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ECONOMIC AND SOCIAL BENEFITS OF GENDER PARITY IN EMPLOYMENT
AND EDUCATION

By: Elizabeth Jean Weathersby

A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of
the requirements of the Sally McDonnell Barksdale Honors College.

Oxford, MS
May 2019

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ABSTRACT

This thesis seeks to examine the ways in which women are disadvantaged in their participation in formal employment and participation and attainment in education relative to men across the world. Furthermore, this analysis examines the economic impacts of inequalities in education and employment at a macroeconomic level and on an individual level. Most data is compiled from various Non-Governmental Organizations that fund and orchestrate global research on gender equality. The results of this research consistently indicate that women continue to face systematic disadvantages in employment, wages, occupation, upward mobility in occupations, hours worked, entrepreneurship, burden of unpaid work, educational attainment, and types of education. Furthermore, it was found that the economic impacts of the lack of gender parity in employment are extremely large and significant. In many areas of the world regional economies could see substantial growth from women increasing their participation in the economy to the same rate as men. Similar economic returns could be seen from increased female educational attainment, both on the societal and individual level. Aside from the economic impacts from education and employment parity, there are also social benefits for women who can gain more autonomy and decision making power through access to education and employment. Overall, there are important benefits to gender parity in education and employment, but achieving these goals will require substantial commitment and efforts from governments, organizations, and the population in general. Many systemic factors impede forward progress for women and they can only be

addressed through continued policy implementation and other initiatives that incentivize and normalize gender equality in education and employment.

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LIST OF ABBREVIATIONS

GDP	Gross Domestic Product
IRR	Internal Rate of Return
MGI	McKinsey Global Institute
OECD	Organisation for Economic Cooperation and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
UK	United Kingdom
UN	United Nations
WEF	World Economic Forum

CHAPTER ONE

I. Introduction

There are large discrepancies between men and women in labor force participation, wages, working hours, employment in certain occupations, entrepreneurship, and in unpaid work (World Bank, 2011, p.xxi). The gaps between women and men in economic participation and compensation are seen all over the world and are holding the global economy back from increased development while also keeping women at a societal disadvantage (Organisation for the Economic Cooperation and Development [OECD], 2012, p.74). This section seeks to examine the gender inequalities in employment, the benefits of women's participation in the economy, the reasons women are not entering the formal economy¹, and how to increase female economic participation.

II. The Lack of Gender Parity in Employment

Women are at a disadvantage in employment on many different dimensions. Women lack access to equal employment, entrepreneurship opportunities, wages, and career advancement (World Bank, 2011, p.xxi). In order to gain a greater understanding of the challenges that women face it is important to examine each way in which women

¹ Formal economic employment is defined by World Bank (2012) as employment that is registered with the government, pays taxes, workers' rights are protected by the laws of the governing body, and where there is a clear, written delineation of pay and expectations.

are disadvantaged, the differences in gender parity across regions, and the drivers of gender inequalities.

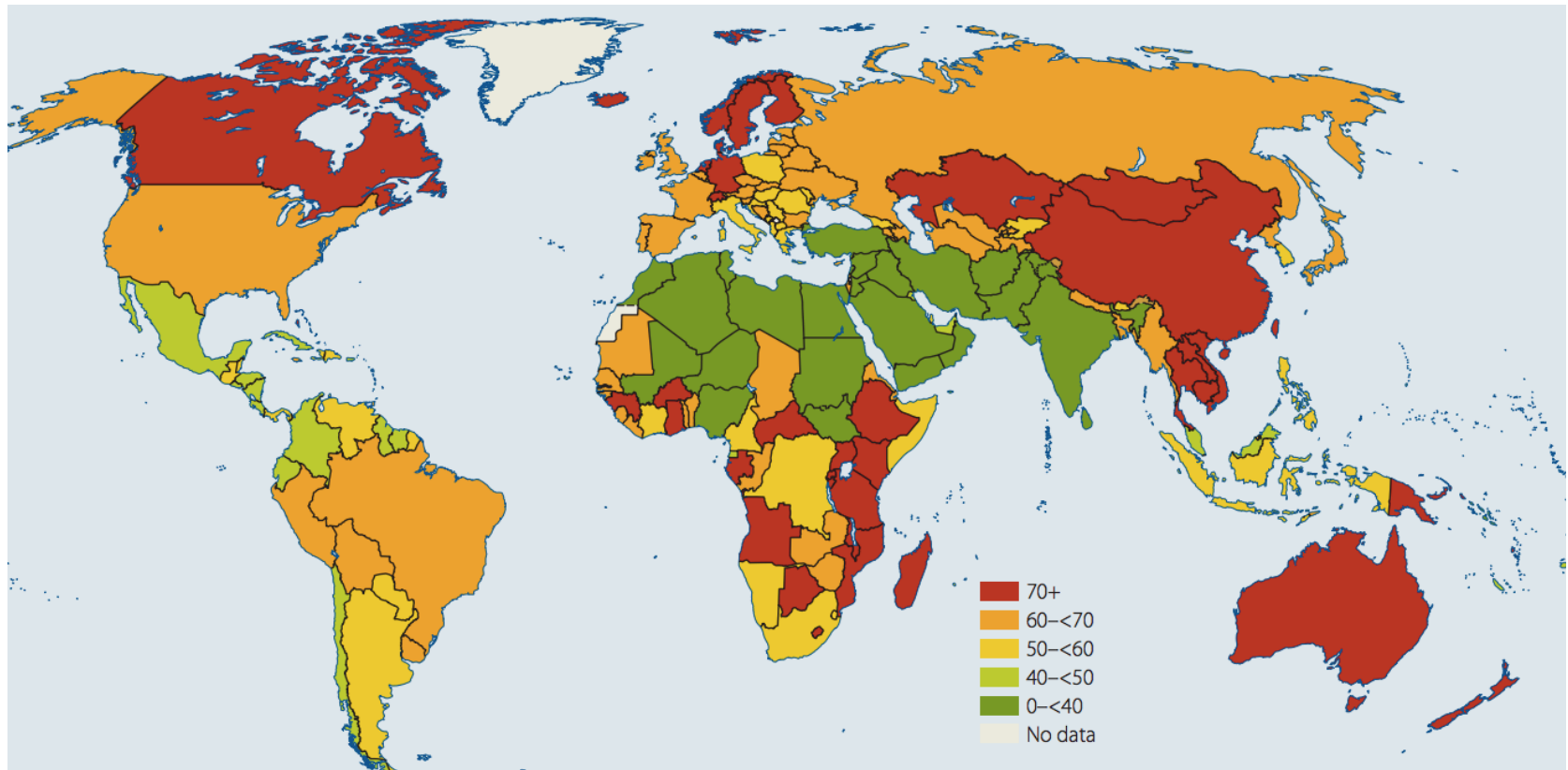
A. Labor Force Participation

The rate of female labor force participation is lower than that of men in every region of the world (OECD, 2012. p.73). Labor force participation is a measure that represents the number of people in the labor force divided by the total number of people between the ages of 15-64 (OECD, 2012). While there have been improvements in the labor force participation rate, there are still significant gaps between the percentage of women involved in the labor force and the percentage of men involved (OECD, 2012, p.73).

Furthermore, rates of women's economic participation are quite varied across countries (OECD, 2012, p.73). Figure 1-1, reproduced from the World Bank (2011), shows labor force participation rates for women, by country (p.199). The large differences between countries and regions in terms of female labor force participation can be seen in Figure 1-1. Certain countries like China, Australia, and Canada all exceed 70% in female labor force participation, while many countries in the Middle East and North Africa fall below 40% female labor force participation (World Bank, 2011, p.199). In the OECD² there is an average of 65% of women aged 15-64 in the labor force, however in countries such as India, Mexico, South Africa, and Turkey, the rate was below 50% (OECD, 2012, p.73). Furthermore, in the Middle East and North Africa the labor force participation gender gap is over 50%.

² Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Poland, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and The United States

Figure 1-1: Female Labor Force Participation Rate (%) Across the World



Source: World Bank. 2011. *World Development Report 2012: Gender Equality and Development*. Washington, DC: World Bank.

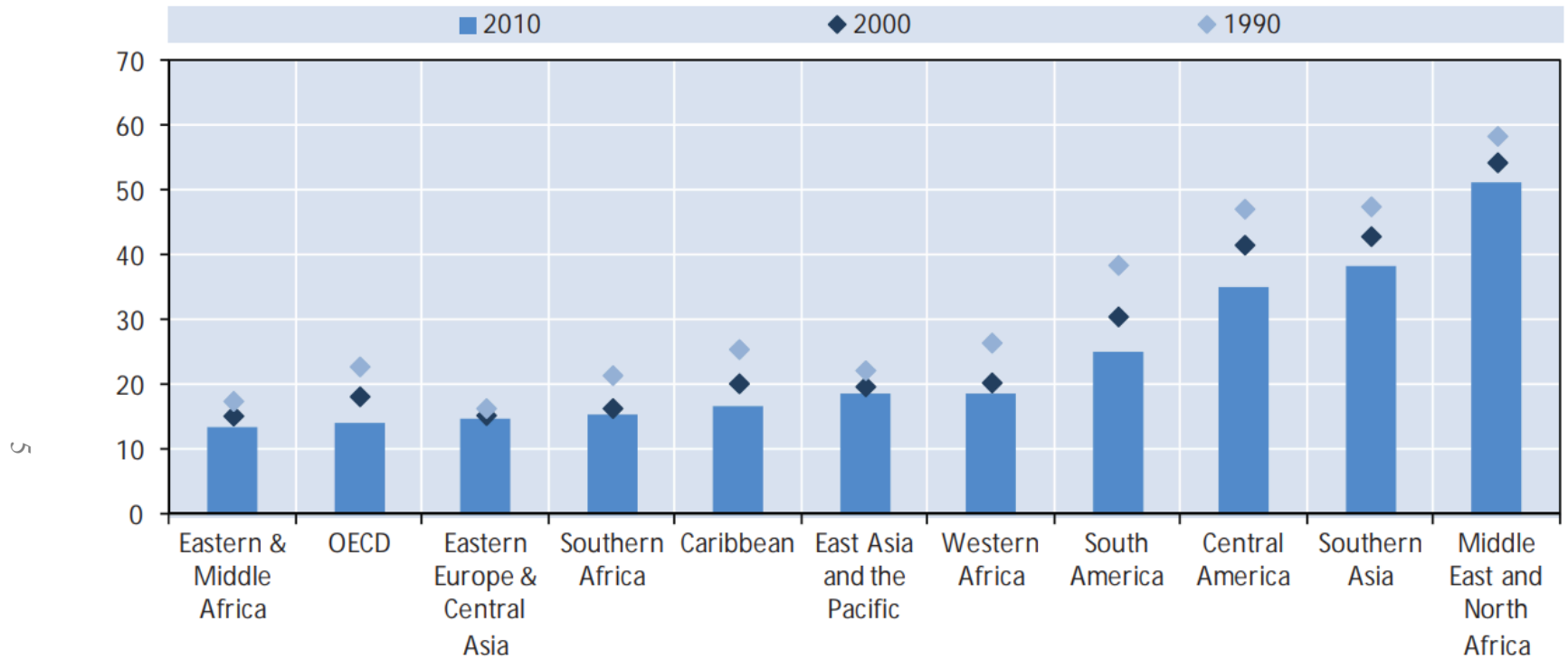
Figure 1-2, reproduced from the OECD (2012), shows the changes in the gender gap in labor force participation from 1990-2010 across different regions (p.74).

B. Occupational Segregation

Another issue with women's economic participation is the segregation of women into certain sectors of employment (OECD, 2012, p.76). Women are mostly relegated to the service sector with 47% of all employed women holding service sector positions as compared to only 40% of men (World Bank, 2011, p.206). Table 1 shows that, in all regions, a lower percentage of women are employed in industry than men (OECD, 2012, p.75). Furthermore, Table 1-1 illustrates that in all regions, except South Asia, a larger proportion of women are engaged in service sector employment, and in some cases the gender difference is significant. In the Caribbean 28% more and in Central America 34% more employed women engage in service sector activities than men (OECD, 2012, p.75).

By decomposing the service sector, the OECD (2012) identified specific occupations that employ women more than men (p.76). The activities that have the highest proportion of female employees ("feminsation rates"), in OECD countries as of 2010, include health and community services at 78% and education at 70%. However, some service sectors are dominated by men. These include finance, real estate, and business activities, transportation, storage, and communication, and public administration and defense (OECD, 2012, p.76). These proportions can be seen in Figure 1-3. Figure 1-4 shows the distribution of women in each subdivision of the service sector, with 65% of women who work in the service sector being employed in retail, health and social work, and education (OECD, 2012, p.76).

Figure 1-2: Gender Gap (%) in Labor Force Participation Rates Ages 15-59



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author.

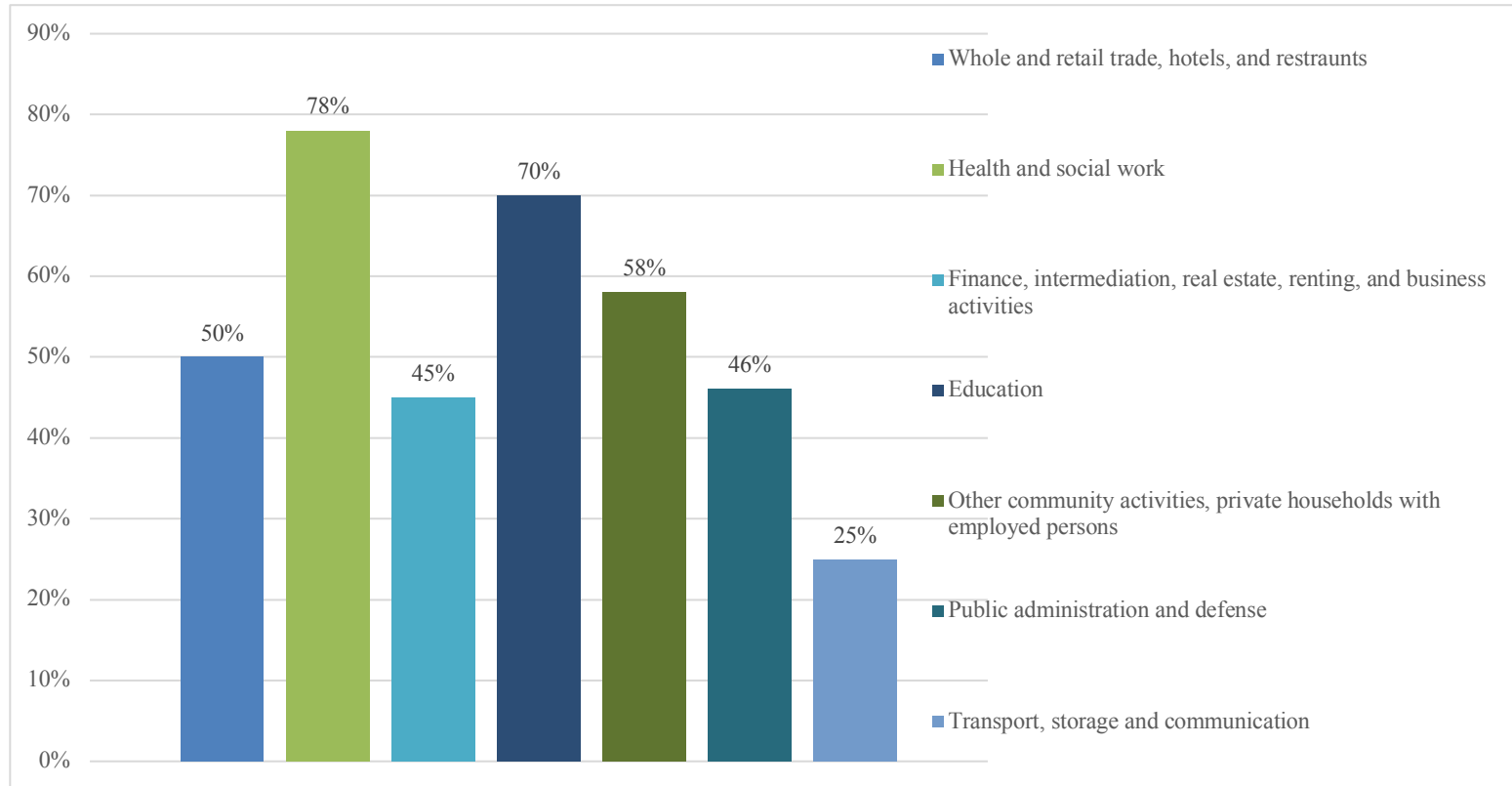
Table 1-1: Percentage of Employed Women and Men Working in Each Economic Sector

	Women				Men			
	Agriculture	Industry	Services	All Activities	Agriculture	Industry	Services	All Activities
Caribbean	3%	9%	88%	100%	11%	29%	60%	100%
Central America	8%	16%	76%	100%	34%	23%	42%	100%
East Asia & The Pacific	31%	12%	56%	100%	33%	20%	46%	100%
Eastern & Middle Africa	58%	8%	34%	100%	52%	14%	34%	100%
Eastern Europe & Central Asia	23%	14%	63%	100%	23%	30%	47%	100%
Middle East & North Africa	21%	7%	72%	100%	12%	29%	58%	100%
OECD	5%	12%	83%	100%	6%	34%	60%	100%
South America	12%	12%	76%	100%	20%	28%	52%	100%
Southern Africa	12%	11%	77%	100%	21%	26%	53%	100%
Southern Asia	51%	19%	28%	100%	35%	20%	41%	100%
Western Africa	53%	7%	36%	100%	60%	11%	27%	100%

Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and*

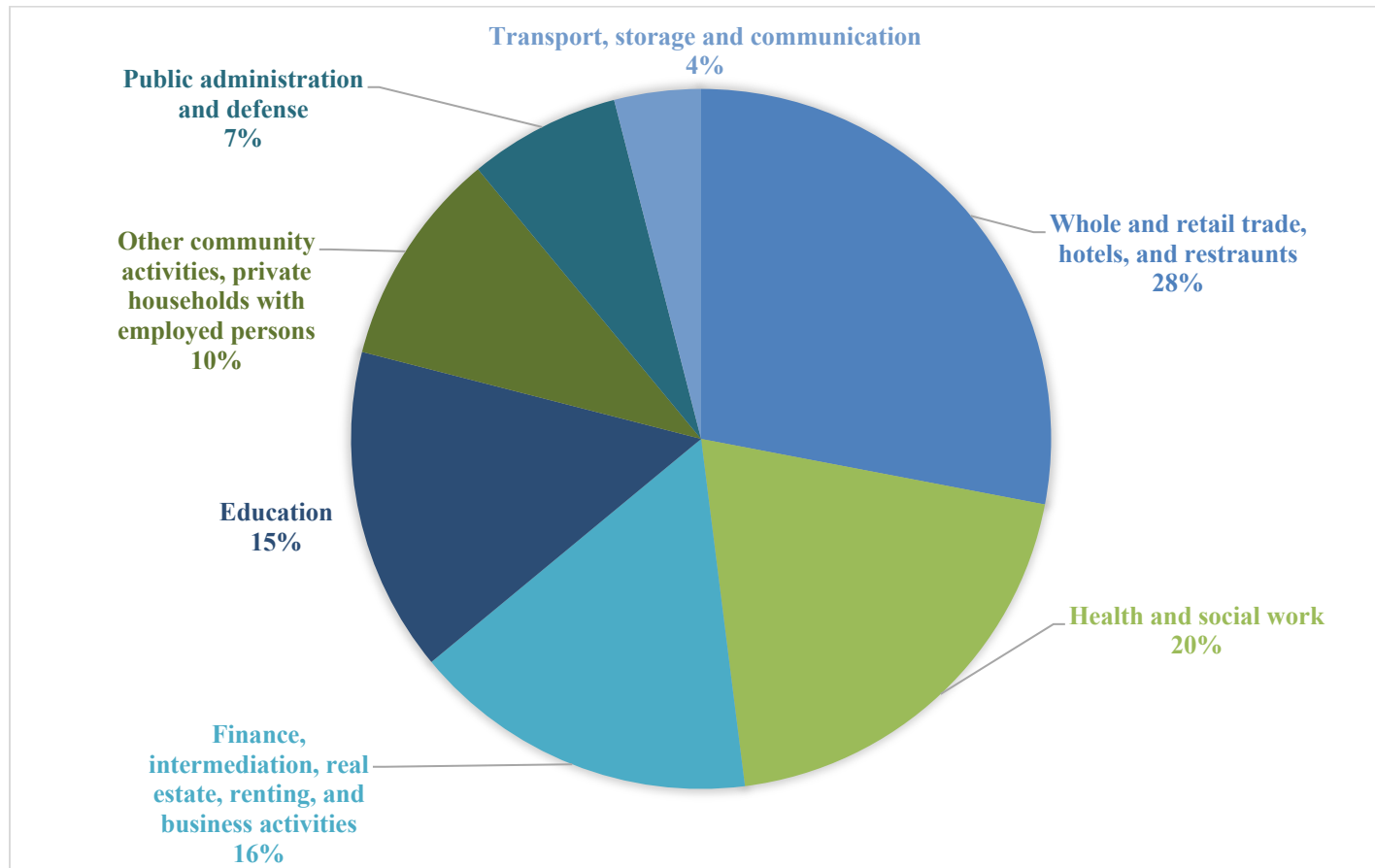
Entrepreneurship: Final Report to the MCM 2012. Paris, France: Author, p.75

