the same time, the demand for higher education has drastically increased since the Oslo Accord.
Angrist (1995, 1996) found that during the first Intifada that started in 1987, unskilled Palestinian workers who worked in Israel earned more than educated workers who were employed locally. Angrist attributes the rise of wages for the unskilled labor to the decline in the supply of unskilled workers in Israel due to absence from work as a result of closures. Contrary to Angrist (1995) findings, Sayre (2001) found that increased demand for, rather than shift in supply of, unskilled Palestinian labor in Israel and decreased demand for skilled Palestinian workers in Arab countries contributed to the decline in the return to schooling during the period of the first Intifada.

In addition, Sayre and Miller (2004a, 2004b), and Sayre (2009) observed an increase in return to education in the years after the Oslo Accord, a decline in return to education in late 1990s when the peace process staled, a decline in demand for unskilled workers after the 2000 Intifada erupted, and rising income inequality after 2000 due to increased return to education.

Demand for higher education by young Palestinians continues to increase, especially by female students. Recent figures from the Palestinian Central Bureau of Statistics show that in 2011, the number of enrolled students in universities and community colleges was 213,973 compared to 33,490 in 1995 (PCBS 2011). The number of graduates from both universities and communities colleges rose from 4,619 in 1995 to 31,702 in 2010 (PCBS 2011). In addition, the female to male ratio for college enrollment was 0.86 in 1995, but by 2011, the ratio rose to 1.33 (PCBS 2011). Despite the continuing demand for higher education, unemployment among college graduates remains high. In 2006, nearly 51% of Palestinian college graduates were unemployed and had a mean search time for jobs of 32 months (Sayre and Al-Botmeh 2009).
The period this study covers includes two major changes in the Palestinian labor market composition. First, the supply of unskilled workers increased in the local economy due to the declining demand by Israeli employers for Palestinian laborers. Second, the supply of educated workers increased due to the increased demand for higher education.

This study found that education has a high premium in the West Bank and Gaza Strip regions, return to education increases with the increase in level of higher education attained, and return to education has an upward trend in both regions. This is despite the fact that supply and demand factors should work against returns to schooling given the increasing demand for higher education in Palestine. In addition, return to schooling and the rate of increase in return to schooling were found to be higher in the Gaza Strip than that in the West Bank. Moreover, the study found that the higher the level of college education attained, the less sensitive wages were to political shocks. The study also found that older and more experienced workers earn slightly higher wages than younger and less educated workers.

The study found that wage premium for working in Israel for Palestinians who live in the West Bank rose significantly in 2009, and by 2011, it was 73.3%. However, no premium for employment in Israel for Palestinians who live in Gaza was found since the number of Gazans who were employed in Israel from 2009 to 2011 was zero. These results indicate an ongoing downward pressure on wages for the unskilled laborers in the Palestinian Territories as a result of restricting the entry of Palestinian workers to the Israeli labor market. The findings in this study suggest an increasing income gap between the skilled (educated) and unskilled labor force in Palestine.
The study also found significant and increasing negative gender income inequality, where the magnitude of such effect on wages was much higher in the West Bank than that in Gaza. In addition, wages offered in the Palestinian Territories were significantly lower than those offered for workers who were employed in Israel. The study also found that premium for employment in the public sector was higher than employment in the private sector, especially in the Gaza Strip. One interesting finding is that, starting in 2009, the demand for educated and uneducated labor force by the public sector increased drastically, with the former group gaining higher percentage of employment relative to the latter group. The period where the demand for labor by the public sector increased also showed a decline in wages for those who were employed in the public sector in the West Bank, but an increase in wages in the Gaza Strip.

The study concludes that the premium of education is high and increasing in Palestine despite the increasing demand for higher education. The premium for associate degree in Gaza was 30% in 2000 and rose to 31% in 2011, while it was 7% in the West Bank in 2000 and rose to 17% in 2011. The premium for a bachelor’s degree was 48% in 2000 in Gaza and by 2011, it was 56%. In the West Bank, it was 19% in 2000 and rose to 37% in 2011. The return to education in Palestine is relatively high compared to other countries. Badiscu et al. (2011) found that the rate of return to higher education across Europe ranged between 21% and 98% in 2007.

Moreover, the study concludes that wage inequality in Gaza could be attributed to the high return to education and employment in the public sector, while it is attributed to the return to education, employment in Israel, and gender income inequality in the West Bank. The higher return to education in Gaza could be a result of the increasing demand
for skilled workers and an increased supply of unskilled workers. The study also concludes that high and increasing gender income inequality is a result of an unhospitable labor market. This could be due to employers’ preference for male workers over female worker and/or due to the increasing supply of female workers. The strong effect of gender income inequality could explain the significant low female labor force participation rates in Palestine despite the fact that female students’ share in higher education enrollment is about 30% larger than that of male.

The theory of human capital, where workers with higher education and/or workers with more work experience earn higher wages, supports the findings of this study. What the theory fails to explain is the significant gender income gap. Becker (1962) argues that since women spend less time in the labor force than men, they have less incentive to invest in their skills, so their wages are expected to be lower than men’s wages. However, the demand for higher education by young female Palestinians is higher than that of men and continues to increase; still, their wages and labor force participation are much lower than the men’s.

In addition, the theory does not explain the downward trends of wages in the public sector at a time when the demand for an educated labor force increased sharply in the West Bank by the public sector. Mincer (1991) argues that the absence of long-term decline in return to human capital in the U.S. despite the massive growth in educational attainment was a result of the growing demand for educated workers. The increased demand for educated workers, which induces an increase in demand (investment) in higher education, is a result of overall economic growth (Mincer 1991). However, this does not seem to be the case in Palestine. While both demand for higher education by
young Palestinians and demand for educated workers by the public sector are high, these demands do not seem to be a reflection of economic growth. It seems that political forces, in addition to market forces, play a strong role in wages and the return to skill in Palestine. The massive rise in employment in the public sector in 2009, which had a negative effect on wages for employment in the public sector in the West Bank, reveals a chronic illness in the Palestinian labor market and in the overall economy.

Further research is needed to investigate trends of real wages and employment share over time in both the private and the public sector based on educational attainment and specialization. Taking these factors into consideration would help one to understand the actual market mechanism and preferences based on specialization and acquired skill set.

Literature Review

*Human Capital and Earnings*

The wage rate of an employed worker is an expression of that person’s worth (Staehle 1943). Education and on the job training, which enhance workers’ marginal productivity, increase the real income of educated and skilled workers (Becker 1962). In general, the life-cycle of earnings in relation to productivity exhibit an inverse U-shaped pattern. As workers age, their earnings rise due to the increased accumulation of knowledge and experience, and then later falls as their marginal productivity declines (Mincer 1958). Becker (1962) argues that when productivity increases as a result of investment in human capital, workers will be motivated to invest in their skills as long as they are rewarded with higher wages for this investment. As such, younger people have more motivation to invest in their education since they can collect the return to their
investment over a long period of time. Schultz (1961a) argues that much of what people consume, including education, constitutes investment in their ability, such as health, diet, and internal migration. Shaffer (1961) rejects treating a person’s ability as “capital” since spending on education is not guaranteed to yield predicted future earnings’, thus, education is consumption. Schultz (1961b) rejects Shafer’s conclusion and argues that education is an investment since it has a direct positive effect on earnings. In addition, Mincer (1991) argues that education and training increase workers’ productivity and thus their wages.

The return to investment in human capital is positive to the extent that there is a market demand for skills. Mincer (1991) argues that an increased supply of educated workers reduces their marginal productivity and wages. Rapid growth of demand for higher education relative to the market demand for educated labor force reduces the profitability of investment in education. Reis and Sequeira (2007) found that the increase in technological changes reduces the effect on human capital on productivity. While education reduces the time required to learn a new technology, high rates of technological changes increases the time required to learn new technology. The authors concluded that, with the advancement in technology in recent years, overinvestment in research and development has a negative effect on the benefits of human capital. The authors also concluded that specialization and investment in specific skills have higher returns, especially in an environment where the rate of technological changes is high. Mithas and Krishnan (2008) investigated the effect of supply and demand forces on the return to human capital for works with experience in information technology (IT). The authors found that a return to skills for IT professionals in an IT specialized firms is significantly
higher that return to the same skill in a non-IT specialized firm. The authors concluded that the growth of technological advancement depreciates the value of the acquired knowledge of skilled workers and thus the return to such knowledge. In addition, the authors concluded that human capital has more economic value if it is firm-specific rather than skill specific.

Wage Premium and Return to Education

The return to education is the gain in earnings associated with an additional year of schooling, and the percentage gain in relative wage as a result of investment in education is referred to as the “education premium” (Mincer 1991). The effect of education on wages is due to the increased productivity of the educated labor force. A return to education in the labor market is expected to be positive to the extent that educated “skilled” and uneducated “unskilled” laborers are not perfect substitutes for each other (Johnson 1997). Fang (2006) found that in the U.S., college education enhanced productivity by 40%, and such enhancement in productivity accounts for two-thirds of the wage premium for college education. Moreover, the author found that young college graduates with 1 to 3 years of experience earn 60% more than high school graduates.