Figure 1-3: Feminization Rates of Service Activities



Adapted from: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.76

Figure 1-4: Distribution of Female Service Sector Employment by Subdivision



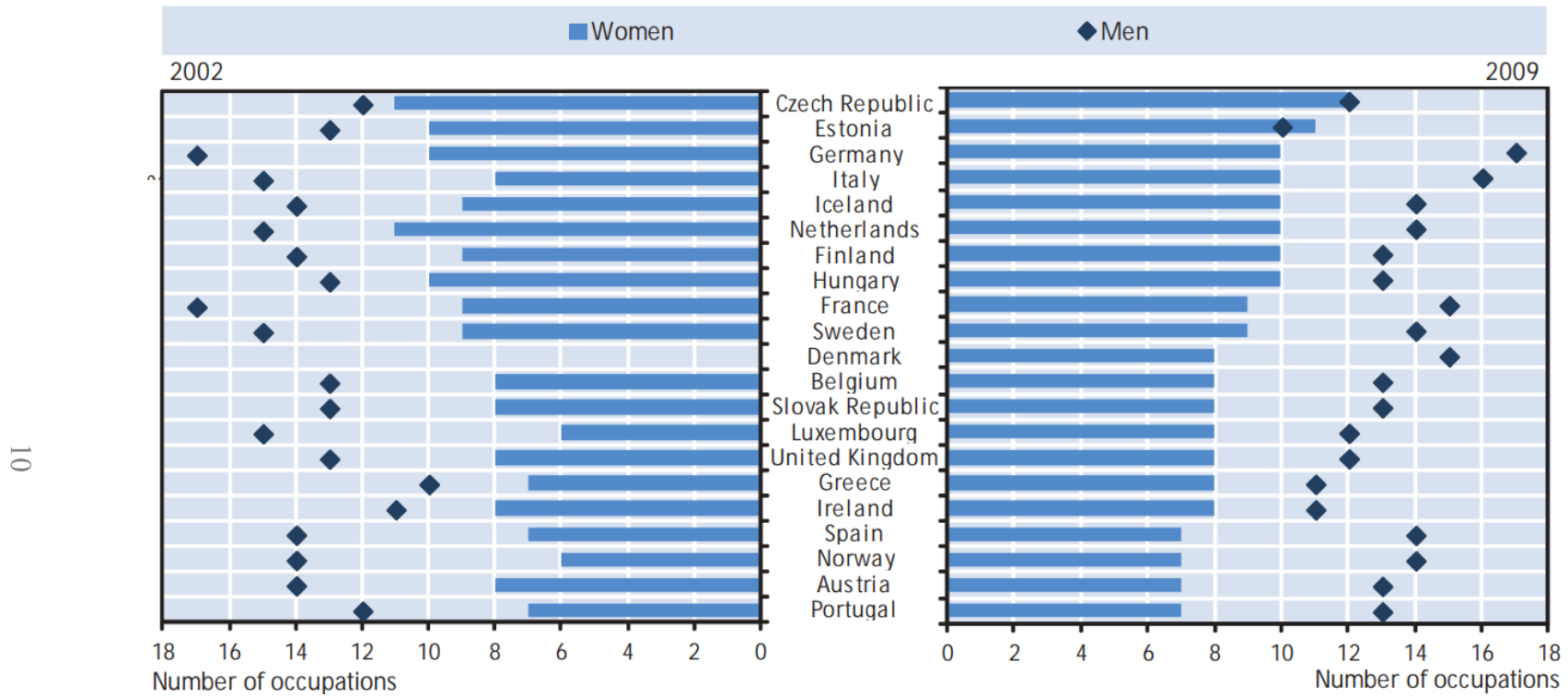
Adapted from: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. P.76

In the 1990's it was widely believed that due to technological advances women would become increasingly involved in more sectors of the economy, however, this has not occurred and women continue to be concentrated in fewer occupations than men (OECD, 2012, p.77). The phenomena of women being heavily involved in fewer occupations than men is called horizontal segregation and can be seen in Figure 1-5. Figure 1-5, created by the OECD (2012), shows that for all countries, except The Czech Republic and Estonia, 50% of employed women are engaged in a smaller number of occupations than 50% of employed men (p.78). Furthermore, it can be seen that the horizontal segregation of women has shown little progress in recent years (OECD, 2012, p.78).

C. Upward Mobility

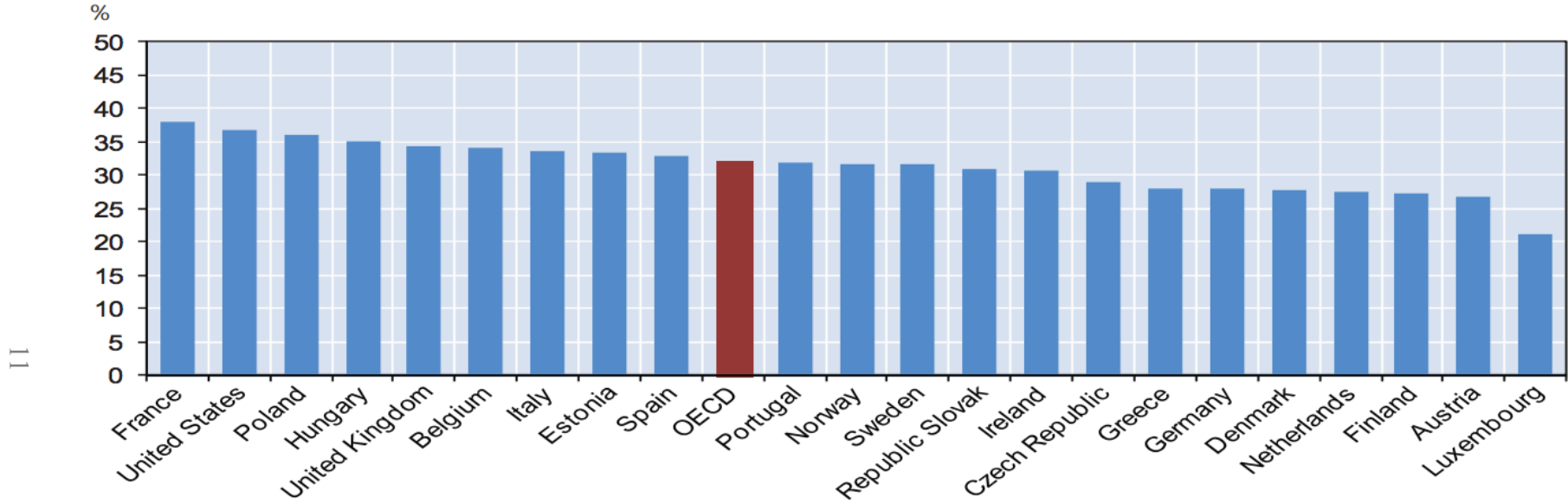
Women also face issues regarding upward mobility in the workplace (OECD, 2012, p.78). The highest proportion of women in upper management positions is shared by the United States, Poland, and France where around 35% of managerial positions are occupied by women (OECD, 2012, p.78). Meaning that the smallest gap between men and women in managerial positions in any country is 30 percentage points. The so called “vertical segregation” of employment that keeps women from entering higher positions is one of the largest disparities that affects women’s equality in the workforce. Figure 1-6 shows the percentage of females in managerial positions by country (p.78). In Figure 1-6 it can be seen that all countries studied are substantially removed from gender parity in managerial positions with countries like Germany, Denmark, and The Netherlands that have over 70% female labor force participation only slightly exceeding 30% in the proportion of females in managerial positions.

Figure 1-5: Number of Occupations that Account for 50% of Employed Men and Women



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.78

Figure 1-6: Proportion of Women Among Staff with Managerial Responsibilities



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.78

The McKinsey Global Institute (MGI) reports that the gender gap in upper level positions is almost twice as high as the global gender gap in labor force participation (Dobbs, Devillard, Ellingrud, Krishnan, Kutcher, Labaye, Manyika, Madgavkar, & Woetzel, 2015, p.62). Additionally, Dobbs et al. (2015) determined that, globally, for every 100 men in occupational leadership positions, there are only an average of 36 women and the higher the position, the greater the gap becomes (p.62). Only 4.6% of S&P 500 companies have women CEOs and only 25.1% of senior or executive level managers are women (Dobbs et al., 2015, p.62). Furthermore, Dobbs et al. (2015) assigned 68% of countries the rating of “extremely high inequality” in terms of the parity between men and women in leadership positions, meaning that there is over a 50% different between men and women (p.62).

The expectation of women to be primarily responsible for domestic duties affects women’s employment rates, in general, and is at the root of the gap between men and women in upper level positions as well (OECD, 2012, p.5). The MGI conducted a survey of male and female managers and found that the burden of balancing work and domestic life was the most cited obstacle that women leaders face, with 45% respondents in The Asia-Pacific Region, and 34% of respondents in Europe citing this reason (Dobbs et.al., 2015, p.63).

D. Inequality in Working Hours

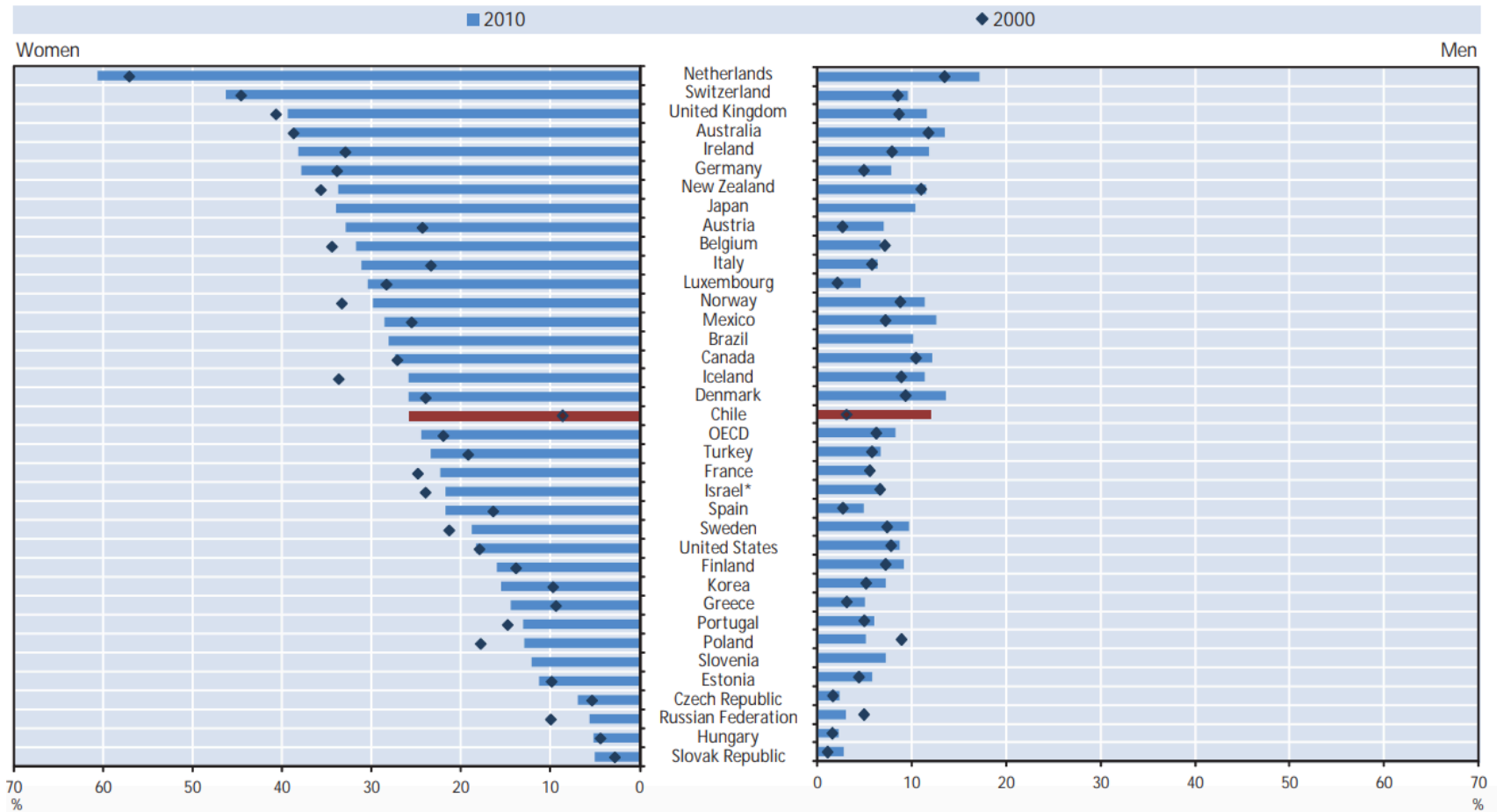
Another issue with women’s employment and wage equality is the difference in hours worked and participation in part-time work between women and men (OECD, 2012, p.81). Part-time work (defined as working less than 30 hours a week) as an institution increased substantially during the 1980-1990s and remains prevalent today

(OECD, 2012, p.81). However, the OECD (2012) finds that, engagement in part-time work is far more prevalent among women than men (p.81). Figure 1-7 shows that men are employed in part-time work at a substantially lower rate than women across every country.

While part time work is helpful for incorporating women into the economy, it leads to a disproportion in working hours and wages between genders because there is a corresponding gap in full-time employment that favors men (OECD, 2012, p.81). Furthermore, in most instances women are not using part-time work as a means to advance to full-time employment (OECD, 2012, p.81). For example, in a study the OECD (2012) found that only 3% of women in the UK who have worked part-time for up to six years move to full-time employment (p.81).

Many women utilize benefits of flexible schedules of part-time work so they can tend to their demanding domestic duties (OECD, 2012, p.83). However, there are also serious consequences of part-time work (OECD, 2012, p.83). The OECD (2012) found that the negative impacts of part-time work include less professional development, job security, promotion, pension benefits, and movement into upper level positions (p.83). Part-time work can also penalize women who move back to full-time employment due to the fact that, after they transition back to full-time employment, women experience lower hourly wages and slower long-term wage growth (World Bank, 2011, p. 220). Furthermore, over time lower working hours for women leads to less economic independence and greater economic insecurity (World Bank, 2011, p.220).

Figure 1-7: Percentage of Men and Women Who Work Part-Time by Country



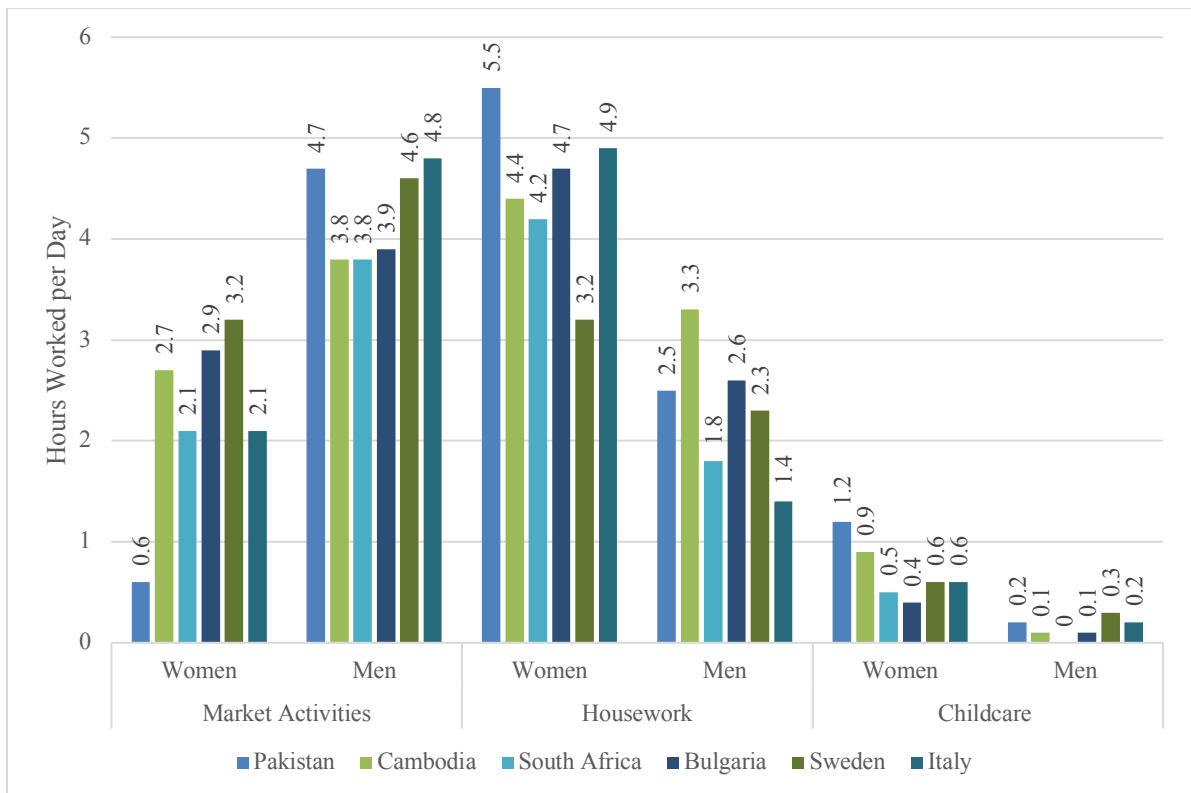
Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p. 82

One example of how working fewer hours can harm women's economic independence is in pensions (World Bank, 2011, p. 156). Women who work less hours generally earn less and, therefore, accumulate less pension benefits, if they accumulate any at all (World Bank, 2011, p. 156). The World Bank (2011) finds that in the United States, for example, the same proportion of women and men hold pension accounts, but, women's pension accounts are, on average, half the size of men's (p. 156). The lack of substantial pension benefits for women decreases women's ability to be financially autonomous if they were to separate from their partners at an older age (World Bank, 2011, p. 156). Furthermore, the lack of a personal pension leads women to have less influence over purchasing decisions in the household (World Bank, 2011, p. 154)

Just because women are working fewer formal market employment hours does not mean they are actually contributing less productive hours to their households (World Bank, 2011, p.17). Dobbs et al. (2015) report that women do an average of 75% of the world's total unpaid work, including, cooking, cleaning, and child care, which is estimated to be about \$10 trillion dollars of output every year lost, equivalent to 13% of global GDP (p.30). The gap between men and women in unpaid work is also negatively related to other inequalities in employment such as wages, occupations and leadership positions (Dobbs et.al. 2015, p.62). Furthermore, the MGI rated 58% of countries to have extremely high gender inequality in unpaid work caregiving for elderly or young family members (meaning 50% or greater inequality between men and women), and an additional 38% of countries were rated as having high inequality (meaning 25% or greater inequality between men and women). Dobbs et al. found that unpaid care work is the factor related to gender equality in work with the highest level of inequality between

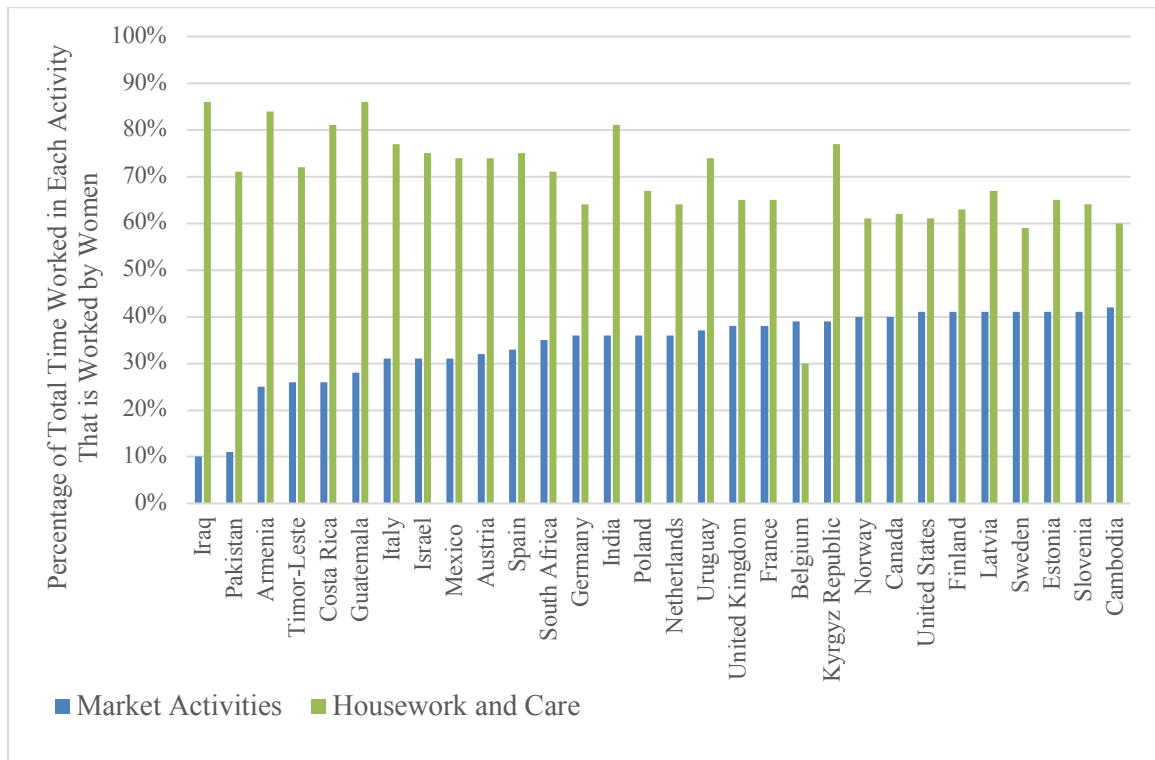
genders (Dobbs et.al. 2015, p.62). Figure 1-8 shows that women work more hours on housework and childcare than men across all countries measured, while men spend more hours on market activities. Women spend an average of one to four hours less than men on market activities per day, however, they typically spend, on average, one to three hours more on housework and an average of two to ten times as many hours on childcare per day, depending on the country (World Bank, 2011, p.17). Figure 1-9 presents the percentage of total time spent on market activities and housework and care that is done by women and demonstrates the same trend of women spending less time on market activities and more time on household activities than men.

Figure 1-8: Hours Worked per day by Activity and Gender



Adapted from: World Bank. 2011. *World Development Report 2012: Gender Equality and Development*. Washington, DC: World Bank. p.219

Figure 1-9: Percentage of Total Time Spent on Market Activities and Housework and Care that is Worked by Women



Adapted from: World Bank. 2011. *World Development Report 2012: Gender Equality and Development*. Washington, DC: World Bank.

There are strategies that have augmented the levels of full-time female employment that involve providing incentives and lowering the opportunity cost of full-time employment for women (World Bank, 2011, p.222). The World Bank (2011) reports that many women who are engaged in part-time employment are mothers (p.223). In the United Kingdom, women with young children are 50% more likely to engage in part-time work than men with young children (World Bank, 2011, p.223). Due to the relationship between hours engaged in market work and the instance of having children for women, increased enrollment of children in child care is a strong indicator of higher

full-time female employment (OECD, 2012, p.83). Additionally, the OECD (2012) states that the rate of part-time work for females is higher in countries where the cost of childcare is higher. The lack of affordable childcare increases the opportunity cost of full-time employment and women are often forced to make adjustments to their working arrangements to accommodate childcare (OECD, 2012, p.83).

Education and wage levels of women are also associated with equality in market hours worked (World Bank, 2011, p.218). In general, as the education level and educational parity between genders increases so does the equality in market hours worked (World Bank, 2011, p. 218). Furthermore, The World Bank (2011) reports that if women are contributing higher incomes to their households, the hours of market work are more evenly distributed between men and women as well (p. 219). However, women who are higher earners still end up spending more time on childcare and household work than men, they just increase their overall hours worked (World Bank, 2011, p. 219).

E. The Wage Gap

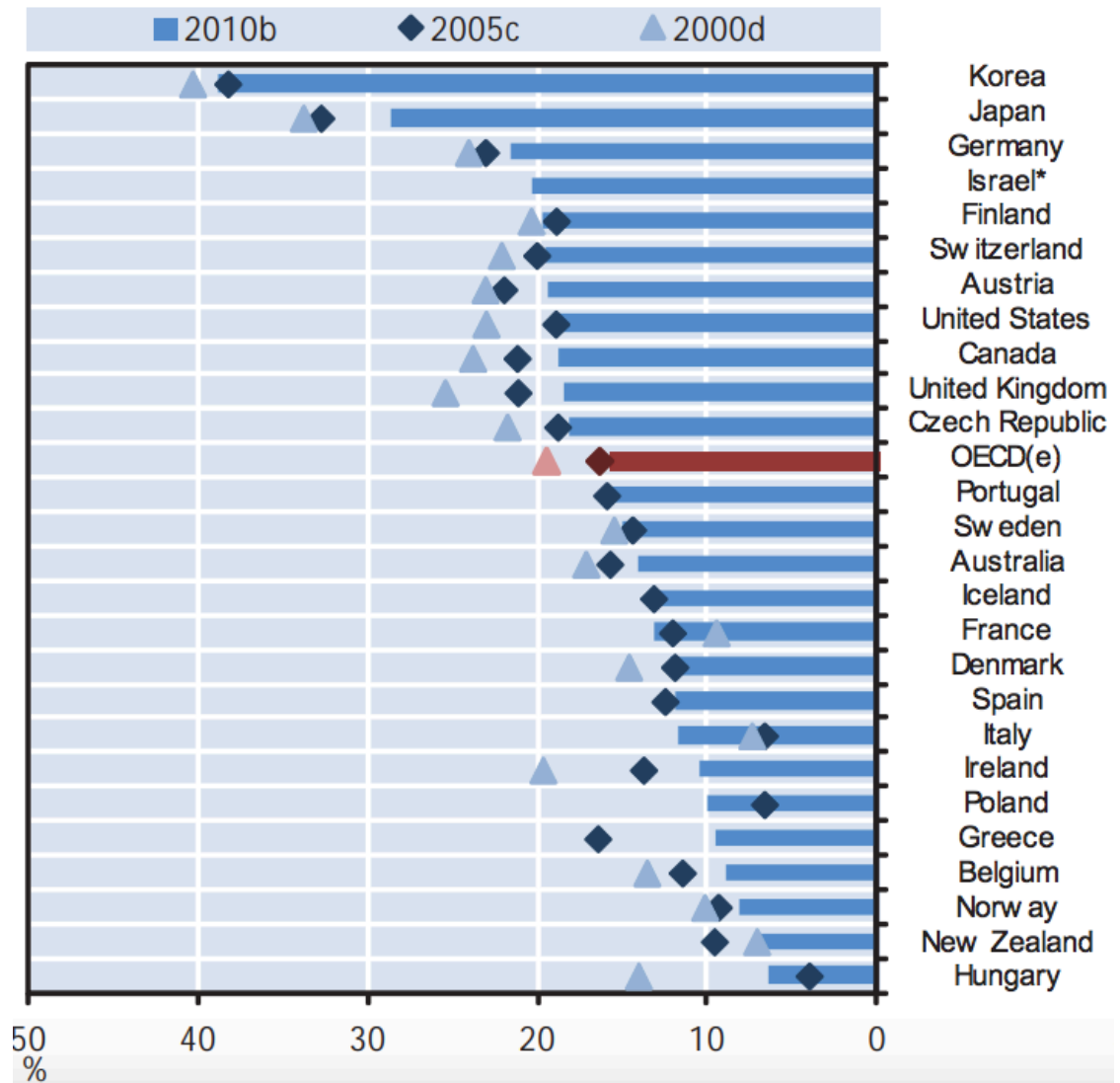
The wage gap between women and men remains significant in developing and developed countries around the world although it has been reduced greatly (World Bank, 2011, p.201). A 2010 study of OECD countries confirmed an average 16% wage gap between women and men when comparing only full-time labor, which was a 4% decrease from 2000 (OECD, 2012, p.85). However, the wage gap decrease was mostly realized by 2005 and has not decreased much since then (OECD, 2012, p.85). The wage gap varies from country to country, even among developed nations, with some countries, such as New Zealand, reporting a gap as low as 7% and others, such as Korea, reporting a nearly 40% gap (OECD, 2012, p.85). Figure 1-10 shows the differences in the wage gap by

country and over the time period from 2000-2010. Furthermore, Figure 1-10 demonstrates that the wage gap, in most cases, has not changed significantly from 2005.

Furthermore, according to the OECD (2012), amongst top earners, the wage gap widens to an average of 21% (p.85). The OECD (2012) also reports that in certain countries, such as Ireland and Australia, the increase in the wage gap for top earners is over 10% (p.86). An increase in the wage gap for high earners suggests that there are more barriers to women being able to enter top positions and earn high levels of compensation (often referred to as the “glass ceiling”) (OECD, 2012, p.85). Furthermore, the effect of the wage gap between high-earning males and females is still present in studies that controlled for different occupations and sectors (OECD, 2012, p.85). The OECD (2012) reports that although rare, exceptions to the increased wage gap for top earners exist in countries, such as Spain, Germany and Austria, where the wage gap of top earners is relatively smaller than in lower-earning positions (OECD, 2012, p.85). The smaller wage gap for top earners in these countries indicates that potentially only highly qualified women make it into the upper echelon of positions and are, therefore, more equally compensated (OECD, 2012, p.85).

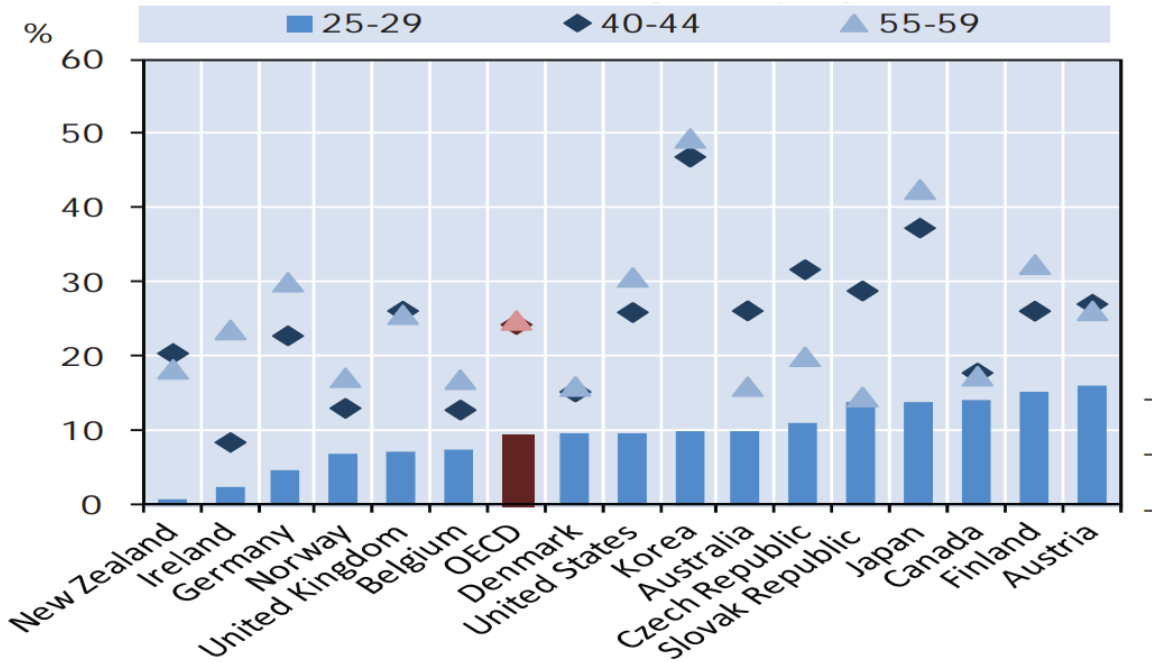
The pay gap between men and women also increases with age. The gap is relatively small in the youngest generation but becomes more prominent throughout the progression of the age structure (OECD, 2012, p.87). In 2010 the average wage gap across 16 countries was 9% for 25-29 year olds, but 24% for 55-59 year olds (OECD, 2012, p.87). Figure 1-11 presents the changes in wage gap by age range, and shows that with increases in age the wage gap also increases.

Figure 1-10: The Gender Pay Gap for Full Time Employees Over Time



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p. 86

Figure 1-11: Gender Wage Gap by Age



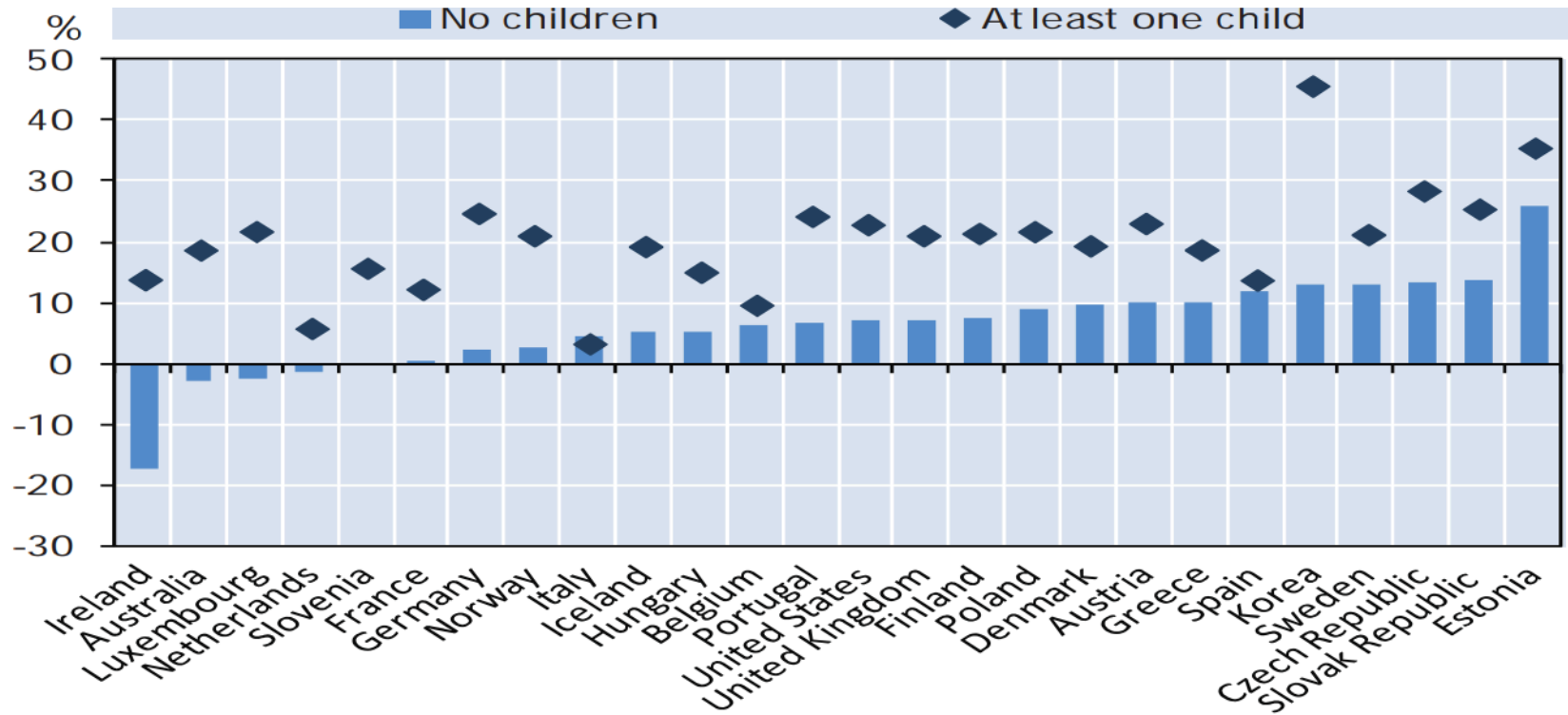
Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p. 87

Reduction in the wage gap in younger generations is a due to a variety of factors, but there is evidence that the recent development of human capital, through increases in women’s education, and encouraging young women to enter traditionally male-dominated fields of employment, have contributed to the trend (OECD, 2012, p.87). However, the OECD (2012) states that after controlling for differences in education and sector choices there is still a rise in the wage gap that corresponds with increased age (OECD, 2012, p.87). The remaining difference in the wage gap between generations can likely be explained by the negative effect that having children has on earnings for women (OECD,2012, p.88). Women who have children, but still work full time, earn about 14%

less than women without children, however, the gap does not exist for men (OECD, 2012, p.88). Figure 1-12 shows that the wage gap between men and women increases when the woman has at least one child.

In order to create strategies to rectify the wage gap it is important to understand the characteristics driving it (OECD, 2012, p.88). The OECD (2012) conducted a study to evaluate which characteristics contribute to the wage gap (OECD, 2012, p.88). The OECD (2012) evaluated variables such as education, experience, hours worked, child care availability, discrimination, and job segregation in order to explain the wage differential between men and women. The OECD (2012) reports that differences in hours worked and job segregation are important factors driving the wage gap (p.88). Job segregation, refers to the phenomena of women choosing jobs with more flexible hours, jobs that are more compatible with their domestic obligations, or jobs closer to their homes that could affect a woman's ability for upward mobility and higher pay (OECD, 2012, p.88). In order to account for job segregation researchers used type of occupation and industry to quantify job segregation between genders (OECD, 2012, p.88). The variables of job segregation, working hours, and experience together explain 30% to 60% of the wage gap depending on the country (OECD, 2012, p.88). However, it is difficult to quantify the extent to which women's employment choices are affected by expected domestic duties and is not fully captured in occupational or industry gender differentials (OECD, 2012, p.89). Therefore, some of the unexplained wage gap could be due to factors like the need for flexible hours, distance to workplace, the need to work from home (OECD, 2012, p.89).

Figure 1-12: Gender Wage Gap by Presence of Children



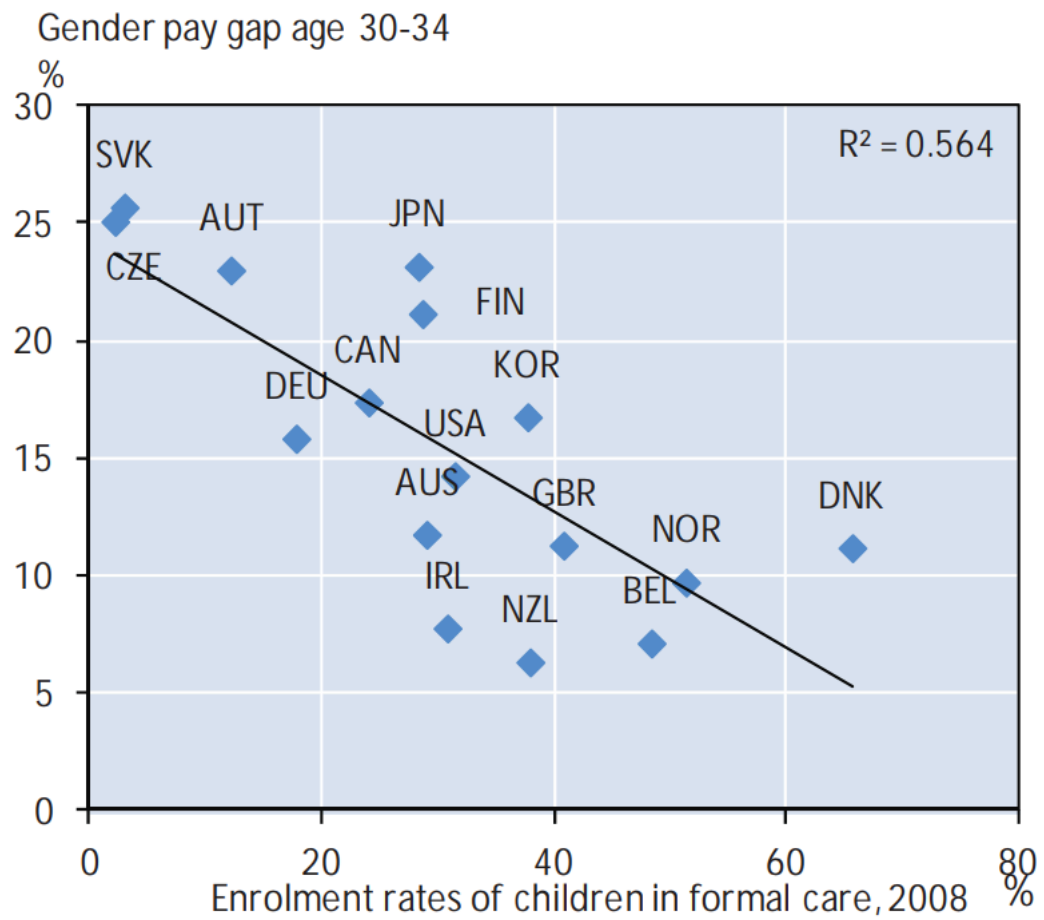
Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p. 88

Enrollment rates of young children in formal child care also relate to the wage gap (OECD, 2012, p.89). The OECD (2012) finds that higher rates of enrollment in childcare for younger children is related to a lower wage gap (OECD, 2012, p.89). Figure 1-13 shows the inverse relationship between the percentage of children enrolled in childcare and the gender pay gap between ages 30-34. However, there is still a large portion of the wage gap that is unexplained by characteristics observed in the OECD's (2012) research (p.89). Discrimination is likely causing some of the unexplained wage gap, however, it is hard to quantify or monitor to what extent discrimination is an important factor (OECD, 2012, p.90).

F. Entrepreneurship

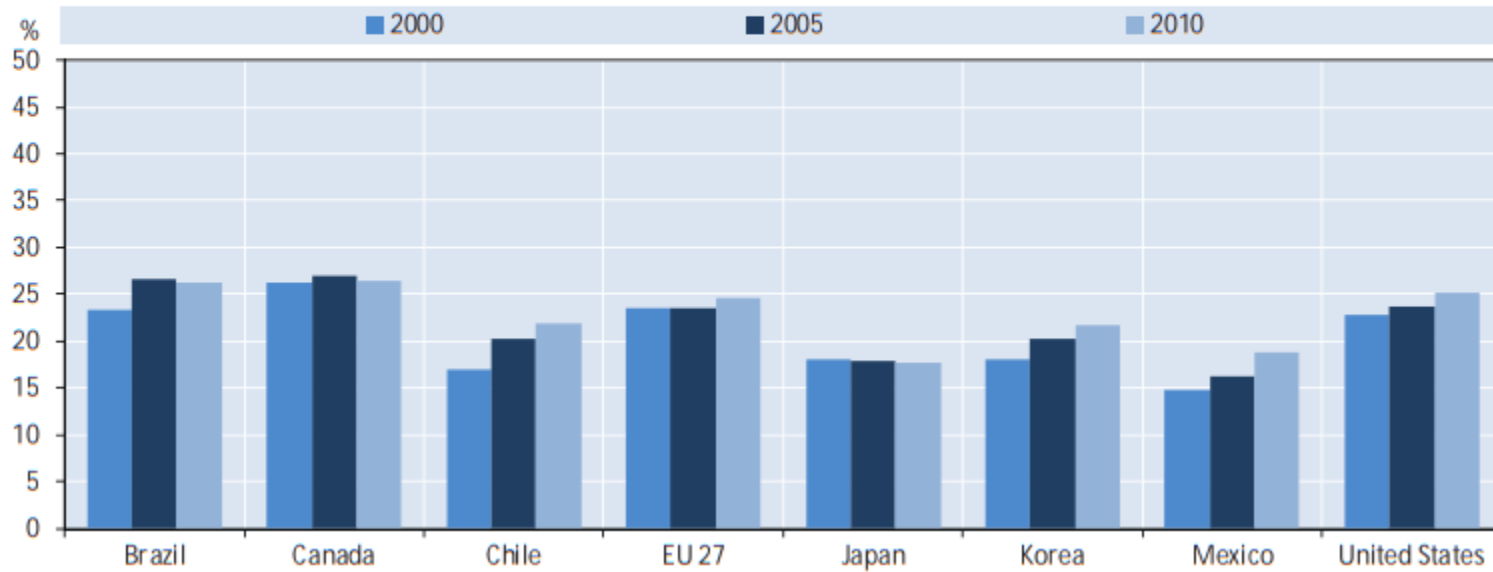
Women are also disadvantaged in entrepreneurship. Women's entrepreneurship is not as prevalent or as productive as male entrepreneurship (OECD, 2012, p.130). Recent data indicates that only 25% of self-employed entrepreneurs with businesses that have employees are run by women (OECD, 2012, p.130). Furthermore, the OECD (2012) indicates that the percentage of female-owned enterprises has not significantly increased over the last decade (p.130). Figure 1-14 shows the percentage of total self-owned enterprises that also have employees owned by women barely exceeds 25% in any country. Furthermore, Figure 1-14 shows that the proportion of female-entrepreneurship has not increased significantly from 200-2010. In addition to engaging in less entrepreneurship, women also indicate a lower preference than men for entrepreneurial activities as opposed to employment by another entity (OECD, 2012, p.130). For example, a survey by the OECD (2012) reports that approximately 10% fewer women than men in the United Kingdom prefer to be self-employed (p.130).