Still, education on its own is not an absolute determinant of the rise of the quantity of the wage premium for educated workers (Mincer 1991). For example, an increase in the educated labor force entering the labor market reduces the marginal productivity of educated laborers, thus compressing their wages leading to reductions in the return to education (Mincer 1991). In advanced economies such as the U.S. and the U.K., there have been fluctuations in the return to education, especially during the 1970s
and 1980s (Walker and Zhu 2008; Katz and Murphy 1992; Johnson 1997). Still the return to education continues to move positively over time although the demand for higher education continues to rise as well. Other factors, besides the quantity of education attained, also had a strong effect on the quantity of return to education awarded. Mincer (1958) found that, in the U.S. in the 1940s and early 1950s, race, gender, family status, and city size determine the quantity of reward to knowledge and education within groups. In addition, Agrawal (2011) argues that returns to education in India differ considerably within education groups. The author found that gender, localities (rural vs. urban), and social class are important factors that determine the return to education in India.

**Wage Inequality and Return to Skill: Supply and Demand Forces**

According to human capital theory, wages have a positive relationship with acquired skills through either formal education and/or on the job training (Mincer 1991). The increased demand for higher education is determined by the profitability of education or the return to education. However, an increased supply of educated workers tends to depress wages if supply outstrips the demand for skilled labor, which in turn reduces the demand for higher education. This mechanism could explain the fluctuation of supply and demand for educated workers and wage inequality in the U.S. in the last three decades (Mincer 1991; Kijima 2006). Mincer (1991) used data to study the trends of wage differential in the US for the period of 1963 to 1987 and found that the increase in supply of young educated workers in the 1970s has depressed wages for the younger cohort but has had no effect on the wages of the older cohort. This implies that the demand for more skilled laborers –older and more experienced- was at work. Mincer (1991) concluded that the absence of a long-term decline in return to education in the
U.S. despite massive growth in demand for education was a result of increased demand for educated workers relative to their supply.

Katz and Murphy (1992) observed that in the U.S., the college wage premium increased moderately in the 60s, declined in the 70s, but expanded dramatically in the 80s. The authors concluded that the drastic shift in skilled-labor demand in the 1980s was the primary cause for rising wage inequality in most OECD economies. Heckman and Yi (2012) and Rosser and Rosser (2004) found that the sources of income inequality in China are the increased demand for skilled workers and the substantial rise in inequality in access to higher education. Contrary to the effect of demand for skilled workers as the primary cause for increased return to education, Acemoglu (1999) argues that the excessive supply of educated workers induced the demand for skilled laborers in the US. He argues that, when more workers became educated, it became profitable to design jobs that capture the increased supply of human capital.

Dickens (2007) argues that the primary cause of rising inequality in the U.S. and U.K. is the lowering of wages of the unskilled laborers. Freeman (1999) attributes the massive increase in wage inequality in the US in the last two decades to the stagnation of wages for low-paid Americans. Acemoglu (1999) found that in the US, the real wages for non-college workers fell by 20% between 1979 and 1978. Kremer and Maskin (1996) argue that the segregation of laborers based on their skills has accelerated wage inequality in advanced economies. Skilled workers wages continue to increase since they have the opportunity to advance their human capital, while low-skilled workers are deprived from such opportunity. Johnson (1997) argues that the rising income inequality even among skilled and educated workers is a result of changes in demand that are
industry specific. In such, the return to education in advanced economies is not universal. Arbache (2001) found similar results in Brazil where wage differentials and the return to education are industry specific, and the return to education and knowledge was higher in industries experiencing expansion.

**Wage Inequality and Skill-Biased Technology**

Skill-biased technological changes (SBTC) hypothesis assumes that the productivity of already skilled workers increases with advanced technology and as a result, their earnings increase (Card and DiNardo 2002). While rises in wage inequality in the U.S. during the 1980s are attributed to SBTC through the development of information technology, the authors argue that the SBTC hypothesis failed to explain the stabilizing of wage inequality and the slowing of return to education in the 1990s despite the continuing advancement in computer technology. It also failed to explain the closing of the gender wage gap, racial gap stability, and the drastic rise in the education-related wage gap between younger and older workers. The analysis of their data suggests that across-sector wage dispersion of recent college graduates narrowed during the period when wage inequality was widening. The authors concluded that while the early rise in wage inequality might have been caused by rapid technological changes, the primary cause for the rapid expansion of wage inequality in the U.S. is the decline of the value of the minimum wage. Lemieux (2008) argues that the failure of SBTC to explain why some advanced economies experienced little change in wage inequality during the 1980s suggests an alternative mechanism behind growth in income inequality in the U.S. The author suggests that institutional change could explain the growth of wage in equality in the U.S. and the U.K. in the 1980s and the 1990s.
Acemoglu (1999) argues that the SBTC was a reaction by firms in the U.S. economy to the massive supply of the educated labor force. He developed a model where firms first decide what types of jobs to create then search for workers. He concluded that when the productivity gap between the skilled and unskilled workers increases, or when the proportion of skilled laborers increases, the economy switches to creating more higher-quality jobs for the skilled and low-capital jobs for the unskilled. This qualitative change in the composition of jobs in the economy results in wage reduction for the unskilled and wage increases for the skilled.

Contrary to the above arguments, Katz and Murphy (1992) and Johnson (1997) believe that economic pressure toward increased inequality and skill differential in the OECD countries in the 1980s was due to SBTC and between-industry shift in labor demand favoring the skilled. However, Johnson (1997) argues that as technology becomes more advanced and able to perform more sophisticated tasks, the effect of technology on employment and earnings will change where the unskilled workers can become more efficient in jobs that were formerly done by skilled and educated workers. Katz and Autor (1999) concluded that the decline in demand for less-educated workers, despite their relative scarcity, in the OECD countries in the last two decades has contributed to the decline of their wages. The authors believe SBTC is one of the leading candidates for this demand shift. Kijima (2006) found similar results where SBTC has shifted demand for more skilled workers and thus, accelerated wage inequality in urban India.

Abraham (2008) observed the relationship between technological changes, return to education, wages, and supply of skilled labor and found that even with smooth
technological changes, the behavior of wage differentials and supply of skilled labor have a non-linear time evolution. As wages for the initial skilled generation increases as a result of a high return to education, more future generations will accumulate skills through high education enrollment to benefit from the increased return to education. This causes an increased supply of skilled labor in the market. The increased supply of skilled labor pushes wages down, discouraging future generations from investing in education. This reduction in college education maintains the higher wages for the initial generation. The author concluded that the cyclical behavior of school enrollment and the wage gap are consequences of the slow adjustment of the educated labor supply. Still, Kaplan and Rauh (2013) found that while college wage premium in the U.S. has flattened in the last decade, the premium for technological skills continues to rise, and technological changes still continue to widen wage inequality among the skilled labor force.

Wage Inequality and International Trade

The Stolper-Samuelson theorem predicts that when countries engage in free trade, income from abundant factors of production will increase, while income from scarce resources will decrease. As such, trade is expected to depress wages for the skilled laborers while increasing them for the unskilled in developing countries. Based on this theorem, one of the long-term effects of trade is the convergence of the price of labor “wages” and greater income redistribution between countries that have different income levels. However, the reality of trade and its effect on wages have mixed results. Dollar and Kraay (2001) argue that there is little evidence that inequality tends to increase or decrease with increased international trade. Phan and Coxhead (2013) found that the return to education is higher for those who are employed in tradable industries in
Vietnam. Similarly, Tansel and Bircan (2010) found that openness to trade that favors skilled laborers is one of the primary causes of within-group wage inequality in Turkey.

In addition, Dutt and Mukhopadhyay (2009) and Wade (2004) argue that increased trade in developing countries depresses the wages of the less skilled laborers. This is due to high income countries continued protection of labor-intensive industries, primarily agriculture (Wolf 2004). Moreover, the reduction in the production of tradable goods that uses low skilled labor in developed economies reduces the demand for low-skilled workers and thus, negatively impacts their wages. Borjas and Ramey (1994) argue that the durable-goods trade deficit is the only variable that consistently shares the same trend as wage inequality in the U.S. When import competition is high, industries tend to pay lower wages and employ fewer workers. Johnson (1997) argues that trade openness by the U.S. increased the demand for skilled workers. However, the share of tradable goods that uses unskilled labor is small, adding to the wage differential between skilled and unskilled laborers.

**Wage Inequality and Return to Education in Palestine**

*Higher education.* Until 1972, there were no higher education institutions in the Palestinian territories (Angrist 1995). Between 1981 and 1985, university enrollment doubled in the West Bank and Gaza Strip (from 6,450 to 13,083) (Angrist 1995). The demand for higher education by young Palestinians continued to increase. Recent figures from the Palestinian Central Bureau of Statistics show that in 2011, the number of enrolled students in universities and community colleges was 213,973 compared to only 33,490 students in 1995 (PCBS 2011). Moreover, the number of graduates from both universities and communities colleges rose from 4,619 in 1995 to 31,702 in 2010 (PCBS
What is of interest is the rising college enrollment of female students. In 1995, the female to male ratio for college enrollment was 0.86, but by 2011, this ratio rose to 1.33 (PCBS 2011). Despite the continuing demand for higher education, unemployment among college graduates remains high. In 2006, nearly 51% of Palestinian college graduates were unemployed and had a mean search time for jobs of 32 months (Sayre and Al-Botmeh 2009).

**Return to education and wage differentials.** Angrist (1995) studied the wage distribution in Palestine as a result of the dramatic influx of skilled workers in the 1980s. The author found that between 1981 and 1985, workers with 16 or more years of schooling received on average a 25% daily wage premium. However, by 1987, the premium for college educated workers fell to more than half than the earlier level. This wage differential continued to decline until it became negative for men in 1988-1989. The author argues that the decline in wage differentials was due to an increased supply of skilled workers. Contrary to Angrist (1995) findings, Sayre (2001) argues that the shift in labor demand, more than the increased in the supply of educated workers, determines the return to schooling in Palestine. The primary explanatory factor that contributed to the decline in the return to education and wage gap between 1981 and 1987 is the increased demand for unskilled Palestinian workers by Israeli employers, and the decreased demand for skilled Palestinian labor by Arab states (Sayre 2001). The author concluded that the return to schooling for Palestinians is negatively associated with trade flow and wages in Israel, and positively associated with outmigration.