Figure 1-13: The Relationship Between the Wage Gap and Enrollment in Formal Childcare



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.89

Figure 1-14: Proportion of Entrepreneurs (Self-Employed with Employees) Who are Women



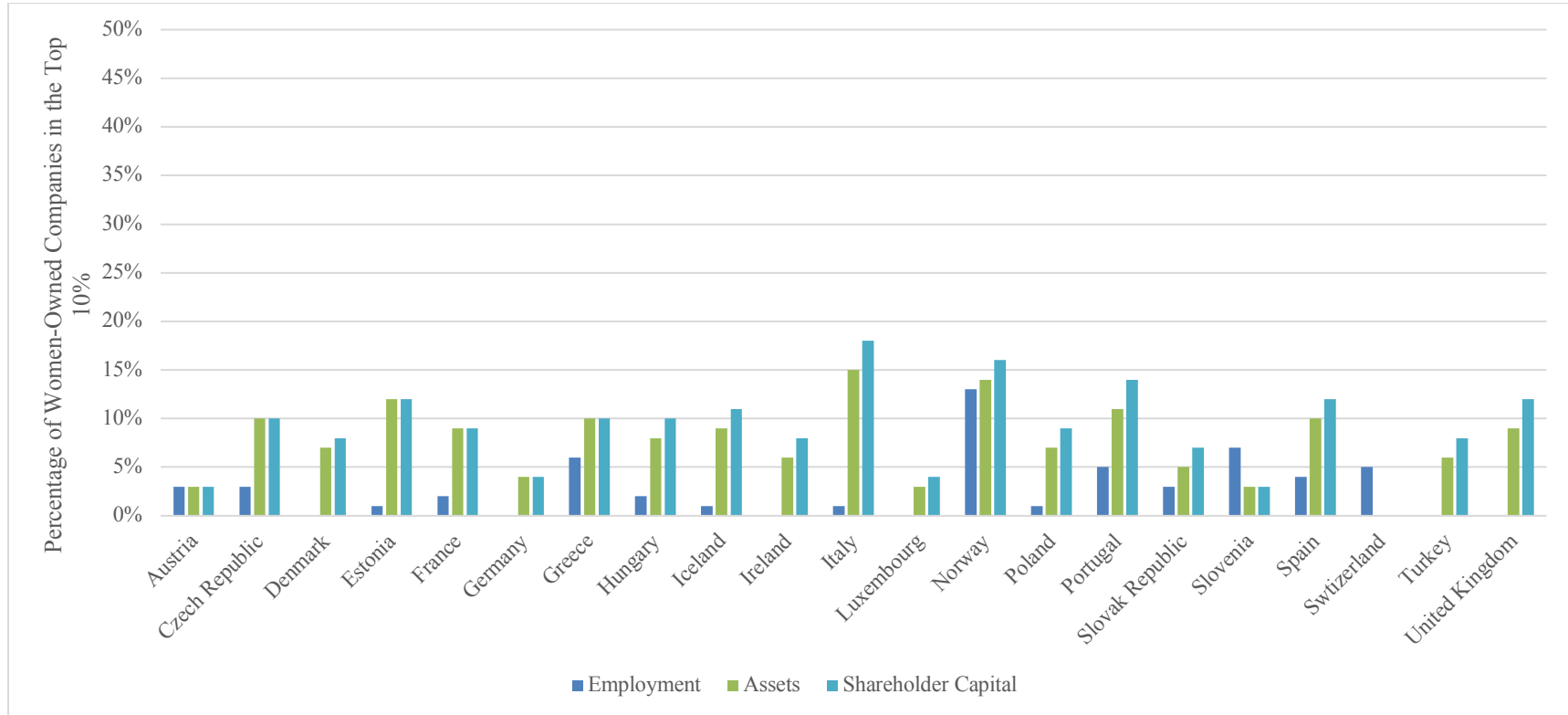
Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.131

The OECD (2012) also finds that much of the reason women have less desire to be self-employed is due to their perceptions of entrepreneurship as being too risky (p.130).

Other issues plague women's entrepreneurship outside of simple inequality between the number of men and women who own a business. Not only are fewer women involved in total entrepreneurial activities, but businesses created by women generally have fewer assets, fewer employees, shorter survival rates, less investment, and are less productive (OECD, 2012, p.132). The OECD (2012) found that in 2007, U.S. businesses owned by women (defined as having 50% of the business owned by one or multiple women) accounted for only 11% of sales for privately held companies (p.134). Sales directly relate to profitability and, therefore, the amount of income women make from their business. The OECD (2012) found that, across the 24 countries³ studied, self-employed women earn less than self-employed women across. Furthermore, in many cases, the earnings gap is exceptionally large, for example, in Germany there is over a 60% gap in median wage between female and male entrepreneurs (OECD, 2012, p.134). The results of another OECD (2012) study are presented in Figure 1-15, which portrays the percentage of women-owned companies in the top 10% of companies in a country in terms of number of employees, value of assets, or value of shareholder capital (OECD, 2012, p.134). Among all countries presented in Figure 1-15, there were no instances of women-owned enterprises reaching or exceeding 20% representation in any of the countries or categories, indicating a large issue in the gender parity of entrepreneurial success (OECD, 2012, p.134)

³ Sweden, Hungary, Denmark, Norway, Luxembourg, Finland, Italy, Czech Republic, Belgium, Slovak Republic, Spain, Australia, Poland, Portugal, Slovenia, Greece, Austria, Ireland, United States, Iceland, Great Britain, Netherlands, and Germany.

Figure 1-15: Percentage of Women-Owned Companies that are Among the Top 10% of Companies by Employment, Assets, and Shareholder Capital



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.134

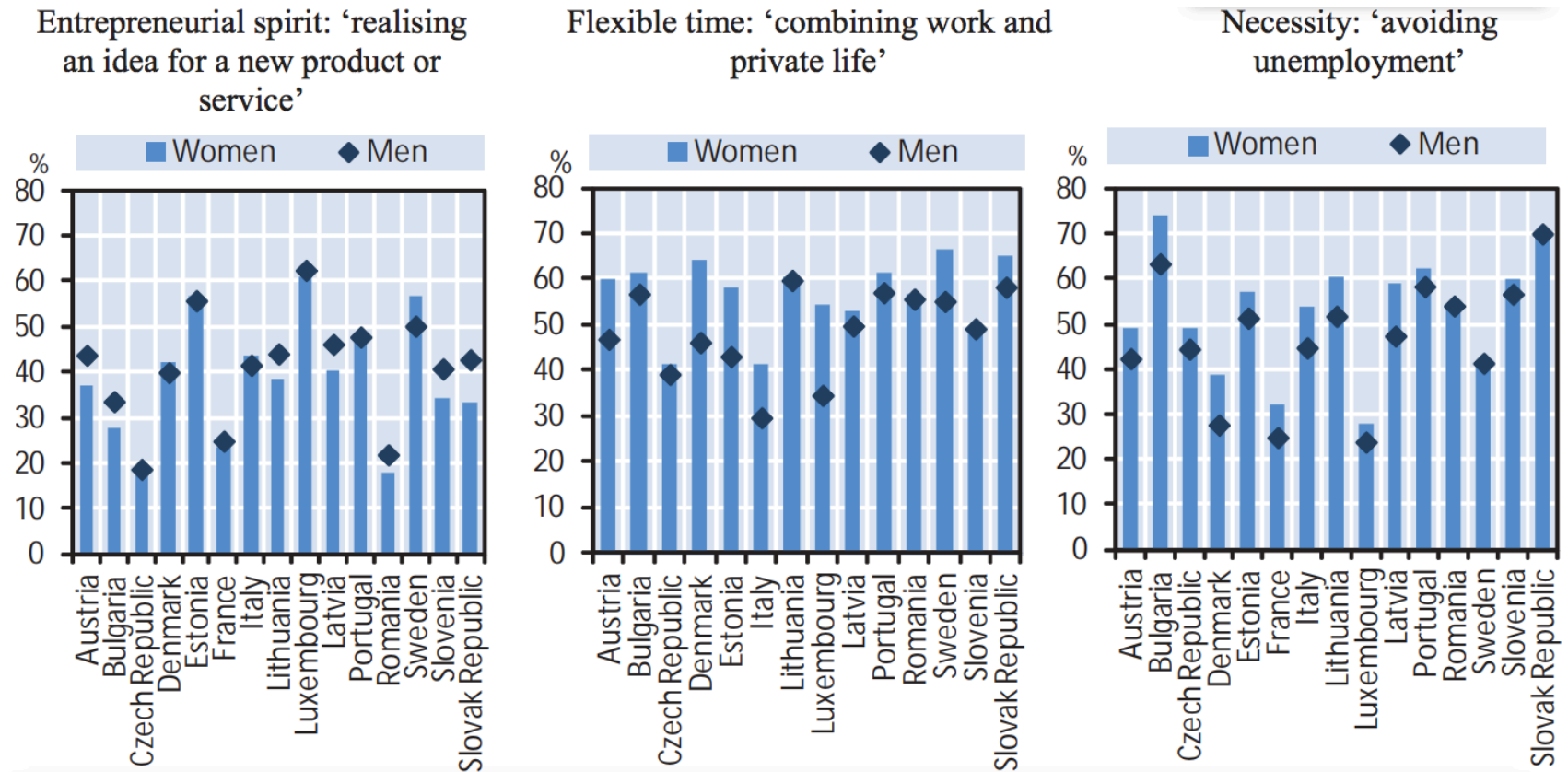
In order to examine the performance of male and female owned enterprises the OECD (2012) conducted a study across 21 countries, for which data was available (p.238). The OECD used a linear regression to understand the differences in productivity between male and female-owned businesses, as measured by economic value added per employee (OECD, 2012, p.238). The regression yielded evidence that women-owned enterprises (in total across the 21 countries) were 11% less productive than male owned business, and there was a significant difference between male and female-owned businesses' productivity (OECD, 2012, p.237). Furthermore, the OECD (2012) reports that women owned businesses are also segregated into different industries than male-owned businesses (p.236). Women are more likely to own businesses in wholesale and retail while men are much more likely to own manufacturing based businesses (OECD, 2012, p.236). Furthermore, women-owned enterprises are also less likely to survive three years than male-owned enterprises (OECD, 2012, p.236).

The OECD (2012) conducted a study in order to account for the difference between male and female-owned business productivity (p.239). The OECD (2012) found that 22% of the difference in productivity (measured as economic value added per employee) between male and female-owned enterprises can be explained by differences in industry type (women-owned enterprises are more common in the retail industry and industries that are less capital intensive) (p.132). Additionally, 38% of the difference in productivity can be explained by lower capital intensity in women owned-enterprises (OECD, 2012, p.132). The OECD found that if women had the same industry size, capital intensity, and industry distribution as male-owned businesses the difference in productivity would be reduced by 50%, and the profit gap would be reduced by 92%

(OECD, 2012, p.239). There are still other unexplained factors, however, the larger question is why do the differences such as capital intensity, experience, and industry occur and how can they be rectified (OECD, 2012, p.132).

Part of understanding how to generate greater and more effective female entrepreneurship is understanding the factors that lead a woman to own and operate her own business. The OECD (2012) reports that the motivations for female entrepreneurs are different than that of male entrepreneurs (p.137). Many women enter entrepreneurship out of necessity and the inability to find other attractive employment (OECD, 2012, p.137). The fact that entrepreneurship allows for more flexible reentry into the market after having children leads many women to engage in starting a business (OECD, 2012, p.137). The OECD (2012) finds that 40% of women in the lowest revenue range reported that “achieving a better work-life balance” was a factor for their entry into entrepreneurship, whereas, only 12% of women in the highest revenue class reported this factor (p. 137). For men the ability to “realize an idea for a new product or service” is a much stronger reason to enter entrepreneurial activities when compared to women (OECD,2012, p.137). Figure 1-16 shows that women exceeded men in every country, except Lithuania, in citing being able to ‘combine work and private life’ as an important motivation for engaging in entrepreneurship (OECD, 2012, p.137). The ability to ‘realize and idea for a new product or service’ was more prevalent amongst men in every country except Sweden, which can also be seen in Figure 17 (OECD, 2012, p.137).

Figure 1-16: Motivation for Starting an Enterprise by Gender and Motivation



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.138

What can be gleaned from this information is that women often engage in entrepreneurial activities out of necessity and not for a specific business purpose, which may be harmful to the overall performance of the resulting business activity, due to lack of vision or business knowledge (OECD, 2012, p.137).

Women also differ from male entrepreneurs in other ways, such as their level of business experience. Women, as opposed to men, are more likely to start a business having less ownership or self-employment experience (OECD, 2012, p.139). A Eurostat study across 15 European countries found that 11.2% of women who started a business in 2002 had prior experience running a business, whereas 18.4% of men had prior experience (OECD, 2012, p.139). Furthermore, in the United States only 28% of female business owners had been self-employed prior to starting their current enterprise versus 42% of male business owners (OECD, 2012, p.139). The OECD (2012) found that in Canada, 51% of female business owners had more than 10 years of management or ownership experience compared to 74% of male business owners (p.139). Experience in business management or working in a particular industry is a key element for the success of businesses (OECD, 2012, p.139). In France, 73% of businesses started by women who had three years of more of experience in the industry of their start-up survived after three years, versus only 64% of those run by women without three years of experience (OECD, 2012, p.139). As a result, in France, when the differences between male founders' and female founders' experience level (40% of women owners had three or more years of industry experience compared to 50% of male owners) is controlled for, the difference in the survival rate of business started by males versus females is no longer significant (OECD, 2012, p.139).

A possible explanation for lower earnings from female self-employment is that women are less willing to take risks (OECD, 2012, p.141). Taking less risk can result in lower losses, but can also eliminate the chance for higher yields (OECD, 2012, p.141). Furthermore, women are also careful to expend financial resources to help their businesses grow especially if they must support their families (OECD, 2012, p.141). There is evidence that women entrepreneurs in the U.S. are less likely to experience losses than their male counterparts (7.5% for females versus 8.4% for males) (OECD, 2012, p. 141). Furthermore, the Small Business Service in the United Kingdom found that female business owners were “wary of extending [financial] commitments” to their businesses and indicated that business ventures “need to be independent of family finances and self-sufficient” (OECD, 2012, p.141). These two pieces of evidence support the hypothesis that women are less likely to take business risks, however, there is a need for more conclusive research and evidence on this topic (OECD, 2012, p.141).

Another explanation for the depressed performance of female-owned enterprises in relation to male-owned businesses is the difference in time spent on the businesses by female and male entrepreneurs (OECD, 2012, p.142). The OECD (2012) conducted an analysis on available information for Australia, the United States, and European countries that found that hours worked per month in self-employment is a highly significant indicator of business success for both men and women (both p-values equaled 0.000) (p.242). Across 30 countries, an average of 22% of women entrepreneurs work less than 40 hours per week compared to only 10% of men (OECD, 2012, p.142). Furthermore, a study by Gurley-Calvez showed that, on average, self-employed women spent less time on business activities and more time on child-care than their male counterparts (OECD,

2012, p.142). Considering the strong relationship between earnings and hours worked, the effects of female entrepreneurs working less hours could explain lower female-owned business earnings (OECD, 2012, p.142).

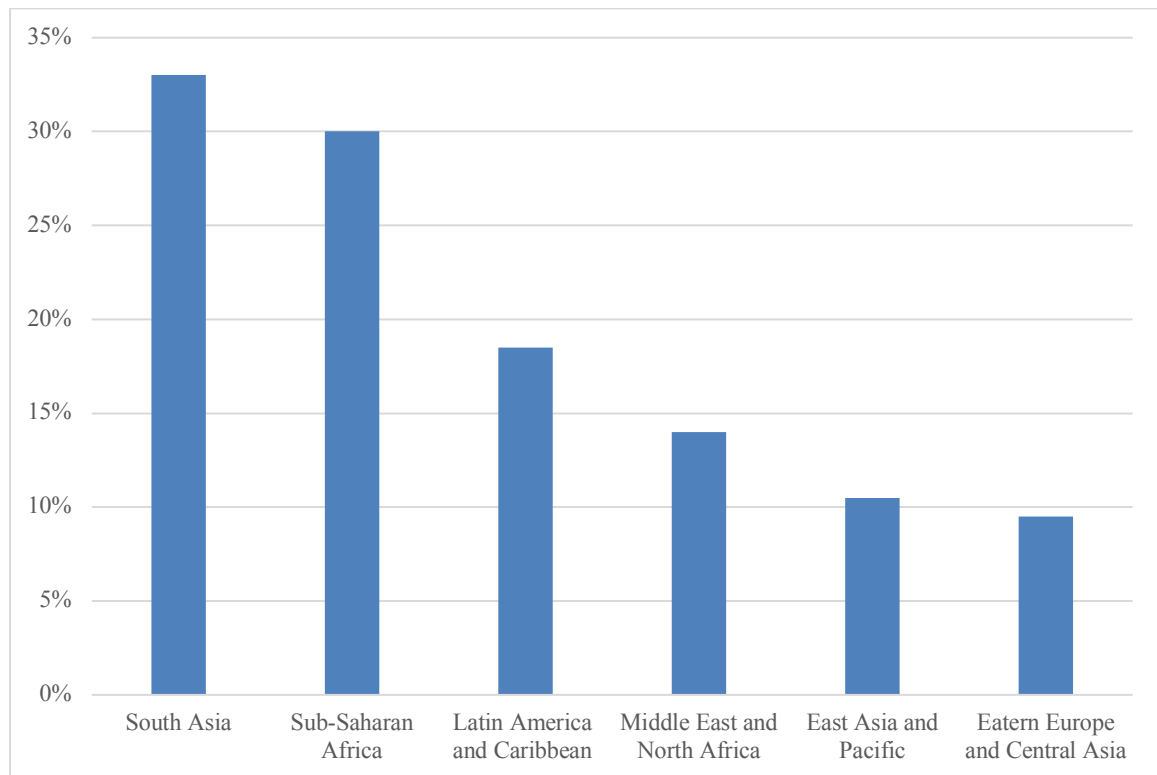
There are large gaps in data on the subject of entrepreneurship, which makes it difficult to assess global problems and generate solutions to issues, such as lower female entrepreneurship, less productivity, and lower earnings, of female entrepreneurs (OECD, 2012, p.130). However, there are certain policies that have been proposed to help alleviate the problems with female-entrepreneurship (OECD, 2012, p.142). As with traditional employment, increased subsidized child-care can reduce the opportunity cost of working for women and allow them to devote more hours to their businesses (OECD, 2012, p.143). Furthermore, additional training and the creation of female-entrepreneur networks can help women build business experience and expertise that would potentially help them create more productive and lucrative businesses (OECD, 2012, p.142).

G. Social Standards and Employment Parity

Social institutions are a large contributor to the fact that the gender gap in labor force participation rate and other measures of gender parity in employment have not become narrower in recent years (OECD, 2012, p.23). One social variable that affects labor force participation is the prevalence of childhood-marriage, measured as percentage of girls ages 15-19 who are married in a certain population (OECD, 2012, p.23). The rates of female adolescent marriage vary greatly across regions with South Asia exhibiting the highest percentage at 33%, the comparison of female adolescent marriage rates by region can be seen in Figure 1-17 (OECD, 2012, p.24). Early marriage limits a woman's likelihood of completing her education and leads to higher rates of adolescent fertility

and maternal mortality, all of which reduce the likelihood a woman will enter the formal economy (OECD, 2012, p.25).

Figure 1-17: Proportion of Women Married Aged 15-19 by Region



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.24.

Discriminatory attitudes towards women also hinder their economic inclusion. A study by the OECD (2012) examined how societal discriminatory attitudes towards female employment affected women’s employment rates. The study asked respondents if they “felt that men are more entitled to a job than women when jobs are scarce” and then

regressed the proportion of respondents who said yes against the percentage of the gender gap in the labor-force participation rate of that country (OECD, 2012, p.23). Figure 1-18 presents the resulting regression line. The study found a positive correlation between the percentage that answered “yes” to the question and the gender gap in employment rate, which indicates that “discriminatory attitudes” towards women’s employment can actually affect the extent to which women are incorporated in the formal economy (OECD, 2012, p.23).

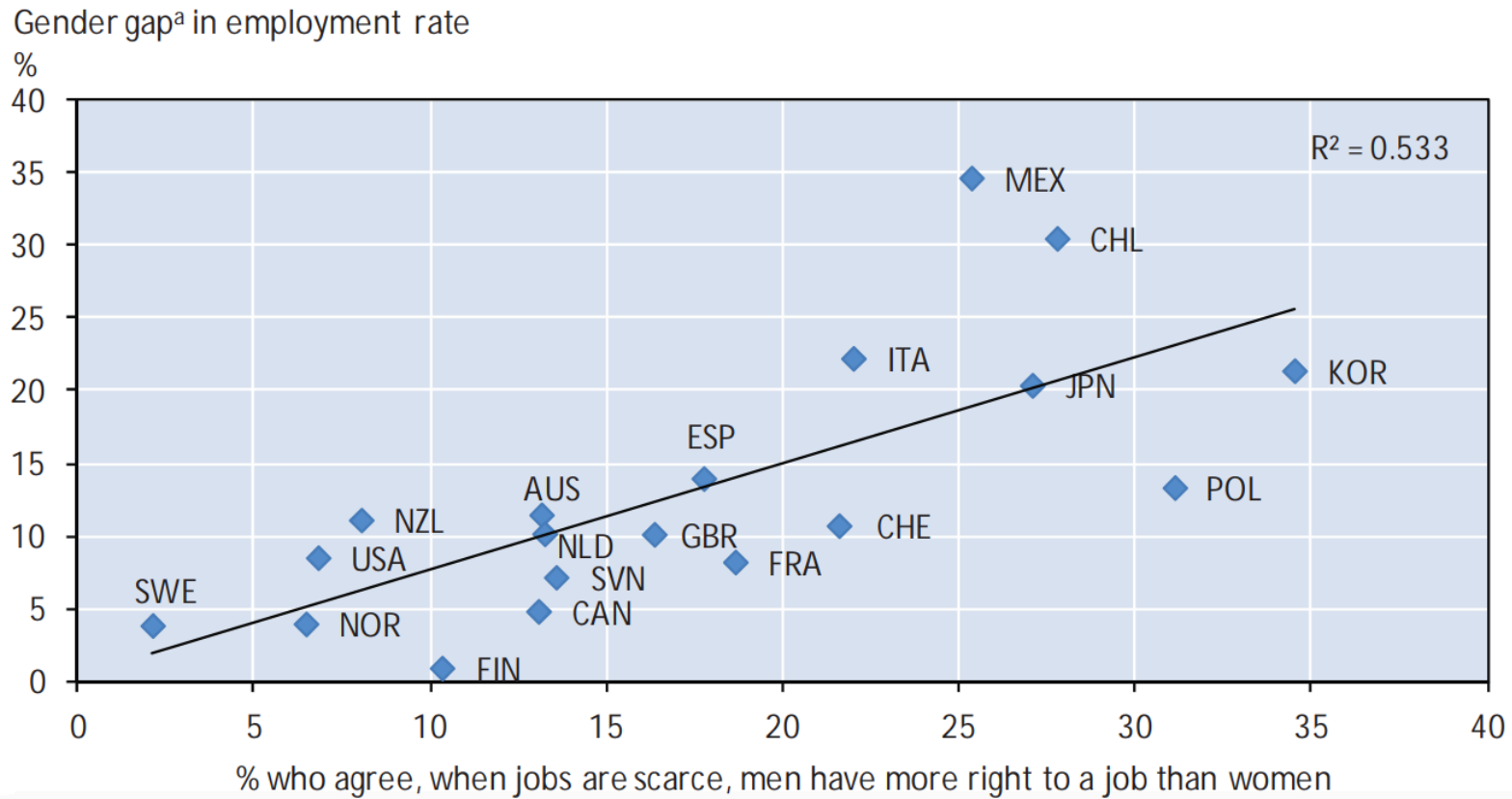
III. The Benefits of Employment Equality

Given the gender disparities in employment it is also important to understand what the discrepancies actually imply for the economy and society as a whole. There are social and economic benefits to equality in employment for women.