During the Oslo period and the establishment of the Palestinian Authority, the return to education and wage differential between educated and uneducated workers took
a different turn. Sayre and Miller (2004a) found that college graduates earned a 30% premium compared to those with a high school degree or less during the period 1995-1996. The authors attribute the increase in return to education to the increased demand for skilled workers due to overall economic growth. However, the return to education declined sharply after the start of the second Intifada in 2000 due to stagnation in the economy. By 2001, the college education premium was 15%, compared to 30% in 1995-1996 (Sayre and Miller 2004b). Moreover, since the late 1990s when the peace process stalled, the return to education continued to fall (Sayre and Miller 2004b; Sayre 2009). Contrary to Sayre and Miller’s (2004b) findings, Almagor (2006) found that the effect of the Intifada on wages for educated workers was minimal during the period of 1995 to 2004, and that education continues to contribute to the increase in aggregate wage of the Palestinians. Tansel and Daoud (2011) found that in Palestine and Turkey, earnings increased with increased educational levels. However, for the period between 2004 and 2008, there was a decreasing trend in the return to education in Palestine.

Methodology

Research Question

Has the recent dramatic increase in university education in Palestine affected the return to schooling?

Theory

The study bases its framework on Mincer’s (1958) human capital theory. The theory assumes that education and skill accumulation increase the marginal productivity of workers and causes their income to rise (return to human capital). Since human capital accumulation takes time, wage increase for the skilled workers is a function of age. The
older the skilled worker, the higher his or her earning is going to be. However, and as skilled workers age, their marginal productivity declines. Thus, the earnings life-cycle exhibits an inverted U-shaped pattern (Mincer 1958; Becker 1962).

Education is a formal form of human capital accumulation and an additional year of schooling is expected to positively affect the marginal productivity of workers and their wages. The theory predicts that older and educated workers earn higher wages compared to younger workers with the same level of education or less. In addition to age and its effect on wages through skill accumulation, the forces of supply and demand for skilled workers determine the wage rates for the skilled workforce. If wages for educated workers continue to grow as they age, then there is an increased return to human capital as a result of an increasing demand for skilled laborers.

Put formally, human capital accumulation increases over time and raises the marginal productivity of a worker, and thus his or her wage; however, the return to human capital in a given market is a function of labor demand. If the demand for skilled workers is low, then the return to education could be absent or negative. More importantly, and as the theory assumes, wage differentials even within the educated workers will be larger if there is a shift in the industrial sector that favors one skill over the other.

*Empirical Model*

The unit of study is the individual worker. The study utilizes the standard Mincerian (Mincer 1974) wage model. The model assesses the effects of human capital (schooling and experience) on wages. In addition, an expanded version of the Mincerian model is utilized in this study to capture the effect of demographic variables (age, gender,
experiences, etc.) and market variables (location, sector) on wage differentials and the interaction of those variables with education. It is important to note that in the Palestinian labor market, education attainment (a completed formal degree) is what employers consider when hiring rather than years of schooling. The expanded model will capture the return to education at different educational levels attained.

Using the expanded equation, the study conducts 12 regression models (one for each year) to study the trends of the return to education over time.

Mincer (1974) standard return to human capital model

\[
\ln WAGE = \beta_0 + \beta_1 SCH_i + \beta_1 EXP_i + \beta_2 EXP^2_i + u
\]

Where

\(\ln WAGE\) is the natural log of individual \(i\)’s real daily wage, \(SCH\) is the number of years of schooling for individual \(i\), and \(EXP\) and \(EXP^2\) are years of experience and experience squared.

The expanded Mincerian model

\[
Y = \beta_0 + \beta_1 GEN + \beta_2 ED-HS + \beta_3 ED-AS + \beta_4 ED-BA + \beta_5 ED-HD + \beta_6 ED-MS + \beta_7 ED-D + \beta_8 EXP + \beta_9 WM + \beta_10 LE-P + \beta_11 ES-P + u
\]

Variable Definition

1. Wage (Y): The log of real daily wage in New Israeli Shekel and is the study’s dependent variable.

2. Female (GEN): A dummy variable that takes on a value of 1 for female and 0 for male.

3. Education Attainment-High School (ED-HS): A dummy variable that takes on a value of 1 if high school is the highest level of education attained, and 0
otherwise. The excluded category is educated attainment less than high school.

4. Education Attainment-Associate Degree (ED-AS): A dummy variable that takes on a value of 1 if an associate’s degree is the highest level of education attained and 0 otherwise.

5. Education Attainment-Bachelor’s Degree (ED-BA): A dummy variable that takes on a value of 1 if a bachelor’s degree is the highest level of education attained and 0 otherwise.

6. Education Attainment-High Diploma (ED-HD): A dummy variable that takes on a value of 1 if a high diploma is the highest level of education attained and 0 otherwise. A high diploma is usually a one year course work to obtain a license after obtaining a bachelor’s degree.

7. Education Attainment-Master’s Degree (ED-MS): A dummy variable that takes on a value of 1 if a master’s degree is the highest level of education attained and 0 otherwise.

8. Education Attainment-Doctorate (ED-D): A dummy variable that takes on a value of 1 if a doctorate is the highest level of education attained and 0 otherwise.

9. Potential Work Experience (EXP): Years of potential work experience, which is age minus years of schooling minus 6. This variable is a proxy for human capital accumulation through participation in the labor market.

10. Job Tenure (WM): Number of months on the current job.
11. Location of Employment-Palestine (LE-P): A dummy variable that takes on a value of 1 if worker’s location of employment is Palestinian Territories and 0 for Israel.

12. Employment Sector- Public (ES-P): A dummy variable that takes on a value of 1 if worker is employed with the Palestinian national government and 0 otherwise.

Research Hypotheses and Assumptions

Hypotheses

Daily wages in Palestine are positively related to higher education, potential work experience, job tenure, location of employment in Israel, and employment in the private sector.

Daily wages in Palestine are inversely related to gender being a female, location of employment in the Palestinian Territories, and employment in the public sector.

Assumptions

Female workers are expected to earn less than male workers. Women usually spend less time in the labor market as a result of time spent rearing children and time focused on domestic production. On average, women spend less than half of their lifetime in the labor market after marriage (Mincer and Plachek 1974).

Higher education attainment is expected to have a positive effect on wages. Also, the higher the level of education attained, the higher the expected wages. This perdition stems from the theory of human capital accumulation where education increases the stock of knowledge of workers, and thus increases the economic value of their time that leads to higher wages.
Potential work experience is predicted to have a positive effect on wages. Workers who spend more years in the labor market are expected to accumulate more work experience and earn higher wages. According to the human capital theory, work experience is a proxy of work knowledge accumulation.

Job tenure, measured in number of months in the current job, is expected to have a positive effect on wages. More time at the current job increases job knowledge and could potentially expose workers to more training that increases their productivity, which in turn increases the economic value of their time. Mincer (1958) argues that the amount of time spent on the job is a measurement of experience and training accumulation, which is similar to measuring the formal training process through the length of time spent at school. Mincer found that experience influences productivity more strongly in jobs that require more training. In addition, for those jobs that require more training, productivity increases with age. As workers become more productive due to on the job training and accumulation of work experience, they receive higher wages than those with less experience (Arbache 2001).

Employment in the Palestinian Territories, either in the public or the private sector, is expected to have a negative effect on wages. Since the start of the second Intifada in 2000, the Palestinian labor force in Israel was reduced by one third, leading to a high supply of labor force in the Palestinian Territories. This increase in labor supply has caused a downward pressure on wages in the Palestinian local economy. Thus, employees in the Palestinian Territories are expected to earn lower wages compared to those who work in the Israeli labor market. Moreover, employment in the public sector in the Palestinian Territories is expected to pay lower wages compared to employment in
the private sector. The public sector in Palestine is heavily dependent on foreign aid for running its operations, which makes wages in the public sector more rigid and less responsive to market forces than the private sector.

Data

Data Description

The source of data for this study is the Palestinian Labor Force Survey, a quarterly survey that was conducted by the Palestinian Central Bureau of Statistics (PCBS) for the period from 2000 to 2011. The sample size for each round is 7,559 households. Each household remains in the sample over 2 consecutive rounds, rests for the next 2 rounds, and is represented again in the sample for another two consecutive rounds before it is dropped from the sample. The target population of the survey is all Palestinians aged 10 years and older. For the purpose of this study, only individuals who are in the labor force and who reported positive income are included. The final working dataset contains total observations of 178,473, in which 55,057 are in Gaza and 123,416 are in the West Bank.

Data Weaknesses

PCBS’s Labor Force Survey does not survey the workers’ years of work experience. Instead, it surveys the number of months at the current job. The potential work experience (Mincer 1974), which is the value of age minus years of schooling minus 6, is used in this study as a proxy for human capital accumulation through participation in the labor market. In addition to potential work experience, the number of months at current job is included in the model as a separate independent variable due to
its relevance to income. Mincer (1958) argues that the amount of time spend on the job is a measurement for experience and knowledge accumulation.

Another weakness is that the survey does not investigate the quality of education provided by formal institutions. Card and Krueger (1992) found a positive link between the return to education and schools with higher quality. McPherson (1981) argues that if rapid expansion of higher education is driven by the increased enrollments rather than by improving the quality of higher education, then the outcome is a decline in the quality of higher education. The drastic expansion of higher education in Palestine since 1995 could have a negative impact on the quality of higher education provided. Al-Quds Open University, for example, which is one of 29 universities in Palestine, has expanded drastically in in the last few years. As of 2011, it enrolled nearly 25% of the total students in the higher education system in Palestine (PCBS 2012).

Empirical Results

Gaza Strip

The results for the 12 regression models (one for each year) are reported in Table 5 below. Standard errors are reported in parentheses below the independent variables coefficients. The level of statistical significance is set at 5%.

Test of the goodness of fit of the model. The results of 12 OLS regression models (one for each year) are reported in Table 5 below. The models estimate the effects of various independent variables on daily wages. Based on the 12 regressions outcome, the probability of Type I error (Prob>F) is 0.000 for all models, which indicates that the models are good fit.
Test of the model’s explanatory power. The Adjusted R² results for the 12 OLS regression models are reported in Table 5 below. The value of the reported Adjusted R² ranges between 0.383 and 0.557, indicating a strong explanatory power of the models.

Table 5

**Gaza Strip OLS results 2000-2011 (Standard errors are reported in parentheses below the estimated coefficient)**

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<td>(0.014)</td>
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<td>(0.016)</td>
<td>(0.018)</td>
<td>(0.021)</td>
<td>(0.018)</td>
<td>(0.018)</td>
<td>(0.034)</td>
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<td>0.308</td>
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<td>(0.017)</td>
<td>(0.020)</td>
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<td>(0.027)</td>
<td>(0.023)</td>
<td>(0.022)</td>
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<td>(0.061)</td>
<td>(0.074)</td>
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<td>Years of Potential Work Experience</td>
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<tr>
<td>No. working months at current job</td>
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<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
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</tr>
<tr>
<td>Place of Employment (1 Palestine, 0 Israel)</td>
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<td>-0.917</td>
<td>-1.254</td>
<td>-1.049</td>
<td>-0.813</td>
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<td>(0.041)</td>
<td>(0.057)</td>
<td>(0.127)</td>
<td>(0.228)</td>
<td>(0.269)</td>
<td>0.000</td>
<td>0.000</td>
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<tr>
<td>Employment Sector (1 public, 0 private)</td>
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<td>0.263</td>
<td>0.321</td>
<td>0.344</td>
<td>0.240</td>
<td>0.211</td>
<td>0.144</td>
<td>0.166</td>
<td>0.122</td>
<td>0.380</td>
<td>0.473</td>
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<td>(0.019)</td>
<td>(0.022)</td>
<td>(0.020)</td>
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<td>(0.018)</td>
<td>(0.020)</td>
<td>(0.024)</td>
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<td>(0.013)</td>
<td>(0.025)</td>
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<td>(0.058)</td>
<td>(0.127)</td>
<td>(0.229)</td>
<td>(0.270)</td>
<td>(0.018)</td>
<td>(0.016)</td>
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<td>3811</td>
<td>4767</td>
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<td>4843</td>
<td>3750</td>
<td>5209</td>
<td>5371</td>
<td>1556</td>
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<tr>
<td>Adjusted R²</td>
<td>0.557</td>
<td>0.437</td>
<td>0.425</td>
<td>0.487</td>
<td>0.513</td>
<td>0.528</td>
<td>0.448</td>
<td>0.401</td>
<td>0.383</td>
<td>0.490</td>
<td>0.554</td>
<td>0.552</td>
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</table>
Results and Test Hypotheses

Gender: Was negative and statistically significant at .05 level for all 12 models. This means being a female worker has a negative effect on her log wages compared to being a male worker. The sign is as expected.

Education Attainment-High School: Was positive and statistically significant at the .05 level for all 12 models. This means that having a high school diploma has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-Associate: Was positive and statistically significant at the .05 level for all 12 models. This means that having an associate degree has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-Bachelor’s Degree: Was positive and statistically significant at the .05 level for all 12 models. This means having a bachelor’s degree has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-High Diploma: Was positive and statistically significant at the .05 level for all 12 models. This means having a high diploma has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-Master’s Degree: Was positive and statistically significant at the .05 level for all 12 models. This means having a master’s degree has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.
Education Attainment-Doctorate: Was positive and statistically significant at the .05 level for all 12 models. This means having a doctorate has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Potential Work Experience: Was positive and statistically significant at the .05 level for all 12 models. This means an additional year of worker experience increases her or his log wages. The sign is as expected.

Job Tenure: Was positive and statistically significant at the .05 level for all 12 models. This means an additional month on the current job increases the worker’s log wage. The sign is as expected.

Location of Employment-Palestine: Was negative and statistically significant at the .05 level for the 2000 to 2008 models. This means being employed in the Palestinian Territories has a negative effect on log wages compared to being employed in Israel. For the 2009 to 2011 models, the variable was omitted since all observations reported employment in the Palestinian Territories. The sign is as expected.

Employment Sector- Public: Was positive and statistically significant at the .05 for all 12 models. This means being employed with the Palestinian government has a positive effect on log wages compared to being employed in the private sector. The sign is contrary to what was expected.

West Bank

The results for the 12 regression models (one for each year) are reported in Table 6 below. Standard errors are reported in parentheses below the independent variables coefficients. The level of statistical significance is set at 5%.
Test of the goodness of fit of the model. The results of 12 OLS regression models (one for each year) are reported in Table 6 below. The models estimate the effects of various independent variables on daily wages. Based on the outcome of the 12 regression models, the probability of Type I error (Prob>F) is 0.000 for all models, which indicates that the models are a good fit.

Test of the model’s explanatory power. The Adjusted R² results for the 12 OLS regression models are reported in Table 6 below. The value of the reported Adjusted R² ranges between 0.411 and 0.528, indicating that the model has a strong explanatory power.
Table 6
West Bank OLS results 2000-2011 (Standard errors are reported in parentheses below the estimated coefficient)

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<th>Gender (1 female, 0 male)</th>
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<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<th>2011</th>
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<td>(0.020)</td>
<td>(0.021)</td>
<td>(0.019)</td>
<td>(0.022)</td>
<td>(0.021)</td>
<td>(0.023)</td>
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<td>(0.013)</td>
<td>(0.011)</td>
<td>(0.012)</td>
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<td>(0.011)</td>
<td>(0.011)</td>
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<td>0.191</td>
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<td>0.223</td>
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<td>(0.015)</td>
<td>(0.014)</td>
<td>(0.013)</td>
<td>(0.013)</td>
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<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.025)</td>
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<tr>
<td>Education Attainment-bachelors</td>
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<td>0.444</td>
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<td>0.371</td>
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<td>(0.010)</td>
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<td>Education Attainment-high diploma</td>
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<td>0.474</td>
<td>0.426</td>
<td>0.368</td>
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<td>(0.087)</td>
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<td>No. working months at current job</td>
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</tr>
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<td>Place of Employment (1 Palestine, 0 Israel)</td>
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<td>-0.618</td>
<td>-0.691</td>
<td>-0.689</td>
<td>-0.645</td>
<td>-0.611</td>
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<td>(0.013)</td>
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<td>(0.010)</td>
<td>(0.011)</td>
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<td>(0.010)</td>
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<tr>
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<td>0.446</td>
<td>0.482</td>
<td>0.501</td>
<td>0.528</td>
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</table>

Results and Test Hypotheses

Gender: Was negative and statistically significant at the .05 level for all 12 models. This means being a female worker has a negative effect on log wages compared to being a male worker. The sign is as expected.

Education Attainment-High School: Was positive and statistically significant at the .05 level for all 12 models. This means that having a high school diploma has a
positive effect on worker’s log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-Associate: Was positive and statistically significant at the .05 level for all 12 models. This means having an associate degree has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-Bachelor’s Degree: Was positive and statistically significant at the .05 level for all 12 models. This means having a bachelor’s degree has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-High Diploma: Was positive and statistically significant at the .05 level for all 12 models. This means having a high diploma has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-Master’s Degree: Was positive and statistically significant at the .05 level for all 12 models. This means having a master’s degree has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Education Attainment-Doctorate: Was positive and statistically significant at the .05 level for all 12 models. This means having a doctorate has a positive effect on log wages compared to having less than a high school diploma. The sign is as expected.

Potential Work Experience: Was positive and statistically significant at the .05 level for all 12 models. This means an additional year of potential work experience increases her or his log wages. The sign is as expected.
Job Tenure: Was positive and statistically significant at the .05 level for all 12 models. This means an additional month at the current job increases the worker’s log wages. The sign is as expected.

Location of Employment-Palestine: Was negative and statistically significant at the .05 level for all 12 models. This means being employed in the Palestinian Territories has a negative effect on workers’ log wages compared to being employed in Israel. The sign is as expected.

Employment Sector- Public: Was positive and statistically significant at the .05 level for 2000 to 2007 models. This means being employed with the Palestinian government had a positive effect on log wages in those years compared to being employed in the private sector. The sign is contrary to what was expected.

The coefficient was negative and statistically significant for the 2008 to 2010 models. This means in those years, being employed with the Palestinian government had a negative effect on workers’ daily wages compared to being employed in the private sector. The sign is as expected. The coefficient for 2011 was not significant at the 0.05 level.