A. Economic Benefits

Including women in the economy is beneficial not only on the individual level of increasing wealth in households, but also to the global economy (OECD, 2012, p.19). Employment equality allows a country to be able to use all of its human capital and, therefore, be more productive and able to compete on a global scale (World Bank, 2011, p. 3). Currently, women produce about 37% of worldwide Gross Domestic Product (GDP), and in regions like India and South Asia only 17% and 24% of GDP respectively, which can be seen in Figure 1-19 (Dobbs et al., 2015, p.26). Figure 1-19 shows the percentage of GDP by country that is contributed by women. By increasing the output of women, the total worldwide GDP could be augmented (Dobbs et.al., 2015, p.26).

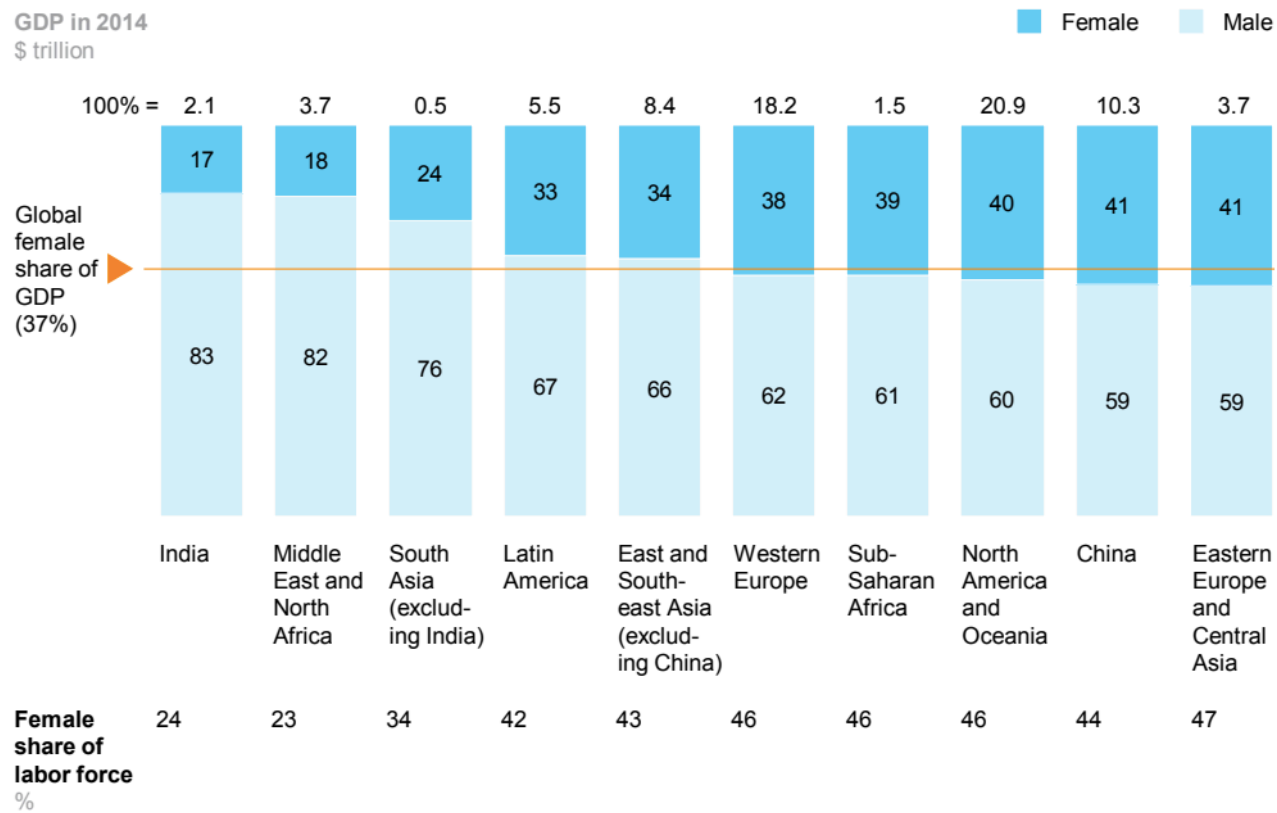
Figure 1-18: The Relationship between Discriminatory Attitudes towards Women's Employment Rates and the Gender Gap in Employment Rates



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Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p.24

Figure 1-19: Percentage of Total GDP Created by Women

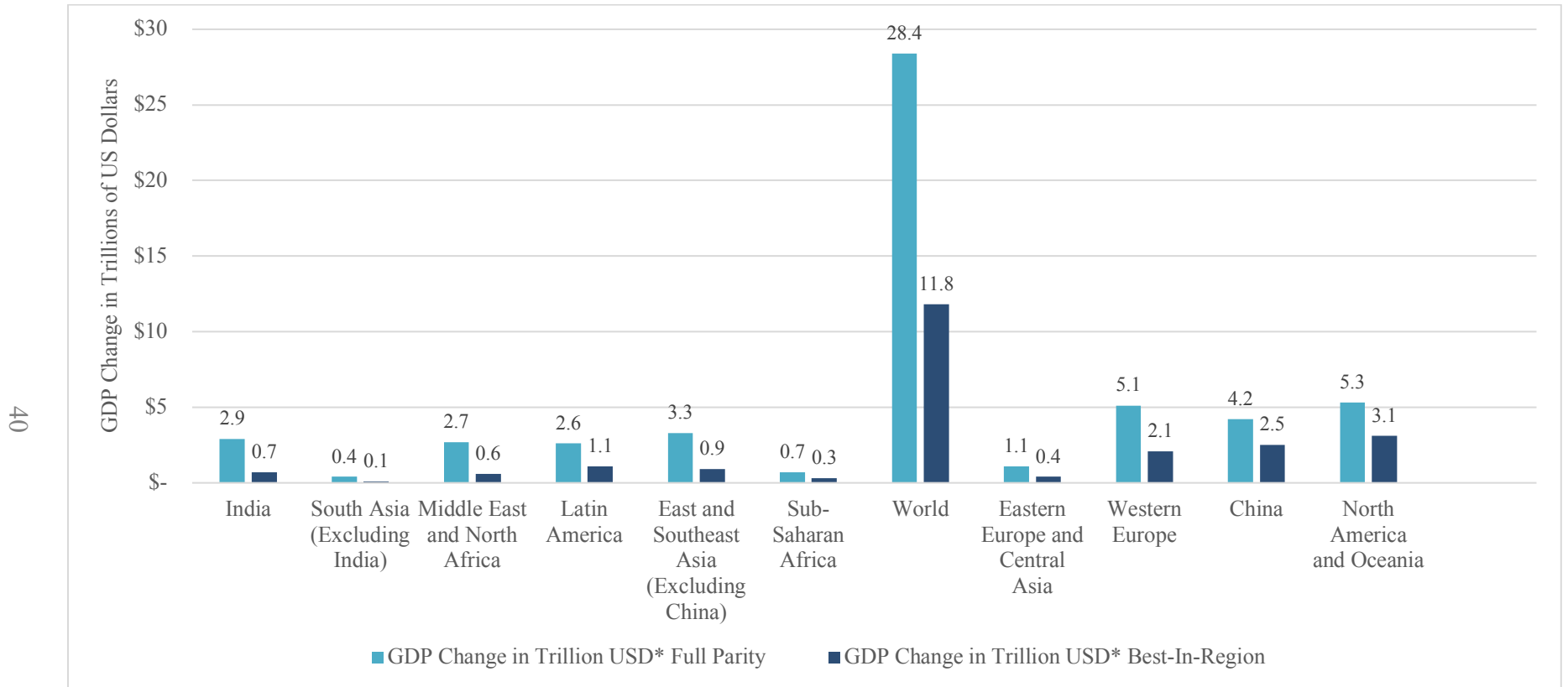


Source: Dobbs, R., Devillard, S. Ellingrud, K., Krishnan, M. Kutcher, E., Labaye, E., Manyika, J., Madgavkar, A., & Woetzel, J., 2015, *The Power of Parity: How Advancing Women's Equality can Add \$12 Trillion to Global Growth*. McKinsey Global Institute. p.

Institutions that prevent women's economic productivity impede the economic well-being of countries, regions, and the world. When women are not allowed the same employment opportunities as men it neglects the economic prosperity they could be generating (World Bank, 2011, p.3). The McKinsey Global Institute estimates that by eliminating the gaps between labor force participation, hours worked, and sector of employment between men and women by the year 2025 (the full-parity model), annual GDP could increase more than 26% over current forecasts, with the maximum increase being a 2.2% increase in global GDP per year (Dobbs et al. 2015, 25). Furthermore, in the year 2025 alone the global GDP could increase by \$28 trillion under the full-parity model, which can be seen in Figure 1-20 (Dobbs et al., 2015, p.25).

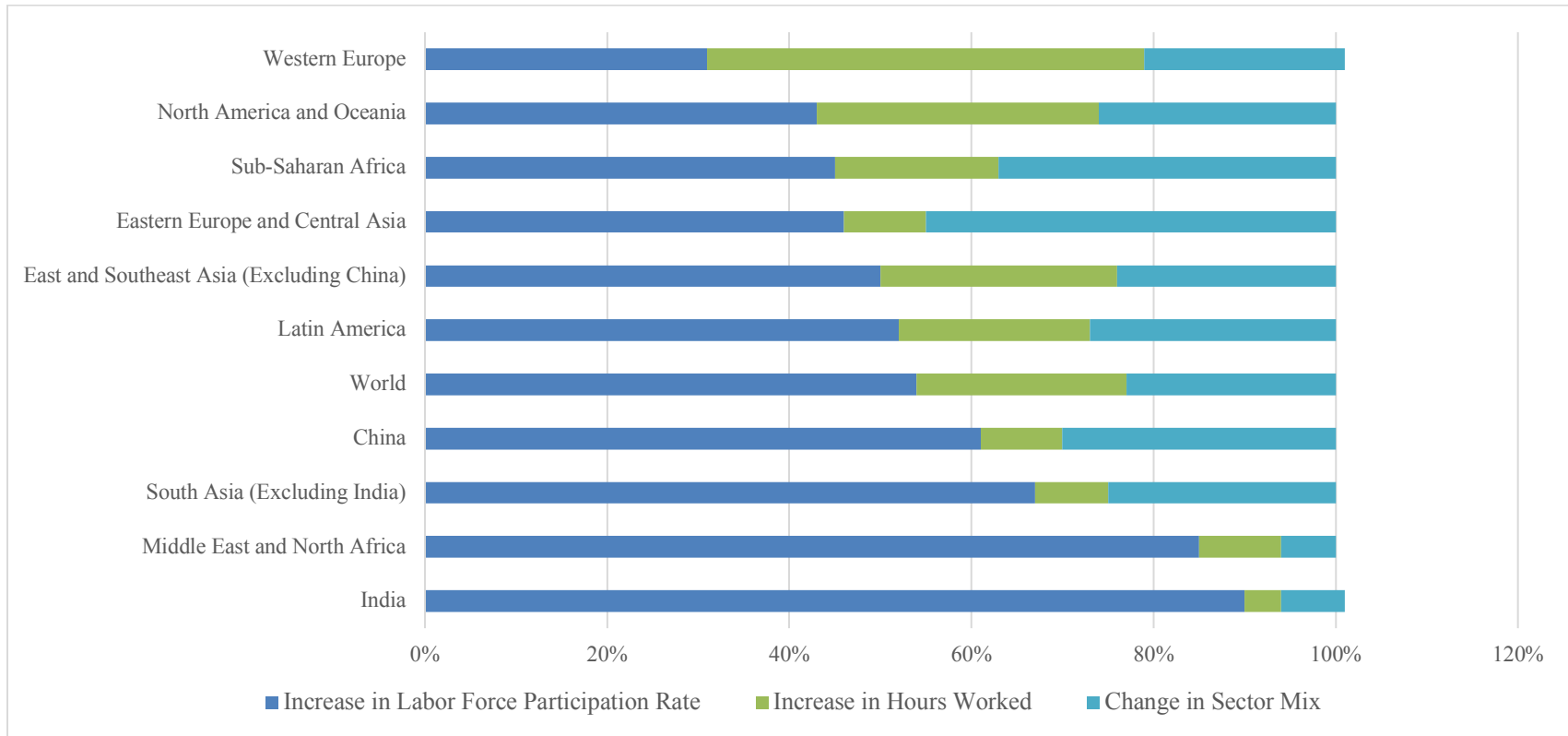
Even though full gender parity is a worthy goal, if countries simply matched the fastest and most advanced country in their respective region on labor force participation, hours worked, and sector of employment between men and women (the best-in-region scenario) the global GDP in 2025 could increase by \$12 trillion (Dobbs et al., 2015, p.31). Figure 1-20 shows how much global GDP would grow under full-parity model and the best-in-region scenario versus remaining at current levels. Achieving parity in the labor force participation rate alone would account for 54% of the \$28 trillion increase in global GDP in 2025 and could account for even larger increases in certain regions across the globe, which is highlighted in Figure 1-21 (Dobbs et.al. 2015, p.34). Figure 1-21 presents the breakdown in drivers of increased GDP by region and demonstrates to what extent gender parity in labor force participation, hours worked, and sector of employment contribute to each region's increase in GDP.

Figure 1-20: US Dollar Increase in GDP in the Full-Employment Scenario and Best-In-Region Scenario



Adapted from: Dobbs, R., Devillard, S. Ellingrud, K., Krishnan, M. Kutcher, E., Labaye, E., Manyika, J., Madgavkar, A., & Woetzel, J., 2015, *The Power of Parity: How Advancing Women’s Equality can Add \$12 Trillion to Global Growth*. McKinsey Global Institute.

Figure 1-21: Drivers of GDP Growth due to Gender Parity by Region

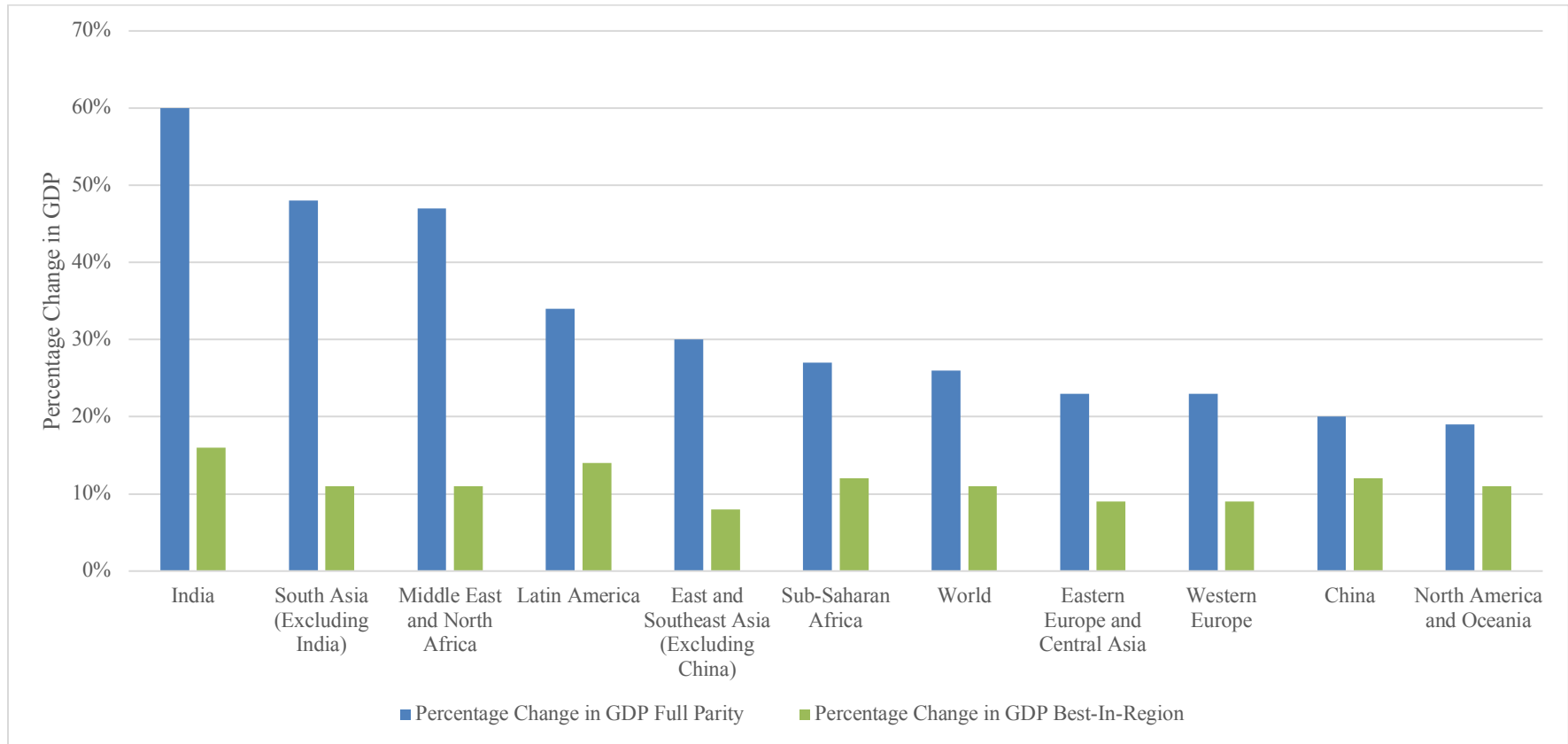


Adapted from: Dobbs, R., Devillard, S. Ellingrud, K., Krishnan, M. Kutcher, E., Labaye, E., Manyika, J., Madgavkar, A., & Woetzel, J., 2015, *The Power of Parity: How Advancing Women's Equality Can Add \$12 Trillion to Global Growth*. McKinsey Global Institute.

The impacts of eliminating the gaps between labor force participation, hours worked, and sector of employment between men and women would be important worldwide, but could have more pronounced effects in certain regions and countries (Dobbs et.al. 2015, p.34). The highest impact would be in India that would experience a 60% increase in GDP if employment equality goals were achieved, shown in Figure 1-22 (Dobbs et.al. 2015, p.34). Figure 1-22 also shows that South Asia and the Middle East would, respectively, gain 48% and 47% in GDP (Dobbs et.al. 2015, p.34). The gains are still significant for Western Europe and North America, which would gain 23% and 19% in GDP, respectively (Dobbs et.al. 2015, p.34). Figure 1-22 indicates that if all countries matched the best country in their region the effects on GDP would still be large, although not as staggering, with India gaining 16% and Latin America gaining 14% in GDP (Dobbs et.al. 2015, p.35).

Including women in the economy has implications for greater economic growth due to better use of human capital and greater access to labor (OECD, 2012, p.18). The OECD (2012) reports that between 17-20% of economic growth in the US from 1960 to 2008 is due to increased representation of women in the workforce (p.18). Furthermore, women represent an emerging source of talent due to increases in educational equality between genders (OECD, 2012, p 91). The leveraging of female talent and the unique female perspective can help to access and understand female target markets, that could be the key to the success of businesses of the future (OECD, 2012, p.91).

Figure 1-22: Percentage Increase in GDP in the Full-Employment Scenario and Best-In-Region Scenario



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Adapted from: Dobbs, R., Devillard, S. Ellingrud, K., Krishnan, M. Kutcher, E., Labaye, E., Manyika, J., Madgavkar, A., & Woetzel, J., 2015, *The Power of Parity: How Advancing Women’s Equality Can Add \$12 Trillion to Global Growth*. McKinsey Global Institute.

Dezsö and Ross conducted study in order to test the theory that female representation in the labor force of a company increases financial well-being. Dezsö and Ross (2012) found that, for companies included in the Standard and Poor's 1500 register, having females represented in upper level management (at least one woman in the top management team) was related to a statistically significant improvement in firm performance. Firm performance was measured by Tobin's q, which is the "ratio of market value of a firm's assets to their replacement value" (Dezsö & Ross, 2012). Furthermore, Dezsö & Ross's data suggest that female representation in top management is related to a "42 million-dollar increase in firm value at the midpoint of data" (Dezsö & Ross, 2012, np).

Female employment has additional positive economic effects at the individual and household level (World Bank, 2012, p.78). Studies across various countries, such as Canada, Ecuador, Germany and South Africa, yield the conclusion that a household member to gaining employment or earning more for their work are the largest drivers of the ability of a household to escape poverty (World Bank, 2012, p.78). Therefore, when women in a household are able to enter the formal economy, that transition can contribute to the alleviation of poverty for her family (World Bank, 2012, p.78). However, the value of employment to an individual is worth more than simply the monetary and quantifiable benefits a job confers (World Bank, 2012, p.9). Employment can increase a woman's autonomy and agency in various ways (World Bank, 2012, p.9).