Results Discussion

_Gaza Strip Results_

Gender was found to have a higher negative effect on daily wages than initially predicted, which is consistent with the findings of Tansel and Daoud (2011). Wages for female workers were 24% lower than male workers in 2000, and 15% lower than male workers in 2011. A possible explanation for low wages for the female workers is that female labor force supply is high compared to that of male, especially with the increasing
demand for higher education by female students. The results here suggest gender as a potential factor that contributes to income inequality in the Gaza Strip.

As anticipated, higher education was found to have a positive effect on daily wages. This is consistent with the findings of Sayre and Miller (2004b) and Sayre (2009) where the education premium was positive but was declining during the years when the peace process stalled. However, and in contrary to the findings of Sayre and Miller, the study found that the return to education, on average, has an increasing trend. The effect of higher education on wages in this study revealed two noticeable facts. First, the higher the level of education attained, the higher the premium. For example, the premium for education at the high school level was 15.5% in 2000 and 18.2% in 2011 compared to workers with less than high school. Premium for bachelor’s degree was 47.7% in 2000 and 56.6% in 2011 compared to workers with less than high school. For masters and doctoral degrees, the premium was 76.2% and 123% respectively in 2000 compared to workers with less than high school. For 2011, premiums for masters and doctoral degrees were 76.4% and 116% respectively.

Second, the return to education increases over time, primarily at the associate, bachelors, and high diploma levels. Premiums for masters and doctoral degrees were relatively flat during the study period. Moreover, the results show that wages are sensitive to political shocks at lower levels of education attainment. Wages for workers with bachelor’s degree and higher are less affected by political downturns. For example, wage premium for workers with associate degrees dropped from 30.8% in 2005 to 27.5% in 2006 after the election of Hamas. However, wage premiums for bachelors, high school diplomas, and masters’ degrees increased from 53.1%, 67.1%, and 78% in 2005 to 54%,
67.6%, and 82.6% in 2006 respectively. These findings suggest a strong demand for an educated labor force in the Gaza Strip.

Consistent with the theory of human capital and the study’s predictions, potential work experience and job tenure were found to have a positive effect on wages. However, their effects were very small, and the effect of potential work experience was declining over time. For example, for every one year increase in potential work experience in 2000, the wages increased by 0.8%, but by 2011, one year increase in potential work experienced increased wages by 0.3%. For job tenure, a one additional month in current job increased wages by 0.01% in 2000. By 2011, the rate of wage increase for one additional month in the current job was 0.03%. One possible explanation for the small effect of experience on wages is that the return to informal human capital accumulation (work experience) is less significant than formal human capital accumulation (education) in the labor market in the Gaza Strip. It is also possible that the increasing, and possibly excess, supply of educated labor force in the labor market causes wages for the older and more experienced workforce to be rigid.

Employment in the Palestinian territories was found to have an increasing negative effect on wages compared to employment in Israel. In 2000, the premium for working in Israel was 87.5% compared to working in the Palestinian Territories. By 2005 premium for working in Israel increased to 125.4%. After Hamas took over the government in Gaza in 2006, the premium for working in Israel declined and continued to decline until it reached 53.5% in 2008. For the years 2009 to 2011, no workers reported employment in Israel. This is possibly because Israel tightened the political and economic isolation of Gaza after the Israeli military assault on Gaza in January of 2009.
The results above are consistent with the findings of Angrist (1995) and Angrist (1996) where wages for Palestinians who worked in Israel were higher than those who were employed locally. Angrist (1995) found that in 1987, the wages for those who worked in Israel were 37% higher than wages for Palestinians who were employed locally. Sayre (2001) and Sayre and Miller (2004b) also found similar results where jobs in Israel paid higher premiums for the period 1981 to 1991. The results in this study were not surprising; however, the magnitude of the effect is much higher than initially anticipated. While the results show that the return to education is high in Gaza, it is possible that wage inequality in Gaza was exasperated by the lack of access to the Israeli labor market by unskilled workers. Also, the excess supply of unskilled labor in the local labor market in Gaza and the complete closure of the Israeli labor market for the residents in Gaza starting in 2009 could have depressed wages for the unskilled further. In other words, there is a possibility that the effect of wage declining for unskilled workers in Gaza is stronger than the effect of return to education on wage inequality.

Contrary to the study’s perdition, employment with the Palestinian government has a positive effect on wages for the entire study period. This is consistent with the findings of Sayre and Miller (2004b) where the authors found that the expansion of the public sector increased wage inequality. However, results also show a drastic decline of public sector wages after the election of Hamas government in 2006. In 2000, wages for those who were employed with the Palestinian government 30.6% higher than those who were employed in the private sector. In 2006, the premium for working with the Palestinian government dropped to 14.4%. However, premium for employment in the public sector increased significantly in the years 2009 to 2011. In 2008 for example,
wages for the public sector employees were 12.2% higher than those in the public sector. In 2009 and 2010, the premium increased to 38% and 47.3%, respectively. It is important to note that this increase in wage premium for employment in the public sector corresponded with a drastic expansion in employment in the public sector as shown in Figure 1 below. One possible explanation for these results is that the private sector labor market has deteriorating since 2000 and has not recovered since then employment in the public sector provides the most job opportunities with reliable income.

![Figure 1. Proportion of Employment in the Public Sector (Gaza Strip). Source: Author’s calculation using the results of the Palestinian Central Bureau of Statistics Labor Force Survey for the period 2000 to 2011 that was used for this paper](image)

**West Bank Results**

The results show that female workers in the West Bank earn significantly less than male workers and this gender income gap is increasing over time. While this outcome was anticipated by the study, the magnitude of gender gap and the rate of its increase were strikingly high. In 2000, wages for male workers were 93.5% higher than wages for female workers. By 2010, wages for male workers were 114% higher than
female workers. While it is not clear from these results whether the demand for female labor is low (and is decreasing), or the supply of female labor is high (and is increasing), it is clear that there is a significant gender income inequality in the West Bank. The gender income gap could explain the historically low female labor force participation in Palestine. Very low and decreasing wages could discourage female laborers from entering and/or remaining in the labor market.

The return for high school diploma and higher was positive and increasing over time. In addition, the return to education was significantly higher at the bachelor’s degree level and above compared to less than high school. For example, in 2000, the premium for associate degrees was 6.8% compared to having less than high school while premiums for bachelors and high diploma degrees were 19.2% and 26.3% respectively. In 2011, premium for associate degree was 17.1% compared to 37.1% premium for bachelor’s degree and 50.9% premium for high diploma. While premiums at the masters and doctoral levels were relatively flat in Gaza for the study period, they were increasing in the West Bank. In 2000, the premium for master’s degree was 50.4% and was 95.5% for the doctoral degree. In 2011, the premium for master’s degree rose to 70% and rose to 107.6% for the doctoral degree. Similar to the findings in Gaza, wages for workers with bachelor’s degree and above were less sensitive to political shocks such as the second Intifada and the election of Hamas. The results above suggest a strong and increasing demand for workers with higher education.

The effect of job tenure and potential work experience on wages was positive. For every one year increase in potential work experience, wages in 2000 increased by 0.2%. By 2011, a one year increase in potential work experience increased the wage by 0.004%.
The results here indicate a positive effect of age on wages; however, the effect is very small. The results also show that the more months a worker spends at her or his current job, the higher their wages. However, the effect of job tenure is very small and was almost identical for the entire study period. For every one month increase in job tenure, wages increased by 0.01% in most of the years in the study period. While the results from the effect of potential work experience and job tenure on wages were consistent with human capital theory, their effect in this study was found to be negligible. One possible explanation for this outcome is that the accumulation of human capital in the form of work experience is not valuable in the Palestinian labor market. Another possible explanation is that the increasing supply of educated labor force increases competition between young educated workers and older experienced workers and thus depresses the wages of the latter group.

The effect of employment in the Palestinian Territories was negative and increasing compared to employment in Israel. In 2000, workers who were employed in the local market earned 50.5% less than those who were employed in Israel. In 2011, the wage premium for working in Israel rose to 73.3%. These results indicate an ongoing downward pressure on wages for the unskilled laborers in the Palestinian Territories as a result of restricting the entry of Palestinian workers to the Israeli labor market. Since the majority of workers who were displaced after Israel restricted the entry to its labor market were unskilled laborers, the findings here suggest increasing trends for income inequality between the skilled (educated) and the unskilled labor force in Palestine as a result of declining wages for the unskilled.
Contrary to the study’s prediction, employment in the public sector has a positive effect on wages; however, the effect was declining until it became negative starting in 2008. The premium for working in the public sector was 11.7% in 2000 and declined to 7.4% in 2004 compared to working in the private sector. In 2008, wages for employees in the public sector were 5.9% less than those who were employed in the private sector. It is possible that as the labor market continued to deteriorate after the start of the second Intifada; the Palestinian government absorbed a large portion of the displaced labor force to the point that wages started to decline compared to wages offered by the private sector. Another possible explanation is that demand for labor by the private sector increased causing wages to increase compared to wages offered by the public sector. However, the latter explanation is less likely since employment in the public sector grew significantly starting in 2009 as shown in Figure 2 below.

*Figure 2. Proportion of Employment in the Public Sector (West Bank). Source: Author’s calculation using the results of the Palestinian Central Bureau of Statistics Labor Force Survey for the period 2000 to 2011 that was used for this paper*
Results Comparison: Gaza Strip vs. West Bank

Both regions show significant positive and increasing rates of return to higher education despite the increasing demand for education in Palestine as shown in Figure 3 below. However, the return to education was higher in Gaza than it was in the West Bank. For example, in 2000, the premium for bachelor’s degree in Gaza was 47.7% compared to 19.2% in the West Bank. In 2011, the premium for a bachelor’s degree in Gaza rose to 56.2% compared to 37.1% in the West Bank. In each region, an additional level of higher education attained yields higher premium, but the premiums for higher levels of education were much higher in Gaza than in the West Bank. For example, in 2011, the premium for associate degrees in Gaza was 31.4% and was 56.2% for bachelor’s degree, while the premium for associate degrees in the West Bank was 17.1% and was 37.1% for bachelor’s degree. These results suggest a possible higher demand for educated labor force relative to their supply in Gaza than in the West Bank. They also suggest a higher supply of an educated labor force in the West Bank than in Gaza.
In addition, the return to an additional year of schooling in the Gaza Strip has a steeper upward trend over time than in the West Bank. Results of 12 regressions models (one for each year) using Miner’s standard wage model are reported in Table 7 below. As shown in the table, the premium for one additional year of schooling in 2000 was 3.1% in Gaza and 1% in the West Bank. In 2011, one additional year of schooling has a premium of 9.3% in Gaza and only 3% in the West Bank. These results suggest a higher value of education in the labor market in Gaza than in the West Bank.
Table 7

*Estimated Premium to Years of Schooling Coefficients Using Mincer’s Standard Wage Model (Standard errors are reported in parentheses below the estimated coefficient)*

<table>
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<tr>
<th>Years of Schooling (Gaza Strip)</th>
<th>Years of Schooling (West Bank)</th>
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<td>2002</td>
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</tr>
<tr>
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<td>0.073</td>
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</tr>
<tr>
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<td>(0.002)</td>
</tr>
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<td>2011</td>
<td>0.093</td>
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<td>(0.003)</td>
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</table>

The findings from both regions show a significant negative effect of gender, or being female, on wages. However, the effect in the West Bank is much larger than in Gaza Strip. In addition, gender income inequality in the West Bank is increasing over time. One possible explanation is that the female labor force participation (supply) is much lower in Gaza than in the West bank. Zidan (2009) found that in 2007, female labor force participation in the West Bank was 18.3% compared to 11% in Gaza. The increased supply of female laborers in the West Bank could be a potential contributor to the
declining of the wages of female workers. However, if the supply of educated labor by both genders is increasing, then the trends of wages should be expected to move in the same direction for both genders. However, wages for male and female are diverging over time as the results show. A possible explanation for the gender wage inequality is that, the Palestinian labor market has a preference for male workers, and female workers are “expected” to accept lower wages when offered a job. Another possible explanation is that the majority of job opportunities available in the Palestinian labor market are more suitable for men. Another possibility is that extended maternity leave benefits and labor laws discourage employers from hiring women. Nevertheless, the ongoing increase in gender income inequality is very alarming and could negatively affect female labor force participation and/or their investment in higher education. As wages for female laborers continue to decline, they will continue to withdraw from the labor market whenever it is economically possible.

In both regions, employment in the Palestinian territories has a negative effect on wages, where such effect is much higher in the Gaza Strip. This could be due to the presence of higher supply of unskilled laborers in Gaza compared to the West Bank. This is also supported by the findings in this study where none of the workers who were surveyed in the period 2009 to 2011 reported employment in Israel. In addition, wages for employment in the public sector were higher than those in the private sector in both regions. In Gaza, the premium for employment in the public sector was positive for the entire study period and increased drastically starting in 2009. However, in the West Bank, wages for employees in the public sector started to decline in 2006 and became negative starting in 2009. It is possible that the private sector in Gaza is more deteriorated than it is
in the West Bank. Another possibility is that, the excess supply of unskilled laborers in the local economy in Gaza is beyond its capacity, especially after Israel closed its labor market for residents in Gaza starting in 2009, pushing wages for the employees of the private sector further down.

In addition to the effect of employment in the public sector on wages, in both regions the Palestinian government absorbed a significant number of labor force, particularly the educated, starting in 2009 as shown in Figure 1 and Figure 2. It is possible that the expansion of the public sector was artificial with intention to reduce chronic unemployment as a result of permanent reduction in Israel’s reliance on Palestinian labor.

*Unemployment and Return to Education*

The study above establishes a positive relationship between education and wages in both regions without consideration to the effect of education on employment. To better understand the effect of education on labor demand, a review of the unemployment rates among workers with college educations and workers without college educations over time is useful. The data used in this study was utilized to study the trends in labor demand over time and the share of employment in the labor market for the two labor force groups. Figure 4 and Figure 5 below show the overall unemployment rates, their magnitude, and their trends among workers with college education and workers without college education.

In the Gaza Strip, unemployment rates were significantly lower among workers with college education compared to workers without college education as shown in Figure 4 below. The figure also shows that the unemployment rates for the two groups
are converging. This could possibly be due to the Palestinian government absorbing a large portion of the unemployed labor force, particularly educated laborers starting in 2009 as shown in Figure 1. Since premiums for employment in the public sector increased drastically after the expansion of the public sector starting in 2009, and since the public sector absorbed large portion of the educated labor force, increase in employment in the public sector could have “exasperated” wage inequality between the educated and less educated labor force in the Gaza.

Figure 4. Unemployment Rates (Gaza Strip). Source: Author’s calculation using the results of the Palestinian Central Bureau of Statistics Labor Force Survey for the period 2000 to 2011 that was used for this paper

In the West Bank, unemployment rates among workers with college education were much lower than employment rates among workers without higher education after the start of the second Intifada, as shown in Figure 5 below. However, the rate of unemployment gap between the educated and the less educated laborers narrowed in 2006 and was almost identical after 2007. In such, while the return to education is positive in the West Bank, employment opportunities are similar to those without higher
education during periods of peace. However, the labor market for a less educated labor force is more volatile during political and economic downturns when they suffer higher unemployment.

![Figure 5. Unemployment Rates (West Bank). Source: Author’s calculation using the results of the Palestinian Central Bureau of Statistics Labor Force Survey for the period 2000 to 2011 that was used for this paper](image)

In summary, in both regions higher education not only produces higher wages, but it also reduces the volatility of the labor market for the educated labor force. In other words, higher education has a positive impact on worker’s income and employment opportunities, revealing a strong demand for an educated labor force in the Palestinian Territories.

Conclusion

The aim of this study was to investigate the effect of higher education on wages and income inequality in the West Bank and Gaza Strip in light of increasing demand for higher education. The study utilized data that was collected by the Palestinian Central

To estimate the effect of higher education on wages, an expanded version of the standard Mincerian wage model was developed. A regression model was conducted for each year in the study period to investigate the trends of return to education over time. This approach was necessary given the sensitivity of the local labor market in the Palestinian Territories to political conditions. The study period includes two major events that had direct effects on economic activities, and thus the labor market. The first event was the start of the second Intifada in 2000 that continued until 2003. The second was the election of Hamas government that prompted Israel to hold the Palestinian Authority’s foreign aid for nearly 18 months. Moreover, dummy variables for different levels of higher education attained were included in the model to investigate the effect of different levels of higher education on wages. Finally, the study utilized a longitudinal analysis to investigate the trends of employment and labor demand for workers with higher education and workers without higher education, especially during periods of economic stagnation following political downturns.

Consistent with human capital theory, the results from the Gaza Strip and the West Bank data show that education indeed has a significant and increasing return. However, the return to different levels of higher educational, as well as the magnitude of return to education in general, is different in each region. In Gaza, the return to education is higher than that in the West Bank at all educational levels. The return to an additional year of schooling in Gaza is also shown to be larger in the West Bank. Moreover, the education premium increases at a larger rate over time in Gaza than it does in the West
Bank with the increase of the education level attained. These findings suggest a stronger demand for an educated labor force in Gaza than in the West Bank.

One of the most significant findings of this study is the strong effect of gender on wages. The study found that in both regions, female workers earn lower wages than men. However, the negative effect of gender on wages in the West Bank is significantly larger in Gaza. In addition, the negative effect of gender is increasing over time in the West Bank but was relatively flat over time in Gaza. These findings suggest that the labor market in Palestine has a strong preference for male workers, either because of labor laws or the nature of jobs available in the local market. Another possible explanation is that the female labor supply, especially the educated, is higher than market demand. Nevertheless, these findings are alarming since the high and increasing gender income gap contributes to the discouragement of female workers from entering and or remaining in the labor market.

When investigating unemployment rates among workers with and without college education, it was found that unemployment among workers without college education is higher and more sensitive to political and economic shocks. The labor market for the less skilled laborers recovers much slower than that of workers with higher education. This reveals the presence of a strong demand for skilled laborers in Palestine.

Starting in 2009, the demand for labor by the Palestinian government increased significantly where workers with college education had the lion share of that demand. In 2000, only 1% of the employed workers without college education, and only 14% of the employed with college education, worked in the public sector in the Gaza Strip. In 2009, 30% of the employed workers without college education were employed in the public
sector, and 63% of the employed workers with college education reported employment in the public sector. In the West Bank, less than 1% of the employed laborers without college education were employed by the public sector and only 3% of the employed with higher education worked for the public sector. In 2009, the rates were 9% for workers without higher education and 41% for workers with higher education. The increased demand for labor force by the national government caused a decline in wages for employees in the public sector in the West Bank, but caused a significant increase in wages in the Gaza compared to wages paid by the private sector. While economic indicators clearly show that the economy in Gaza is in a worse state than in the West Bank, the results of this study show a healthier and a stronger labor demand for educated workers in Gaza than in the West Bank.