B. Social Benefits

Another important manner in which equality in employment outcomes helps women is by promoting greater social equality between genders. The MGI created a

Gender Parity Score (GPS) that equally weights a set of indicators in order to measure the level of gender equality in society and employment (Dobbs et.al. 2015, p.54). The indicators related to gender equality in employment include the ratio between males and females in labor force participation rate, participation in professional and technical jobs, perceived wage gap for similar work, leadership positions, and unpaid care work (Dobbs et.al. 2015, p.108). While variables related to gender equality in society included unmet need for family planning, maternal mortality, education ratio, financial inclusion, digital inclusion, legal inclusion, political representation, sex ratio at birth, child marriage, and violence against women (Dobbs et.al. 2015, p.108). The GPS scores range from 0-1.00 with 1.00 being complete parity between men and women in society (Dobbs et.al. 2015, p.54). Figure 1-23, taken from Dobbs et.al. (2015), shows that the GPS rating for social variables of each country is highly correlated with the GPS score relating to employment equality (p.54). The strong correlation between societal and work equality suggests that work and social equality are achieved concurrently (Dobbs et.al. 2015, p.54).

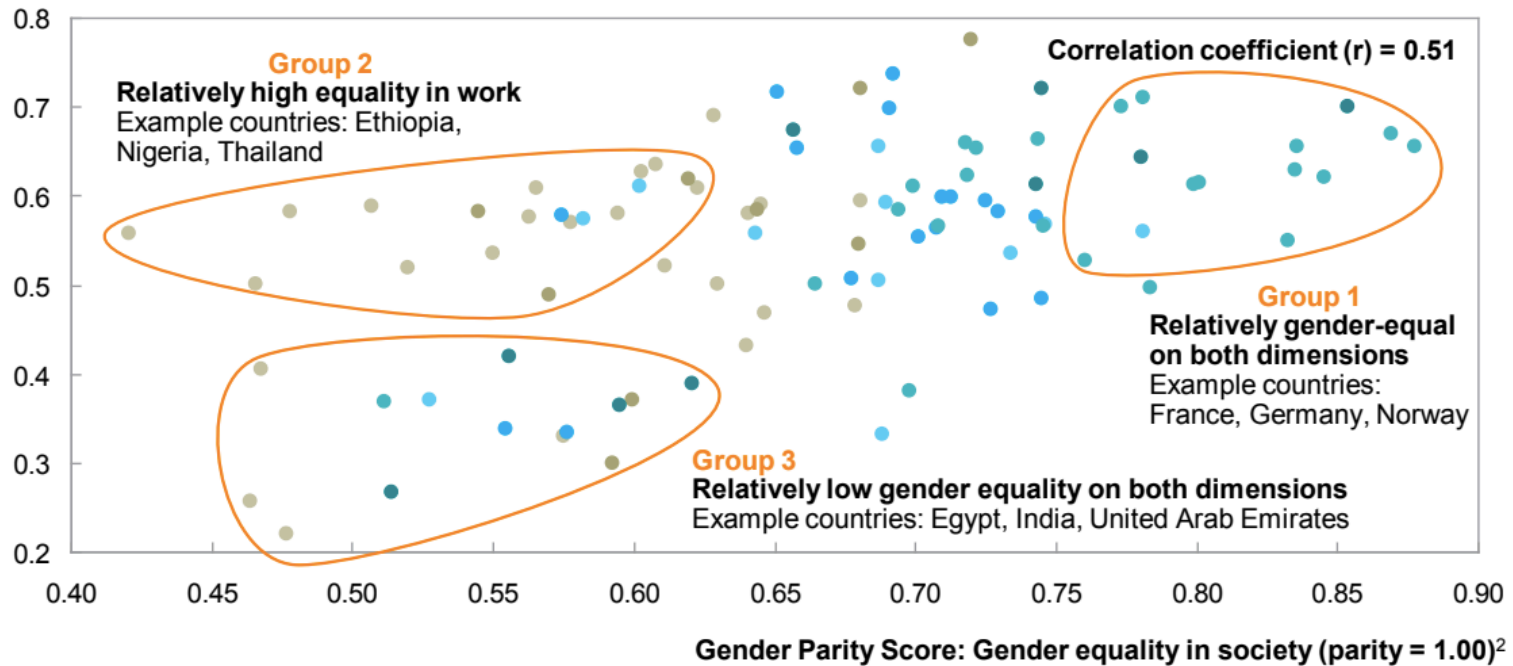
Increasing the economic participation of women allows them to claim ownership over resources, which increases agency. Agency, as defined by the World Bank (2015), is “an individual's ability to make effective choices and to transform those choices into desired outcome. Agency can be understood as the process through which women and men use their endowments and take advantage of economic opportunities to achieve desired outcomes.” (p.150).

Figure 1-23: Relationship Between Social Gender Equality and Gender Quality in Work

Per capita GDP levels, 2014 purchasing-power-parity international dollar

● <5,000 ● 5,000–10,000 ● 10,000–15,000 ● 15,000–25,000 ● 25,000–50,000 ● >50,000

Gender Parity Score: Gender equality in work (parity = 1.00)¹



Source: Dobbs, R., Devillard, S. Ellingrud, K., Krishnan, M. Kutcher, E., Labaye, E., Manyika, J., Madgavkar, A., & Woetzel, J., 2015, *The Power of Parity: How Advancing Women's Equality Can Add \$12 Trillion to Global Growth*. McKinsey Global Institute.

Outcomes of agency include control over resources, the ability to move freely, participation in decision making over family formation (when to get married, who to marry, and the ability to decide the number of children and timing of having children), freedom from violence, and the ability to participate and engage in politics (World Bank, 2011, p.150). Women's agency is affected by economic development and the ability of a woman to participate in economic prosperity by earning her own income, therefore, increasing her bargaining power in a household and obtaining her own personal assets (World Bank, 2011, p.150).

Women's employment is important to increasing agency (World Bank, 2011, p.153). When household income increases as a result of men's increased earnings, impacts of women's agency are found to decrease (World Bank, 2011, p.153). However, the World Bank (2011) reports, if women are contributing to the increase in household earnings, their agency increases (p.153). The amount of income a woman earns enables her to accumulate physical and financial assets, pensions, and insurance. The assets a woman owns allow her greater freedom to cope with leaving a marriage, and invest in her own economic opportunities (World Bank, 2011, p.154). Also women who have higher contribution to household income are less likely to be victims of domestic violence (World Bank, 2011, p.154). For example, in the United States, women's wages account for 10% of observed reductions in domestic violence (World Bank, 2011, p.154).

Furthermore, women who are incorporated into the economy can benefit from extending their social networks and increasing their connections to people outside of their household and family (World Bank, 2011, p.155). By increasing social connections women can, subsequently, increasing their access to information and knowledge. Jobs

help to connect people to others who may have different perceptions and ideas, as well as connect them to society outside of their household that could lead them to other opportunities (World Bank, 2012, p.126). Increasing social connections is particularly important for women who often have more limited social networks or opportunity for connection outside of their families than most male family members (World Bank, 2011, p.155). The World Bank (2011) reports that that women who work participate almost equally as much as men in professional associations and other social networks generate by employment (p.155).

Why is women's agency important? Firstly, agency matters in and of itself because the ability of people to make decisions about their own personal lives matters (World Bank, 2011, p.151). Furthermore, women's agency increases their ability to access further economic opportunities, and services like healthcare, education, and legal systems. (World Bank, 2011, p.151). Agency helps a woman to improve the health of her children. Women are more likely than men to invest earnings in the well-being of her children through education and health care. (World Bank, 2011, p.151) A study in Nepal found that communities where mothers owned a greater percentage of land are communities with fewer underweight children (World Bank, 2011, p. 151). A study in Brazil, Cote d'Ivoire, and the U.K. found that when women had greater control over income they increased expenditures on expenditures like schooling, food, and goods and services that benefit their children (World Bank, 2011, p. 151). Furthermore, the experiences of children in a household where women have more agency are likely to influence their later household structure, for example, women whose mothers worked or

wives whose mothers-in law worked are both more likely to be employed (World Bank, 2011, p.152).

IV. Conclusion

Women are at a disadvantage when compared to men in many aspects of economic participation. Women are employed at a lower rate, earn less, work fewer hours, are promoted less, and engage in entrepreneurship at a lower rate than men. All of these inequalities affect the economic prosperity and social well-being of women and entire economies. There is a need for policies that remove the burden of domestic labor typically assumed by women and for incentives for businesses that create more inclusive environments and have equal opportunities at every level for females. Through greater inclusivity of women in employment, countries, regions, and nations can fully access the economic and human capital potential of their labor force and increase the social well-being of their populations.

An excerpt from a statement on women's inclusion in employment published in the World Bank study from a Woman in Tanzania named Baruani:

“Baruani is reflecting on how women's and men's lives have changed over the past decade in Ijuhanyondo—a village in Tanzania. “Ten years back was terrible,” she recalls. “Women were very behind. They used to be only at home doing housework. But now, they are in businesses, they are in politics.” Others hold similar views. “We do not depend a lot on men as it used to be,” says Agnetha. “We have some cash for ourselves, and this assists us in being free from men and to some extent controlling our lives.” In addition to managing their businesses, the women now make up half the members of the street committee that runs the village.”

(World Bank, 2011, p.8)

CHAPTER TWO

I) Introduction

Educational equality is a major component in the process of incorporating women into the economy, increasing women's personal economic wellbeing, and enhancing the economic viability of many nations (OECD, 2012, p. 3). Gender disparities in education are hindering the economic prosperity and development of economies around the globe (OECD, 2012, p. 4). Educating women can help generate economic gains by increasing economic participation, productivity, educational investment, and the health in future and current generations (OECD, 2012, p.17). In order to properly analyze the effects of women's education, it is necessary to examine the impacts for both the women who receive the education and for society at large.

II) Disadvantages in Female Education

Women are disadvantaged in multiple dimensions of education and in distinct ways in different countries and regions across the globe. The main issues in female education are that women have lower educational attendance and attainment overall, and that women are underrepresented in fields such as science, technology, engineering, and math (Dobbs, et al., 2015, p.74).

A) Attainment

Women, on average, enroll in and finish primary, secondary, and tertiary school at lower rates than men (World Economic Forum [WEF], 2012, p.6) In a study conducted by the World Economic Forum (WEF) (2017), all countries for which data was available, were analyzed and scored on gender parity in terms of literacy, primary, secondary, and tertiary school enrollment (p.6). Using the scores on gender parity in literacy, primary, secondary, and tertiary school enrollment, each country was then given a composite weighted average⁴ score on gender parity in education (WEF, 2017, p.12). Of all countries worldwide, Chad was the country ranked the lowest in terms of educational gender parity with a score of 0.572 (WEF, 2017, p.12). A score of 0.572 means that women achieved literacy, primary, secondary and tertiary education at 57.2% of the rate of men (WEF, 2017, p.12). The WEF (2017) found that in 18 countries women achieved a weighted average of 80% or less of the educational outcomes as men and 33 countries were below the 95.3% world average of gender parity. While it is important to note that a global weighted average of 95.3% gender parity ratio is the highest level that has ever been recorded, it is also critical not to neglect the serious educational issues that remain in many countries. (WEF, 2017, p.9). 27 countries globally have completely closed the gap between male and female educational outcomes. Nevertheless, education inequality is not an insignificant issue because there are large differences that exist in many countries (WEF, 2017, p.6). Due to the fact that this composite measure places a great deal of weight on the ratio of females-to-males in primary enrollment, a high score does

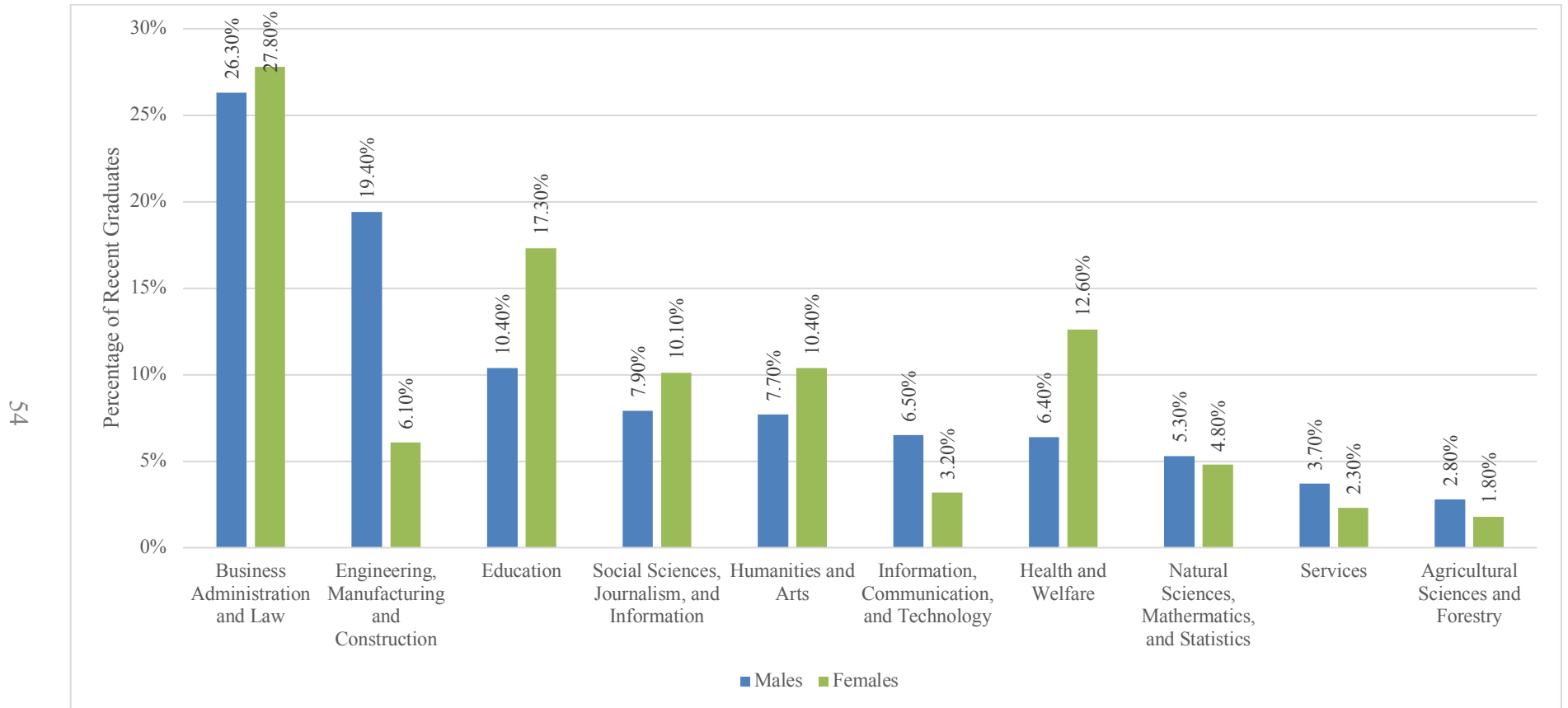
⁴ The ratio of female-to-male literacy was weighted 0.191, the ratio of female to male primary enrollment ratio was weighted 0.459, the ratio of female-to-male secondary enrollment ratio was weighed 0.230, and the ratio of female-to-male tertiary enrollment ratio was weighted 0.121 (WEF, 2017, p.6)

not necessarily equate to parity, especially in higher levels of educational attainment. For example, The McKinsey Global Institute estimates that inequity in education affects 195 million women worldwide, 76% of which live in India, South Asia, and Sub-Saharan Africa (Dobbs, R. et.al., 2015, p.74). Furthermore, the MGI estimates that in 15 of the 23 countries in Sub-Saharan Africa that women attain only 75% of the level of education as men (Dobbs, R. et. al., 2015, p.76). Furthermore, The UNESCO calculates that 62 million girls are not permitted to attend primary and lower-secondary school (Kwauk et al., 2016, p.66)

B) Inequity in Types of Education

In countries with higher levels of gender parity in educational attainment, there is still a large disparity in the types of education that women and men are pursuing (WEF, 2017, p.35). Women are underrepresented in the number of degrees obtained in engineering, manufacturing, construction, mathematics, and technology (WEF, 2017, p.31). Figure 2-1 presents the percentage of recent graduates in specific degree types by gender. As depicted in Figure 2-1, engineering, manufacturing and construction represent 19.4% of male graduates, but only 6.1% of female graduates (WEF, 2017, p.32). Additionally, communication and technology accounts for 6.5% of male graduates, more than double the 3.2% of female graduates (WEF, 2017, p.32). Furthermore, research by the World Economic Forum (2017) disproved the notion that gender differences in educational pursuits are due to individual selection and natural ability differences between genders and found that differences between genders in fields of study are actually more influenced by socio-cultural factors (p.31).

Figure 2-1: Degrees Obtained by Recent Graduates by Field of Study and Gender



Adapted from: World Economic Forum. 2017. *The Global Gender Gap Report 2017*. Geneva, Switzerland. World Economic Forum. p.31

For instance, it has been shown that across many countries, women are limited in their access to technology and, therefore, do not develop the skills or interest in technological fields (WEF, 2017, p.31). The WEF (2017) also found that when women have mathematical and technological skills those skills are often recognized less often than their male peers (p.31). Such discriminatory factors relate to the likelihood that girls and women will pursue education in certain fields (WEF, 2017, p.31).

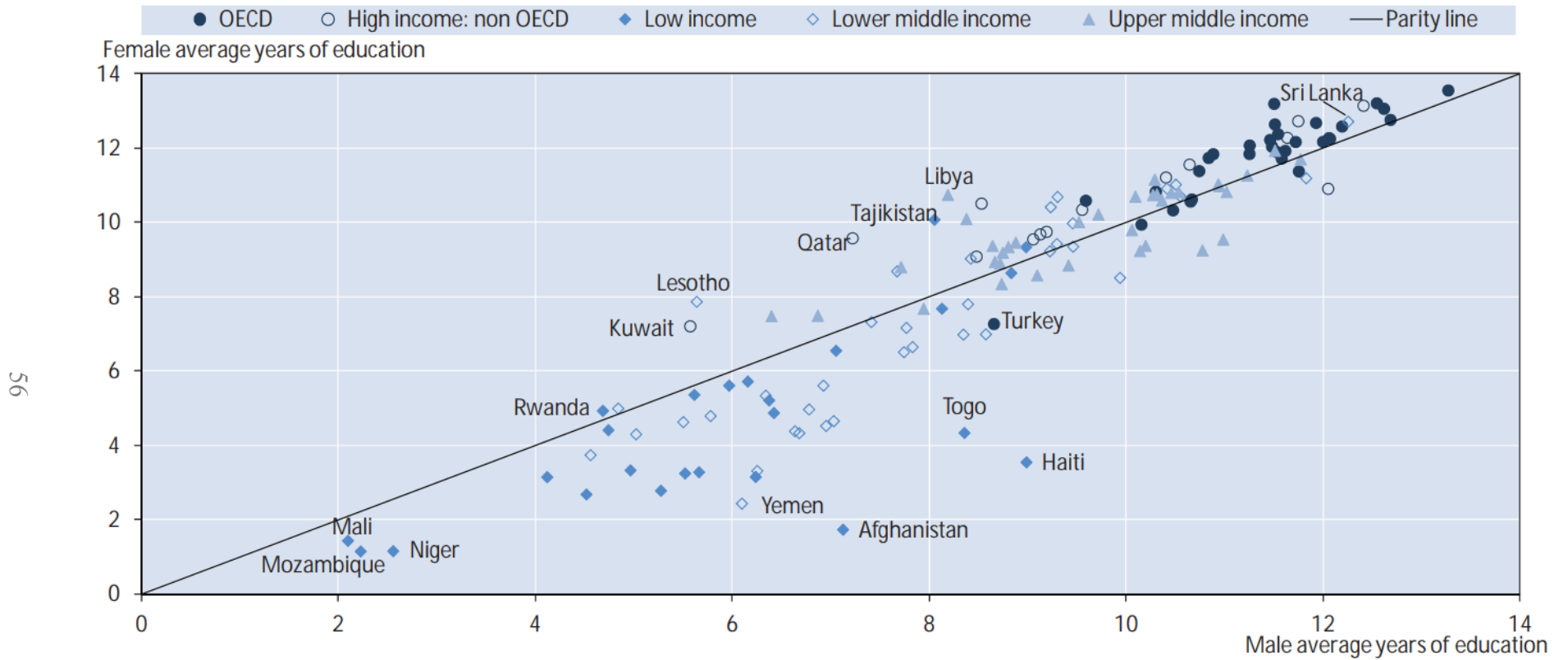
III) Economic Impacts

In order to rectify the issues that affect females in education it is necessary to understand the positive impacts that female education can have for personal and societal economic development. Female education has positive economic impacts stemming from increased economic participation, wages, and health.

A) Gross Domestic Product

Women's education has positive implications for economic development and sustainability shown in increased GDP (OECD, 2012, p.17). One of the strongest relationships between economic variables and women's education is the relationship between improvements in women's educational attainment and increases in economic growth resulting from increased productivity, use of technology, job creation, and participation in the formal economy (OECD, 2012, p.17). Figure 2-2 shows that, in general, as the average level of education in the population of both men and women increases, the income level of the country also increases. Better education for all people creates workers with greater skills, and therefore, an increase in employment and entrepreneurial activity and, subsequently, higher taxes (OECD, 2012, p.17).

Figure 2-2: The Relationship Between Educational Attainment and Income Level



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author. p. 18

Furthermore, greater educational attainment creates a better talent pool for companies to draw from (OECD, 2012, p.17).

The United Nations Women (2015) organization also found that gender equality in education is positively associated with higher GDP and higher productivity (p.197). A study by the OECD (2012) reports that increased educational attainment accounts for around one-half of all economic growth globally, from 1960- 2008, equating to about a 2.1% increase per year (p.3). Additionally, Kwauk, Sperling, and Winthrop (2016) found that increasing total average educational attainment by one year for the whole population led to a 10% increase in per capita output per year (p.20). Furthermore, Kwauk et al. (2016) report that “In a study of 100 countries it was found that increasing the share of women completing secondary education by 1 percent increases economic growth by 0.3 percent, a significant amount” (p.21). The World Bank also found that, in a wide range of developing countries, if girls completed education at the same rate as boys it would increase annual GDP in each country by 1.5% (WEF, 2017, p.28). Additionally, in the East-Asian and Pacific region it is estimated that between 16-30 billion USD are lost annually due to the lack of gender parity in education (WEF, 2017, p.28). Given such consistent findings that education and, specifically, gender parity in education increases income in GDP, it is important to consider these results when addressing policies to increase educational attainment.

B) Wages

Education can improve personal financial well-being for women by increasing their wages. Psacharopoulos estimates that throughout more than 100 countries around the world the average increase in wages for an additional year of schooling is around

10% (Kwauk et al., 2016, p.25). Additionally, a study in Ghana shows that for uneducated men and uneducated women the wage gap between genders is 57%, however, the wage gap decreases to 16% for women and men with secondary education (Kwauk et al., 2016, p.27). Furthermore, in Pakistan, women with a high level of literacy had wages that were 95% higher than women with no or little literacy (for men the difference was only 33%) (Kwauk et al., 2016, p.27). The improvements in wages by educated women have been observed across the globe allowing for the conclusion that education helps individuals, and to a greater extent woman, achieve higher personal wages (Kwauk et al., 2016, p.27).

C) Increased Participation

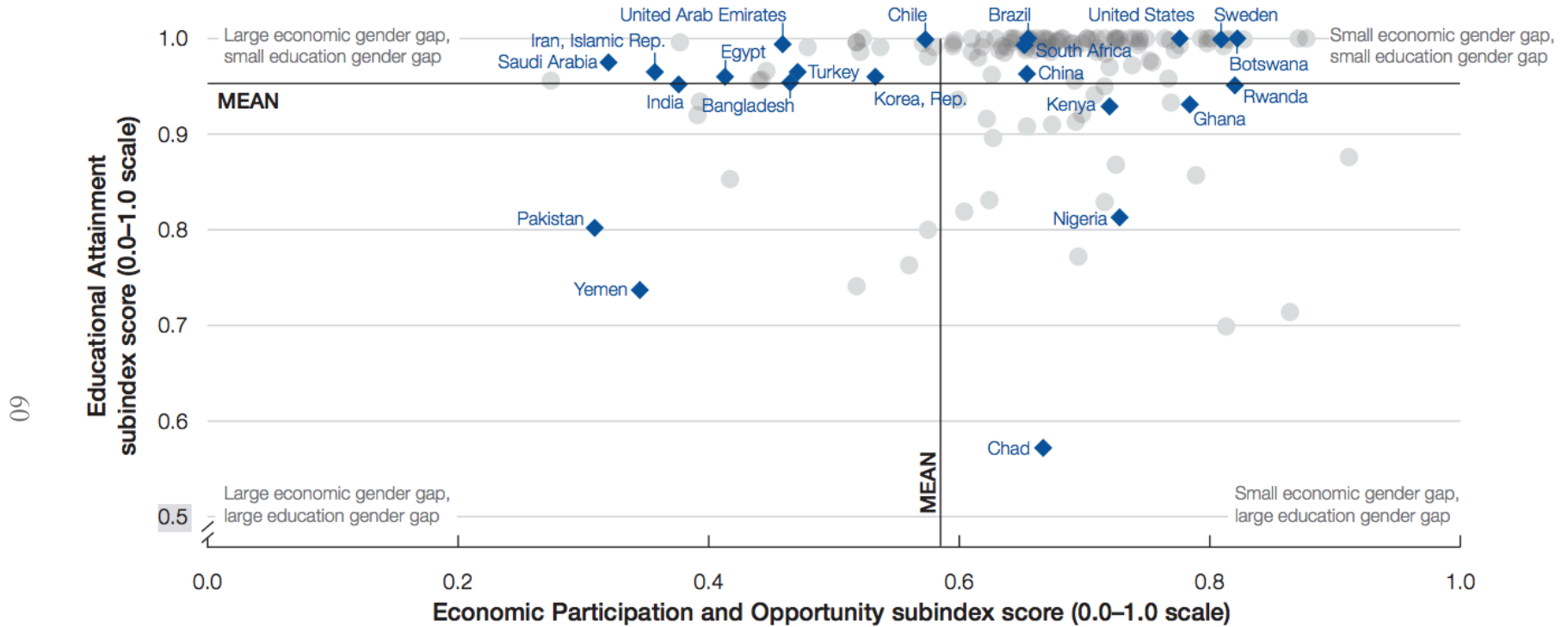
Another important macroeconomic consequence of women's education is that when women are educated, they are more likely to seek out jobs and engage in entrepreneurial activities that are a part of the formal economy (OECD, 2012, p.159). The OECD (2012) has found that women who operate in the formal economy are more likely to have greater educational attainment than are women who operate in the informal economy (p.159). Furthermore, many women in the informal economy are likely to have no education at all. Increased formal economic participation is a benefit to the overall economic metrics of a country because workers in the formal economy are included in calculation of GDP and are also paying taxes on their wages (OECD, 2012, p.157). In OECD countries, 79% of women with a tertiary education (college education or higher) were employed, but only 48% of women with less than secondary education were employed (OECD, 2012, p.79). Additionally, the OECD (2012) found that in Egypt and Jordan, a woman with post-secondary education is three times more likely to be

employed than the average female in the population of each respective country (p.79).

The UNESCO found that, in Mexico, 39% of women with primary education are employed in jobs that pay a wage, however, 48% of women with a secondary education are employed in a job that pay a wage (Kwauk et al., 2016, p.28).

In a WEF study, educational attainment parity between women and men in tertiary, secondary and primary education completion, and literacy, was related to the level of economic participation equality between women and men (on the dimensions of labor force participation, wage equality, proportion of female managers, and proportion of female professional and technical workers) (WEF, 2017, p.31). Figure 2-3 shows the results of this study and the strong positive relationship between educational attainment equality and economic participation and opportunity equality (WEF, 2017, p.31). It is important to note that there are a notable number of countries that fall into the category of having educational equality without employment equality and many of these countries face issues such a disproportion of unpaid work, discrimination, and lack of affordable childcare, and also discrepancies in field pursued by women in education (WEF, 2017, p.30). However, for the majority of countries better access to educational equality for females directly relates to their employment outcomes, which leads to greater economic growth (WEF, 2017, p.31).

Figure 2-3: The Relationship Between WEF Educational Parity Index and WEF Economic Participation Parity Sub-Index



Source: World Economic Forum. 2017. *The Global Gender Gap Report 2017*. Geneva, Switzerland. World Economic Forum. p.31

D) Human Capital Investment

In order to gain a more objective understanding of the economic benefits of women's education Patrinos & Psacharopoulos (2018) examine education as an economic investment. The study uses a human capital approach to view education as an investment now that leads to increased wages and economic returns in the future (Patrinos & Psacharopoulos, 2018, p.2). Viewing education through the human capital approach allows Patrinos & Psacharopoulos to use the internal rate of return, IRR, (the rate of return that makes the cost of an investment equal to the future cash inflows of that investment) to determine if the investment in education is worth undertaking (Patrinos & Psacharopoulos, 2018, p.2).

Patrinos & Psacharopoulos (2018) used a "full discounting method" in order to examine the private economic returns of education (p.3) In this method, they equate the present value of all expenditures and other costs to education for the individual to the present value of all of the lifetime earnings of the individual (Patrinos & Psacharopoulos, 2018, p.3). Opportunity costs of lost earnings while in school, actual school fees, and other expenses incurred (ex. uniforms and books) are included in the calculation of the costs of education (Patrinos & Psacharopoulos, 2018, p.3). The returns from schooling were calculated as the average earnings after taxes that the individual earned above the average earnings at the next highest level of educational attainment (Patrinos & Psacharopoulos, 2018, p.3).

Patrinos and Psacharopoulos (2018) go further to establish a secondary "social rate of return" that includes the societal cost of maintaining and renting school buildings and the salaries of teachers (typically subsidized by the government) as well as the

previous personal variables mentioned (p.3). This social rate of return was included to examine the rate of return on education to society, not just the individual (Patrinos & Psacharopoulos, 2018, p.3). However, the social rate of return is flawed because it fails to incorporate overall benefits to society from education that include increased longevity, innovation, and overall economic growth that are less concrete and more unpredictable (Patrinos & Psacharopoulos, 2018, p.3).

Patrinos & Psacharopoulos (2018, p.9) separate the returns to education into separate categories for low, middle and high income countries and for each level of education. Table 2-1 presents the private returns to education by income level of the country and education level.

Table 2-1: Percentage Return of Education by Level of Education and Income Level of the Country

Per Capita Income Level	Private			Social		
	Primary	Secondary	Higher	Primary	Secondary	Higher
Low	25.40%	18.70%	26.80%	22.10%	18.10%	13.20%
Middle	24.50%	17.70%	20.20%	17.10%	12.80%	11.40%
High	28.40%	13.20%	12.80%	15.80%	10.30%	9.70%
Average	25.40%	15.10%	15.80%	17.50%	11.80%	10.50%

Adapted from: Patrinos, H., Psacharopoulos, G. (2018). *Returns to Investment in*

Education: A Decennial Review of the Global Literature. Washington, D.C. World Bank

Group.p.11

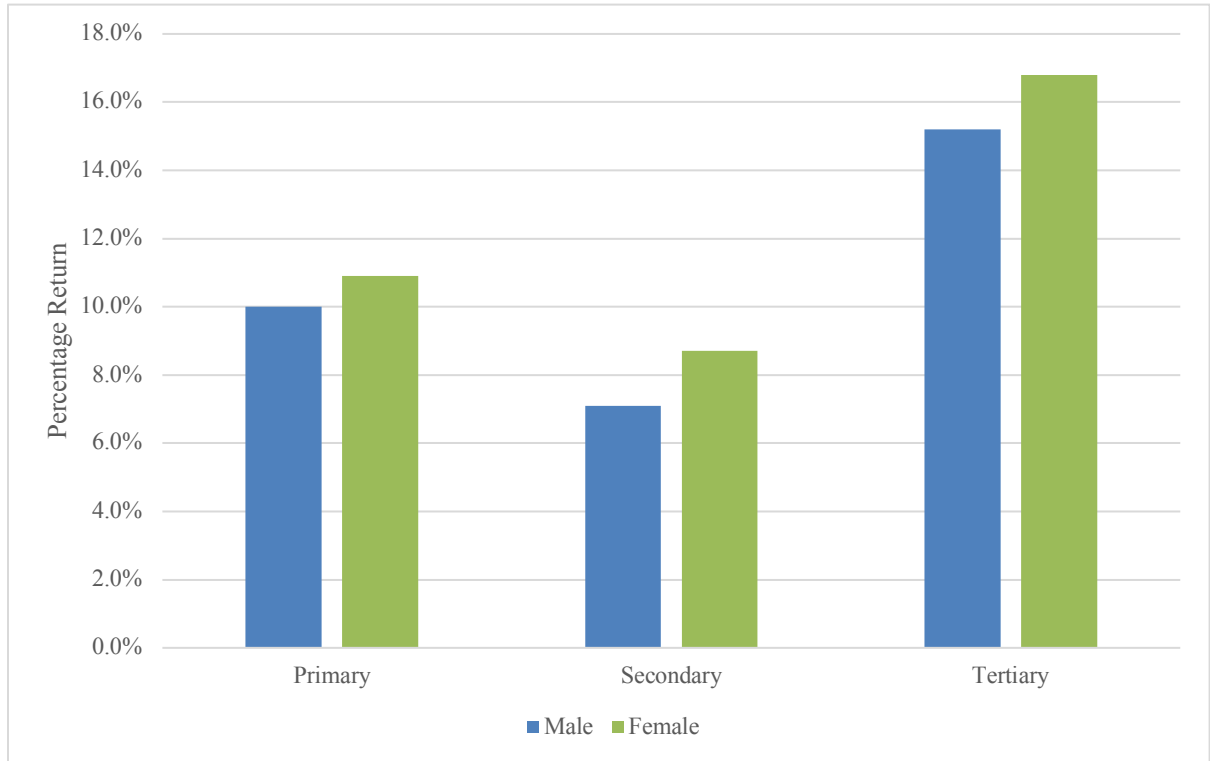
As seen in Table 2-1 Patrinos and Psacharopoulos (2018) found that primary school education provides the highest levels of return for educational investment (p.11).

Furthermore, Table 2-1 shows the returns differ by the income of the country examined

(Patrinos & Psacharopoulos, 2018, p.11). At each level of education, the returns for education are higher for countries with low per capita income at both the private and social level (Patrinos & Psacharopoulos, 2018, p.11). For social returns, Figure 2-1 depicts that level of return on education in all cases decreases as level of education increases (Patrinos & Psacharopoulos, 2018, p.11). However, the private returns for low and middle income countries are highest for primary school, and experience a depression for secondary school while bouncing back up for higher education (Patrinos & Psacharopoulos, 2018, p.11). Patrinos and Psacharopoulos (2018) suggest that the depressed secondary school returns are likely due to stratification of extremely high performing individuals in the upper levels of education creating a gap between the secondary and higher education returns (p.14). This study also found that the rate of return for women is higher by approximately 2% for females than males meaning that, compared to women who do not get an education the returns for female education is a better investment than the returns for that of males

Montenegro and Patrinos conducted a study using similar methodology to the Patrinos and Psacharopoulos study and found comparable results relating to the returns on education (Montenegro & Patrinos, 2014, p.2). Furthermore, Montenegro and Patrinos' (2014) study also identifies a similar pattern for female returns to education that exceed male returns in all levels of education by a statistically significant amount, which can be seen in Figure 2-4 (p.8). Figure 2-4 shows that at each level of education female returns exceed male returns.

Figure 2-4: Private Returns to Education by Level and Gender

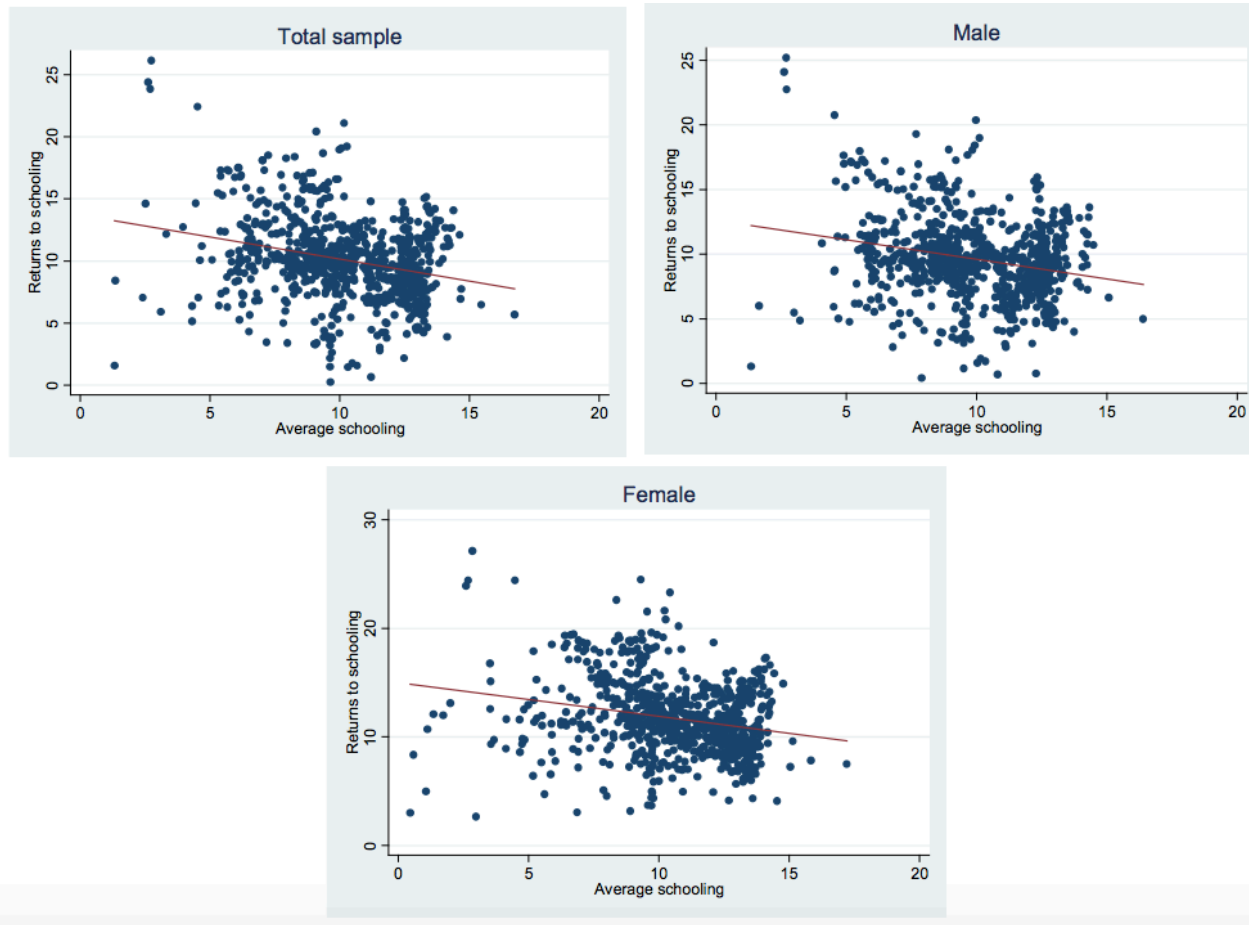


Adapted from: Montenegro, C.E., Patrinos, H.A., (2014). *Comparable Estimates of Returns to Schooling Around the World*. Washington, D.C. World Bank Group.

Montenegro and Patrinos also found that as the average level of education in the population increases the private returns of schooling decrease (Montenegro & Patrinos, 2014, p.13). Figure 2-5 shows the negative relationship between average years of schooling in the population and average returns to schooling.

Drawbacks to the studies by Patrinos & Psacharopoulos (2018) and Montenegro and Patrinos (2014) include difficulties with estimating economic factors and earnings over a lifetime. Economic variables are volatile and, therefore, difficult to estimate.

Figure 2-5: The Relationship Between Average Years of Schooling and Average Returns to Schooling



Source: Montenegro, C.E., Patrinos, H.A., (2014). *Comparable Estimates of Returns to Schooling Around the World*. Washington, D.C.

Another question that is not addressed by these analyses is whether or not the economic returns to education are actually caused by increases in educational level or by some external factor, or by some combination (Patrinos & Psacharopoulos, 2018, p.5). Patrinos and Psacharopoulos (2018) state that the issue of undetermined causality will become easier to measure as more data is collected through experimental government education programs.

E) Drivers of Economic Growth

In an attempt to separate and understand further the drivers of economic growth, the Federal Reserve conducted a study in order to analyze the economic growth of different states in the United States (Bauer, Schweitzer, Shane, 2006, p.1). Bauer, Schweitzer, and Shane (2006), reported that the most prominent driver of per capita income growth was the level of knowledge stocks in a state, over a number of other factors including taxes, levels of public infrastructure, rates of business failure, climate, and size of private financial markets (Bauer et al., 2006, p.1&2). Knowledge stocks are defined as “the accumulation of productive information in the form of education and technology” and are quantified as the amount of patents per capita, and proportion of the population acquiring a high school or secondary education (Bauer et al., 2006, p.2). The finding that knowledge stocks have the highest impact on economic growth of a state over all other tested characteristics indicates that, as a state increases its levels of educational attainment and technology, the level of economic growth over the relevant time period also increases (Bauer et al., 2006, p.2).

Bauer, Schweitzer, and Shane (2006) modeled the effects of three variables, that are categorized to represent the level of knowledge stocks, on the overall income levels of a state. These variables are the proportion of a state's population with at least a high school degree, the proportion of a state's population with at least a bachelor's degree and the number of patents held by individuals or businesses in a state (Bauer et al., 2006, p.35). The authors examine the effects of these three variables while controlling for taxes, original per capita income, investments in infrastructure, size of private financial markets, the rate of business failure, industry structure, and climate (Bauer et al., 2006, p.4). Their results indicated that the effects of being one standard deviation above the average in each of the knowledge stock variables was related to an increase in per capita income by 3.0% for patent number, a 1.5% increase for high school attainment, and a 1.4% increase for college attainment (Bauer et al., 2006, p.35).