It is important to note that since the public sector absorbed a large portion of the educated labor force, who might have been unemployed otherwise, starting in 2009, one cannot assume premium to education in terms of wages and share of employment is an indication of a healthy Palestinian economy. Mincer (1991) found that the absence of long-term decline in return to human capital in the U.S. despite the massive growth in educational attainment is a result of the growing demand for educated workers. The increased demand for educated workers, which induces increase in the demand (investment) in higher education, is a result of overall economic growth, Mincer (1991) argues. However, this does not seem to be the case in Palestine. The expansion of the public sector in 2009 could be the result of chronic and rising unemployment in the Palestinian Territories as a result of a permanent displacement of Palestinian workers who used to work in Israel, as well as an increase in the supply of educated laborers. In
such, the government absorbed much of the unemployed, especially the educated, as an attempt to control unemployment. Another possibility is that, foreign aid providers placed a pressure on the Palestinian government to build and/or expand civil institutions in the Palestinian Territories. The sharp decline in wage premium for employment in the public sector in the West Bank, which coincided with a sharp increase in demand for labor by the public sector, should be approached with extreme caution when discussing the health and recovery process of the Palestinian labor market during the last decade.

The results of the regression models in this study show that wages in the Palestinian Territories are much lower than those offered by employers in Israel. The study shows that since 2000, which marks the start of the second Intifada, premiums for employment in Israel continued to increase. In the West Bank, working in Israel paid significantly higher wages than the local market, and wage premium for employment in Israel increased in the period 2009-2011. In the Gaza Strip however, premium for working in Israel increased drastically in 2005, started decreasing in 2006, and then became absent after 2009 since employment in Israel for the residents of Gaza became almost impossible. It is possible that the increase in premiums for employment in Israel is due to declining real wages in the Palestinian Territories. Israel’s restriction on the number of Palestinian laborers allowed to cross its boarders caused an excess supply of unskilled workers in the local market, more severely in Gaza, which could have caused wages to decline in the Palestinian Territories.

It could be concluded from the above findings that the return to education is high and increasing in Palestine despite increasing demand for higher education. Wage inequality in Gaza could be attributed to high return to education and employment in the
public sector, while it is attributed to return to education, employment in Israel, and gender income inequality in the West Bank. The study also concludes that high and increasing gender income inequality is a result of an inhospitable labor market for female workers, and the Palestinian labor market might have a preference for male workers. This could explain the significant low female labor force participation in Palestine despite the fact that female students share in higher education enrollment is about 30% larger than that of male students.

Increasing return to higher education despite the drastic increase in demand for higher education indicates a strong demand for laborers with higher education in Palestine. This could be an indication of a healthy economy where the economy is utilizing its skilled labor force and on its path to recovery. However, the massive rise in employment in the public sector in 2009, which had a negative effect on wages for employment in the public sector in the West Bank, reveals a chronic illness in the Palestinian labor market and in the overall economy. In addition, while education in Palestine does not guarantee employment, it increases the probability of obtaining and employment, which could explain the ongoing increase in demand for higher education.

Further research is needed to investigate trends of real wages and employment share over time in both the private and the public sector based on educational attainment and specialization. Taking these factors in consideration would help understand the actual market mechanism and its preferences for specific human capital.
CHAPTER V  
CONCLUSION

The aim of this study was to investigate the interaction between wages and labor force participation in the West Bank and Gaza Strip for the period from 2000 to 2011. The beginning of the selected period marks the start of the second Intifada. One of the main consequences of the Intifada was a severe restriction by Israel on the entry of Palestinian workers to its labor market leading to a 30% reduction of overall Palestinian employment in Israel. Another was a severe stagnation in the Palestinian local economy due to long periods of closure and restrictions on the mobility of people and goods between the Palestinian Territories by Israeli military forces. The outcome was a long-term rise in unemployment, excess labor supply in the local economy, and declining wages. The effect of the Intifada was magnified after the election of Hamas government in 2006. As a retaliatory approach to the outcome of the 2006 election, Israel withheld the Palestinian Authority’s foreign aid funds for nearly 18 months. In addition, Israel has also placed the Gaza Strip, where nearly 38% of the Palestinian population resides, under political and economic siege. The outcome was a further deterioration in the local economy and thus, the labor market and wages.

Three areas of interest were considered in this study. Chapter II studied the effect of adult employment and income on the child labor supply. A multiple regression model was utilized, and a separate study was conducted for each region (West Bank and Gaza Strip). The findings from this study are consistent with the established literature where parents’ income and years of education were found to have a negative relationship with child labor, but the effect of parents’ income found in this study was small. In addition,
the parents’ employment status was found to have a positive relationship with child labor in both regions; however, the relationship in the Gaza Strip was not statistically significant. The study also found that older male children are more likely to work than younger and/or female children. The study concluded that in both regions, the lack of regular full-time employment opportunities as well as the lack of employment opportunities with adequate wages for adults are probably the underlying cause for child labor in Palestine, especially during periods of economic decline.

Chapter III studied the effect of husbands’ income and employment status on wives’ labor force participation. The method of analysis in the study was a fixed-effects logistic regression. The study found that a husband’s employment and second job had a positive effect on a wife’s labor force participation. Consistent with the established literature, a husband’s income was found to have a negative effect on a wife’s participation in the labor market; however, the effect was small and negligible. In addition, the wife’s education had a strong positive effect on her participation in the labor market. Wives’ previous work experience was found to have a negative effect on their participation in the West Bank, but a positive effect in the Gaza Strip. Family size was found to have a positive relationship with a wife’s labor force participation in both regions. Finally, inflation was found to have a strong positive relationship with a wife’s participation in the labor market in the Gaza Strip, but no relationship in the West Bank. The study concluded that labor market conditions and the perception of finding employment have a stronger effect on wives’ participation in the labor market than husbands’ income. Given the current high unemployment rates in the Palestinian labor market among the primary labor force, and given the ongoing decline in real wages, it is
possible that married women enter the labor market when necessary due to severe economic needs and leave when possible due to inhospitable labor market condition for them.

Chapter IV studied the return to education and wage inequality. An expanded version of the Mincerian (1974) wage model was developed and utilized to capture the effect of demographic variables (age, gender, experiences, etc.) and market variables (location, sector) on wage differentials and the interaction of those variables with education. Consistent with human capital theory, the study found a positive and increasing return to education in Palestine, but a very small positive effect for work experience on wages. Also, the return to education and the rate of increase in return to education were found to be higher in Gaza Strip than in the West Bank. In addition, wages for workers with higher levels of education were found to be less sensitive to economic shocks due to political downturns in both regions. The results also show that as the level of educated attained increases, the return to education increases significantly. In both regions, the study found a gender income inequality, but more significant in the West Bank. The study concluded that in both regions, wage inequality is primarily a result of the increasing return to education and the decline in wages for the unskilled workers due to excess supply of unskilled workers in the local economy. In addition, the increasing return to education is a result of strong demand for educated workers despite the growing demand for higher education. Growing gender wage inequality indicates a low and possibility decreasing demand for female workers due to market preference for male workers, or increase in the supply of female workers. This could explain the low
rate of female labor force participation despite their growing share in higher education enrollment.

In sum, the above results indicate severe challenges that are facing the Palestinian labor force and labor market. When unemployment rates among the primary laborers increase, and/or when their wages decline, wives and children are pushed to enter the labor market. The increase in labor supply pushes wages down even further. Lower wages in turn discourage female laborers from entering the labor market, even if they acquire enough skills and education to be active in the labor market. While education was shown to have a positive and increasing return, only male workers seem to benefit from this trend. With the increasing demand for higher education by young female Palestinians, the effect of the above trend in the labor market on female workers, or potential workers, could be severe in the long-run. The absence of a significant return to education could decrease the demand for higher education by female students, depriving the Palestinian economy from the active participation of nearly two third of its potential educated labor force.

Without adequate intervention by development agencies to increase the capacity of the local Palestinian economy to absorb its growing labor force and without creating enough jobs with adequate wages, investment in higher education among female will eventually decline, and female workers will continue to withdraw from the labor force. In addition, as economic needs continue to grow, the need to send a child to the labor market will escalate and could potentially have a negative effect on school enrollment in the long-run.
**APPENDIX A**

**Palestinian Central Bureau of Statistics**

Data Confidential in Accordance to General Statistical Law 2000

Mark (x) in the box of the Repetition in which the household is interviewed: first [ ] second [ ] third [ ] forth [ ]

### Part I: Identification Information

<table>
<thead>
<tr>
<th>IDNUM</th>
<th>REP</th>
<th>IDSAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ID1</th>
<th>Locality code</th>
<th>ID4</th>
<th>Number of HU in the Building</th>
<th>ID7</th>
<th>Type of locality</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID2</td>
<td>Enumeration Area</td>
<td>ID5</td>
<td>Number of household in HU</td>
<td>ID8</td>
<td>No. of HH in Enumeration Area</td>
</tr>
<tr>
<td>ID3</td>
<td>Building no</td>
<td>ID6</td>
<td>District code</td>
<td>ID9</td>
<td>Name of head of HH</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District</th>
<th>Locality</th>
<th>Street/Route</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

### Part II: Quality Control

<table>
<thead>
<tr>
<th>Repetition</th>
<th>Date of interviewing</th>
<th>Final result</th>
<th>No. of visits</th>
<th>Name of interviewer</th>
<th>No. of interviewer</th>
<th>Editor code</th>
<th>Coder code</th>
<th>Data entry operator code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetition</td>
<td>QC1 (1-6)</td>
<td>QC2 (1-6)</td>
<td>QC3 (1-6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
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</tr>
</tbody>
</table>

**QC2 Final result:**
1. Complete (Household not changed)
2. Complete (Household was changed)
3. Household invented
4. Unit Not Found
5. Nobody at Home
6. Refused
7. Not inhabited unit
8. No information
9. Others/Select

Interviewer: Read all names of household members listed in the previous Repetition and ask the following questions:

<table>
<thead>
<tr>
<th>Repetition</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD1</td>
<td></td>
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<tr>
<td>RD2</td>
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<td>RD3</td>
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<td>RD4</td>
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<tr>
<td>RD5</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

If the number is more than one, add the new names to the household roster.

If the number is more than one, update the roster and delete the names of the leaving members.
<table>
<thead>
<tr>
<th>HRO</th>
<th>HROA</th>
<th>HR1</th>
<th>HR2</th>
<th>HR3</th>
<th>HR4</th>
<th>HR5</th>
<th>HR6</th>
<th>HR7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Use Only</td>
<td>Number of Person answering by Round</td>
<td>Name</td>
<td>Sex</td>
<td>Date of Birth</td>
<td>Relationship to the Head of Household</td>
<td>Refugee Status</td>
<td>Interviewer: Write down changes of residency Status</td>
<td>When was the Person Registered For the first time in the HH by the Repetition</td>
</tr>
</tbody>
</table>


| 01 |  |  | | | | | | | | | | | | | |
| 02 |  |  | | | | | | | | | | | | | |
| 03 |  |  | | | | | | | | | | | | | |
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| 17 |  |  | | | | | | | | | | | | | |
| 18 |  |  | | | | | | | | | | | | | |
| 19 |  |  | | | | | | | | | | | | | |
| 20 |  |  | | | | | | | | | | | | | |

O Interviewer: Mark (x) in the circle if an extra questionnaire was completed for the household.
### Part 4: Population 10 years and over

#### District: | Locality: | Name of head of HH: | ROUND:
--- | --- | --- | ---

#### Serial No: | Name: | Pr1: The Age: |  
--- | --- | --- | ---

#### Pr2: School Attendance:
1. yes 2. no

#### Pr3: Years of school

#### Pr4a: Specialization of education:

#### Pr4b: Country of graduates

#### Pr5: Marital Status: ask for Persons 12 years and above. Persons
10-11 years record for them (+-)
5. Widowed  6. Separated

#### Pr6: Training course attendance (such as training courses that
managed by ministry of labour, Qalanda institute) must
present certificate at the end of the training course
and graduated  4. Never attended (Skip to PW01)

#### Pr7: Training Institution name

#### Pr8: Specialization of training course

#### PW01: Did _____ work for wage in any kind of job including
   casual activities even for one hour?
1. yes  2. No
3. Disable abroad  4. Dismissed
5. others (Skip to PW05)

#### PW02: Although _____ did not work last week, did he/she assist in
   any work including casual activities?
1. Yes  2. No
3. -  4. Others (Skip to PW6)

#### PW03: Does _____ have any work or enterprise for which
   he/she was absent last week?
1. Yes  2. No

#### PW04: Why was _____ absent from his/her job last week?
1. Ill  2. Vacation  3. Strike, closure, curfew
4. Closure (Permit with payment)  5. Temporary stoppage
6. Others

#### PW05: Does _____ have any other jobs?
1. Yes  2. No

#### PW06: What is the economic activity in the second job?
1. -

#### PW07: How many hours did _____ work in all jobs last week?
   a. Main Job
   b. Second Job

#### IF the hours 35 or more Skip to PW68

#### PW08: Why was the number of hours worked last week less
   than 35 hours?
1. Personal reasons (Illness, vacation,)
2. No desire to work more
3. Nature of work
4. Strike
5. closure
6. Others (Skip to PW10)

#### PW09: Did _____ want to change his/her job or to get
   additional work last week?
1. Yes  2. No

#### PW10: Why did _____ want to change his/her job or to get
   additional work?
1. Insufficient income  2. Occupation is not suitable
3. Bad working conditions  4. Place of work is far
5. Seasonal / casual, occasional
6. Others (PW78)

#### PW11: Why did not _____ want to change his/her job or to
   get additional job?
1. Good work  2. Studying, training
3. House duties  4. Old, Illness
5. Others (PW12)
<table>
<thead>
<tr>
<th>Question</th>
<th>Options/Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>PW11 Was your work available for last week?</td>
<td>Yes, No, Old, Illness, No, student, No, home duties, No, Others</td>
</tr>
<tr>
<td>PW12 Was there any reason that prevented you from getting a job last week?</td>
<td>Yes, student, No, home duties, Yes, Old, Illness, Yes, Others</td>
</tr>
<tr>
<td>PW13 For how long is your work available and able to work?</td>
<td>Months</td>
</tr>
<tr>
<td>PW14 Did you seek for a job last week or last four weeks?</td>
<td>a. last week, b. last four weeks</td>
</tr>
<tr>
<td>PW16 Why did you not seek for a job last week?</td>
<td>1. Studying, training, 2. Home duties, 3. Old, Illness, 4. Found a job, 5. Waited for previous job, 6. Waiting clients, 7. Closure curfew, 8. Still trying to have a permit to work in Israel and settlements, 9. Vacation or official vacation during the reference period, 10. Do not have any qualification or occupation, 11. Did not seek job due to low wages, 12. Find a job that doesn't fit with your qualifications, 13. Discouraged to find a job, 14. Not interested in a job, 15. Finding due to other income sources, 16. The household does not permit to work (only for women), 17. Others</td>
</tr>
<tr>
<td>PW17 Did you work in the last two weeks regularly?</td>
<td>1. Yes - in the last 12 months, 2. Yes - less than 3 years ago, 3. Yes - more than 3 years ago, 4. No</td>
</tr>
<tr>
<td>PW18 Where did you work in the main current position?</td>
<td>1. In same district in West Bank, 2. In other district in West Bank, 3. In same district in Gaza Strip, 4. In other district in Gaza Strip, 5. Israel and Settlement, 6. Abroad</td>
</tr>
<tr>
<td>X18a Does your work permit or has any document to get to Israel or settlement?</td>
<td>1. Work with permit, 2. Work without permit, 3. Israel identity/Foreign passport/Jerusalem identity</td>
</tr>
<tr>
<td>X18b For the interviewer: Write detailed description to the work place</td>
<td>a. Major work place, b. Second work place</td>
</tr>
<tr>
<td>PW19 For whom did you work in the main current position?</td>
<td></td>
</tr>
<tr>
<td>PW20 What type of industry (economic activity) does this company establish work in?</td>
<td></td>
</tr>
<tr>
<td>PW21 What are the main duties and activities that do you at this work?</td>
<td></td>
</tr>
<tr>
<td>PW22 What is his/her main occupation at this work?</td>
<td></td>
</tr>
<tr>
<td>PW23</td>
<td>What is/was his/her employment status</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job (if the answer in PW95 is 1)</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job</td>
</tr>
<tr>
<td>pw23a</td>
<td>What is the legal status/organization of the enterprise where you work?</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job</td>
</tr>
<tr>
<td>pw23b</td>
<td>What kind of accounts do you keep for this activity?</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job</td>
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<tr>
<td>pw23c</td>
<td>Product destination</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job</td>
</tr>
<tr>
<td>pw23d</td>
<td>In the enterprise in which you work registered in the administration</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job</td>
</tr>
<tr>
<td>pw23e</td>
<td>How many persons (including yourself) usually work your enterprise/the enterprise where you are employed?</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job</td>
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<tr>
<td>pw23f</td>
<td>How many of them are paid employees?</td>
</tr>
<tr>
<td></td>
<td>a. Main Job</td>
</tr>
<tr>
<td></td>
<td>b. Second Job</td>
</tr>
<tr>
<td>For wage employees only (the answer in PW23 from 4-11)</td>
<td></td>
</tr>
<tr>
<td>pw23g</td>
<td>Are you employed permanently or temporarily/seasonal/occasional?</td>
</tr>
<tr>
<td></td>
<td>a. Main job</td>
</tr>
<tr>
<td></td>
<td>b. Second job</td>
</tr>
<tr>
<td>pw23h</td>
<td>Are you employed on the business in a written contract?</td>
</tr>
<tr>
<td></td>
<td>a. Main job</td>
</tr>
<tr>
<td></td>
<td>b. Second job</td>
</tr>
<tr>
<td>pw23i</td>
<td>Do you benefit from any of the following:</td>
</tr>
<tr>
<td></td>
<td>1. Yes 2. No 3. Not applicable</td>
</tr>
<tr>
<td></td>
<td>a. Main job</td>
</tr>
<tr>
<td></td>
<td>b. Second job</td>
</tr>
</tbody>
</table>

Only for those who answered PW23 4-10, and did not answer PW17:

<table>
<thead>
<tr>
<th>PW24</th>
<th>How long is he/she at this week?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Months:</td>
</tr>
<tr>
<td></td>
<td>b. Days:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PW25</th>
<th>How many days did work for wages last month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a. Months:</td>
</tr>
<tr>
<td></td>
<td>b. Days:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PW26</th>
<th>Since he/she worked for wage what was the amount for it</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Amount he/she received:</td>
</tr>
</tbody>
</table>
REFERENCES


Commission. Accessed April 22, 2014,


http://www.unesco.org/education/wef/countryreports/palestine/contents.html#cont


http://repository.upenn.edu/wharton_research_scholars/28