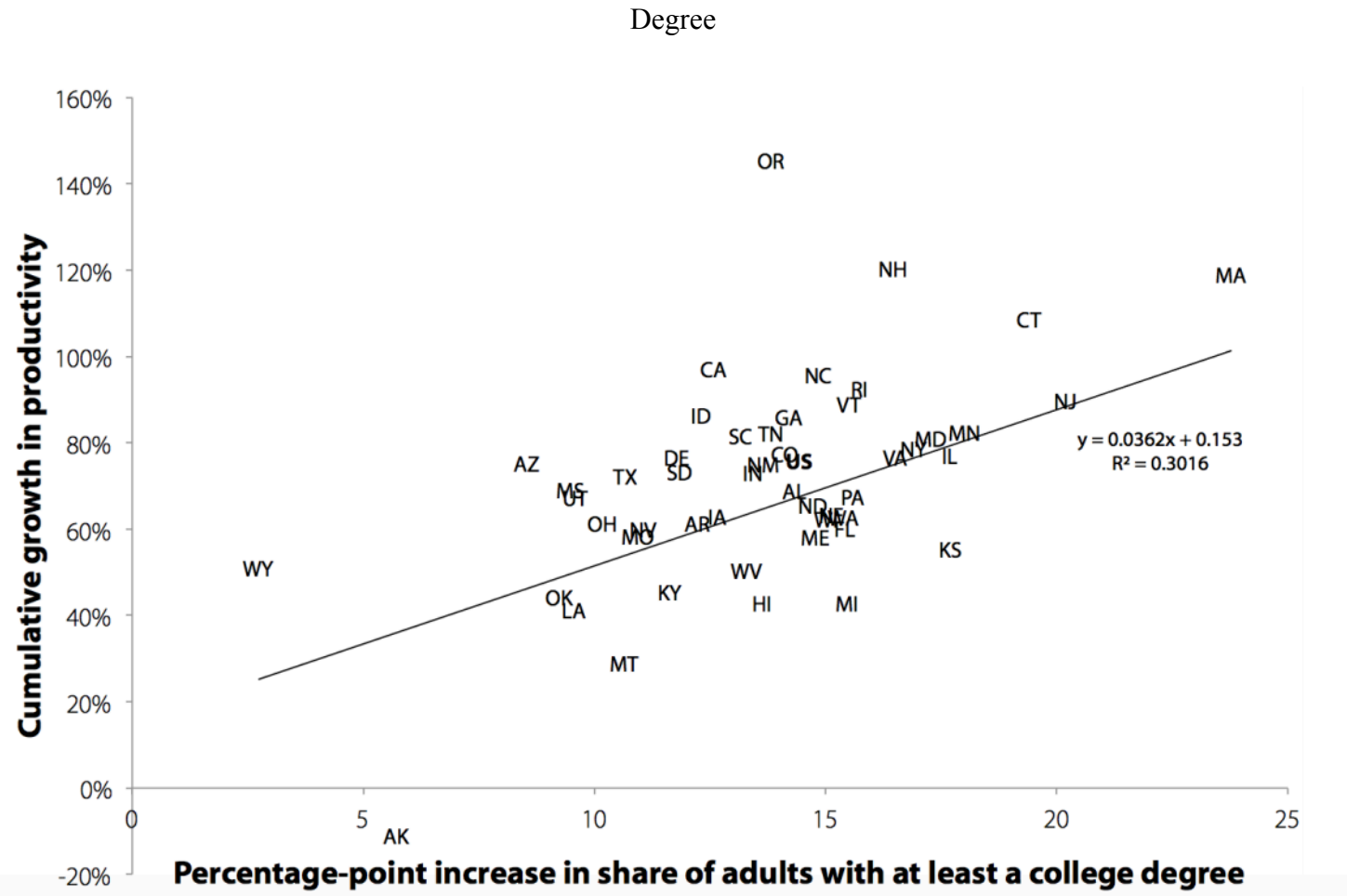
There are a variety of proposed reasons that explain the connection between knowledge stocks and economic prosperity. An Explanation presented by Bauer, Schweitzer and Shane (2006) include that higher levels of technology (as measured by the stock of patents) coupled with better educated workers results in a population that is more productive, more creative and entrepreneurial, better able to work in highly technologically intensive jobs, and more equipped to adopt new technology (Bauer et al., 2006, p.1&2). The researchers acknowledge the endogeneity of these factors, meaning that income could result in an increase in the amount spent on education and technology (Bauer et al., 2006, p.4).

Another study across multiple U.S. States examined education and its links with economic productivity and overall economic well-being (Berger & Fisher, 2013, p.1). In

order to measure increased productivity, Berger and Fischer (2013) measured gross state product per hour worked in relation to the proportion of adults with at least a college degree, which can be seen below in Figure 2-6 (p.3). Figure 2-6 shows a strong positive correlation between education and productivity (Berger & Fisher, 2013, p.3).

Berger and Fisher show that greater productivity is related to greater overall income in the economy and, when the benefits of higher output are distributed equitably between business owners and workers, higher median wages (Berger & Fisher, 2013, p.11). Berger and Fisher (2013) state that it is important to denote the difference between increases in productivity and increases in economic wellbeing (p.11). Productivity increases can be captured solely by those at the top of the corporate pyramid, however, when the returns to increased productivity are returned to the workers that are generating the increased productivity the overall and personal economy benefits (Berger & Fisher, 2013, p.11) In order to accurately measure the extent to which all people are benefitting from increased economic productivity, Berger and Fisher (2013) measure the impact of education on overall economic well-being by examining median wages (p.5.). Using median wages eliminates the bias of only certain individuals in upper level management capturing all the gains related to gains in productivity, which would raise average wages, but not the median (Berger & Fisher, 2013, p.5). Berger and Fisher (2013, p.5) use wages instead of income to preclude any non-productive income from investments and such assets. The only factor that Berger and Fisher (2013) tested that had a substantial correlation with median hourly wages was the proportion of the population with a bachelor's degree (p.6). Figure 2-7 shows that median hourly wages have a strong positive relationship with increased educational attainment of the state's population.

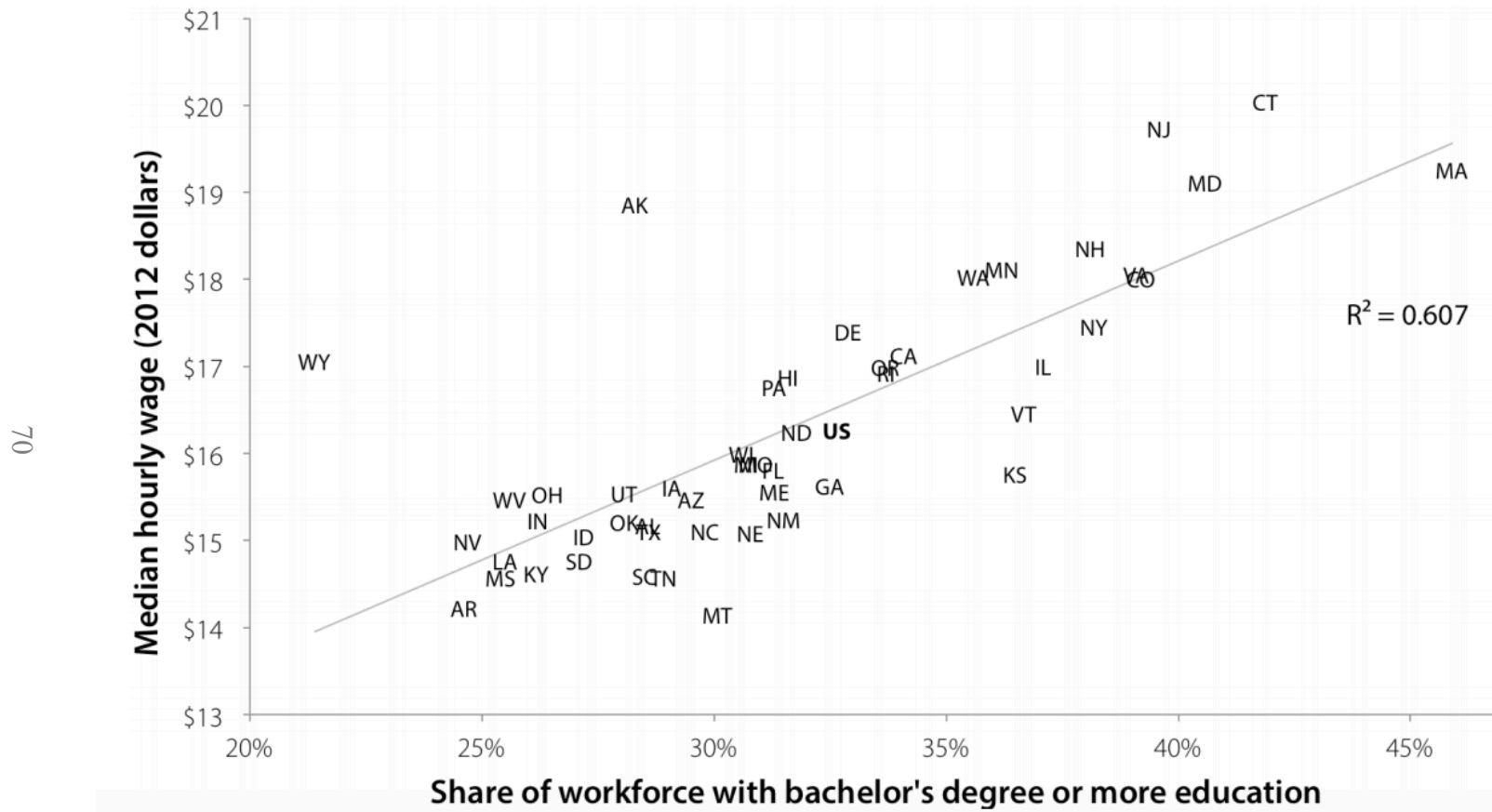
Figure 2-6: The Relationship Between Productivity Growth and Percentage Increase in the State Population with a College Degree



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Source: Berger, N., Fisher, P. 2013. *A Well-Educated Workforce Is Key to State Prosperity*. Economic Policy Institute. Washington, D.C. p.4.

Figure 2-7: The Relationship Between Median Hourly Wages and Percentage of the Workforce with at Least a Bachelor's Degree



Source: Berger, N., Fisher, P. 2013. *A Well-Educated Workforce Is Key to State Prosperity*. Economic Policy Institute. Washington, D.C.p.7.

Increased median wages not only help individual's personal economic well-being, but also contribute to overall economic progress (Berger & Fisher, 2013, p. 10). Increased wages go back to the government in the form of taxes, therefore each individual is, in many ways, returning the cost of his/her education (Berger & Fisher, 2013, p. 10). Another benefit, indicated by Berger and Fisher (2013), of investing in better education for the populous was that skilled workers not only create demand for more industry and development, but at the same time create supply of new industry through innovation and by drawing more industry to their regions (p.10). The creation of increased supply of industry and innovation in regions can help an economy grow and sustain new innovation (Berger & Fisher, 2013, p.10).

F) Demand for Labor

Another key economic reason that necessitates greater educational equality is increased demand for jobs that require skilled workers and decreasing numbers of people in the active populations in certain countries (OECD, 2012, p.19). Due to the increasingly aging population, the need for educated workers will likely increase over the next 20 years. The growing need for workers will likely incentivize countries to educate women and emphasize female labor force participation (OECD, 2012, p.19). Using the current prediction of mortality and assuming the fertility rate remains constant, many countries will be at risk of a lack of skilled workers if they do not incorporate women into their labor force (OECD, 2012, p.21). In order to sustain economic growth more women need to be educated and obtain higher level degrees to fulfill the future demand for employees in many countries.

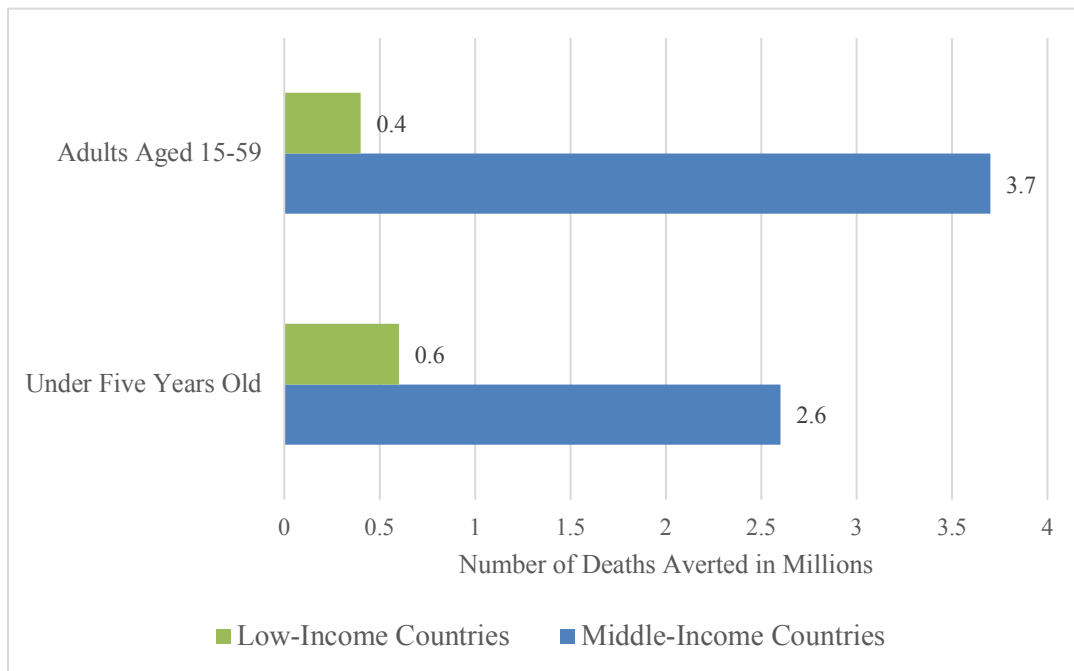
G) Returns on Education: Health Perspective

Women's education has substantial effects on health outcomes in a society including reducing child and adult mortality and decreasing the rate of adolescent pregnancy (Bundy, Silva, Horton, Jamison, & Patton, 2018, p.215). These same effects are not seen as a result of the education of males (Bundy et al., 2018, p.215). A study of 58 countries conducted by the UNESCO found that universal primary education for girls, would reduce child mortality by 15% and child mortality would be reduced by 49% if there were universal secondary education for females (Kwauk et al., 2016, p.29).

Positive health externalities associated with female education are generally not considered by families of females when deciding to send their daughters to school and the benefits are rarely considered in the calculation of economic returns (OECD, 2012, p.39). In order to understand this issue, Bundy et al. (2018) use data from countries around the world to attempt to comprehend and quantify the health-related economic impacts of increased female education (p.218). Bundy et al. (2018) provide a report assessing the effect of female, male, and overall education on a variety of health factors including female and male adult mortality (from ages 15-60), fertility rates, and under-five mortality (from ages 0-5) (p.212). The study uses statistical analysis to establish a causal relationship between female education and increased longevity (Bundy et al., 2018, p. 212). The study compares the educational attainment of different countries and the effects educational attainment has on health-variables while controlling for time, technological advances, and income (Bundy et al., 2018. p.212). Bundy et al. (2018) found that increases in education cause a decrease in adult mortality (15-59) and under-five mortality by 3.7 million and 2.2 million, respectively in middle income countries

(p.215). Figure 2-8 shows the number of death averter from 2010-2015 due to increases in education overall. Figure 2-9 depicts the percentage decline in mortality for males, females, and children under five that is attributable to increases in female education from 1970-2010.

Figure 2-8: Deaths Averted Due to Increases in Educational Attainment from 2010-2015



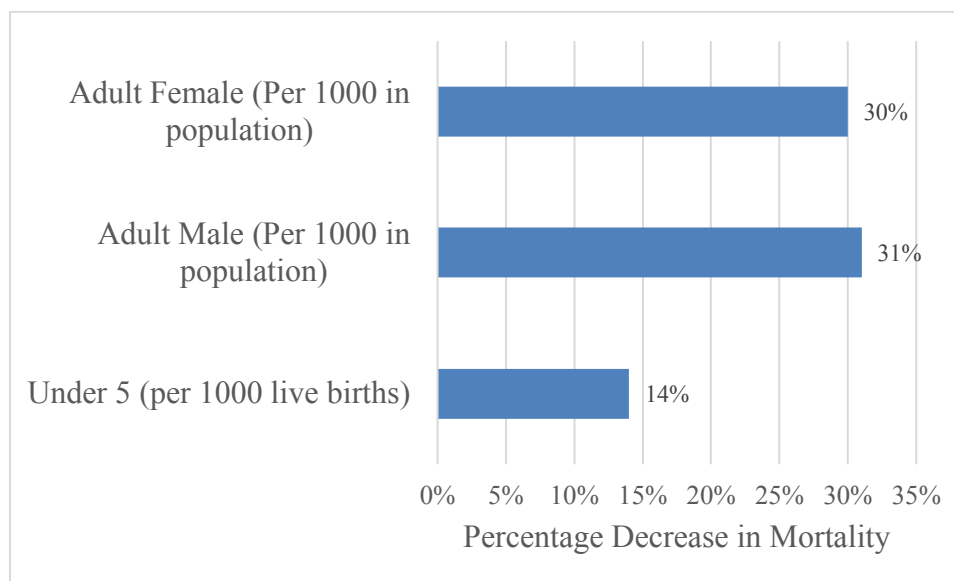
Adapted from: Bundy, D., Silva, N., Horton, S., Jamison, D., Patton, G., 2018.

Optimizing education outcomes: high-return investments in school health for increased participation and learning (English). Disease Control Priorities. Washington, D.C.:

World Bank Group. p.216)

Figure 2-9: Decline in Mortality Attributable to Increase in Female Schooling Worldwide

1970-2010



Adapted from: Bundy, D., Silva, N., Horton, S., Jamison, D., Patton, G., 2018.

Optimizing education outcomes: high-return investments in school health for increased participation and learning (English). Disease Control Priorities. Washington, D.C: World Bank Group. p.216

Furthermore, the study found that the under-five mortality decreased by 4.2% with a one-year increase in female education (Bundy et al., 2018, p.215). However, the effect of one extra year of male schooling is not found to be significant on any mortality levels in the study (Bundy et al., 2018, p.215).

Bundy et al. (2018) further quantify the returns from health benefits due to increased female education in order to incorporate them into the original assessments of returns on education (p.218). The impact of an additional year of female schooling was

quantified with respect to decreases in female adult mortality, male adult mortality, and under-five mortality (Bundy et al., 2018, p.218). Bundy et al. (2018) used a previous study to quantify the “value-of-a-life-year,” which accounts for economic productivity as well as other factors to assign a dollar value to one additional year of life (p.218). Returns were assessed as a multiple of the average years of increased longevity due to female schooling (Bundy et al., 2018, p. 220). For example, if a country had an average of five years of schooling for females then the returns were calculated based on improvements in the health outcomes related to five years of female schooling (Bundy et al., 2018, p.218). The value of health-related improvements due to female education was then added to the original returns of female education to calculate a new IRR (Bundy et al., 2018, p.218). The returns were then separated into different categories based on the education levels and income of each respective country (Bundy et al., 2018, p.218). The new data generated indicates that for low income countries the social rates of return for female schooling, increased by 5% when accounting for the monetary benefits from better health, which is, documented in Table 2-2. The benefits also existed for lower and upper middle income countries providing a 2.3% increase and a 1.7% increase respectively, as measured in Table 2-2 (Bundy et al., 2018, p.220).

Increased educational attainment for women can also help to improve the rates of adolescent fertility (defined as the percentage of women 15-19 who are currently pregnant or have a child), which not only decreases the incidence of maternal mortality, but also decreases financial strain from unexpected medical costs due to complicated deliveries (Bundy et al., 2018, p. 191). When educational rates are higher for females, the rate of adolescent fertility are lower (Bundy et al., 2018, p.191).

Table 2-2: The Rate of Return to an Additional Year of Schooling Including and Not Including Health Benefits

IRR	Private Rate of Return	Without Health Benefits	Health-Inclusive
		Social Rate of Return	Social Rate of Return
Low Income Countries	16.00%	11.00%	16.00%
Lower-Middle Income Countries	9.00%	7.00%	9.30%
Upper Middle Income Countries	5.00%	3.00%	4.70%
Are Benefits/Costs Included			
Health Benefits	No	No	Yes
Earnings	Yes	Yes	Yes
Direct Costs of an Additional Year of Schooling	No	Yes	Yes
Opportunity Cost of Attending an Additional Year of Schooling	Yes	Yes	Yes

Adapted from: Bundy, D., Silva, N., Horton, S., Jamison, D., Patton, G., 2018. *Optimizing education outcomes: high-return investments in school health for increased participation and learning (English)*. Disease Control Priorities. Washington, D.C: World Bank Group. P.220

Decreased adolescent fertility leads to decreased maternal mortality because adolescents are at a five times higher risk of dying during childbirth (Bundy et al., 2018, p.191.) Furthermore, adolescents frequently have more complicated childbirths that require a significant outlay of cash, which can be devastating for an already impoverished family (Bundy et al., 2018, p. 191).

Using the countries Niger and India, Bundy et al. (2018) quantify the impact of one extra year of education on the rate of adolescent fertility and subsequently the improvements made in impoverishment and maternal mortality (p.192). It is estimated that if every girl received one extra year of schooling it would cost 15 million dollars in Niger, with a population of around one million adolescent females and three billion in India with 58 million adolescent females (Bundy et al., 2018, p.195). If this strategy was implemented, it is estimated that in both India and Niger, an additional year in schooling would result in an 18% decrease in adolescent pregnancy (Bundy et al., 2018. 195). An 18% in adolescent pregnancy is estimated to result in the reduction of 160 female deaths per year in Niger and 1250 per year in India, shown in Table 2-3 (Bundy et al., 2018. 195). This implementation would also save \$150,000 US Dollars in Niger and \$3,000,000 in India in out of pocket medical expenditures (Bundy et al., 2018. 195). Although these numbers are dwarfed by the large expense of schooling the entire female population for an extra year, they are simply additions to the other societal benefits (Bundy et al., 2018. 196). The results of this study are all summarized in Table 2-3.

Table 2-3: Impact of Increasing Mean Years of Female Schooling by One Year by Country

Niger						
Outcome	Total	Income Quintile I	Income Quintile II	Income Quintile III	Income Quintile IV	Income Quintile V
Adolescent Maternal Deaths Averted	164	40	40	34	30	20
Adolescent Out of Pocket Expenses Averted	\$152,000	\$13,000	\$27,000	\$29,000	\$31,000	\$52,000
Adolescent Cases of Catastrophic Health Expenses* Averted	\$1,100	\$130	\$200	\$200	\$240	\$330
*Expenses Greater than 10% of Income						
India						
Outcome	Total	Income Quintile I	Income Quintile II	Income Quintile III	Income Quintile IV	Income Quintile V
Adolescent Maternal Deaths Averted	1260	400	360	260	170	70
Adolescent Out of Pocket Expenses Averted	\$3,050,000	\$430,000	\$610,000	\$730,000	\$740,000	\$540,000
Adolescent Cases of Catastrophic Health Expenses* Averted	\$5,160	\$5,160	\$-	\$-	\$-	\$-
*Expenses Greater than 10% of Income						

Adapted from: Bundy, D., Silva, N., Horton, S., Jamison, D., Patton, G., 2018. *Optimizing education outcomes: high-return investments in school health for increased participation and learning (English)*. Disease Control Priorities. Washington, D.C:

World Bank Group. P.220

H) Why are the Returns on Education Higher for Women?

Given that returns to education were consistently found to be higher for females than males Dougherty (2005) conducted a study to determine why this trend occurred. In his study, Dougherty (2005) analyzes 27 previously conducted studies on educational returns separated by gender in the United States from 1973-1999. Dougherty (2005) found that 18 of the 27 studies reported a differential with female returns exceeding male returns to education, six reported mixed results of some variables where women's returns were higher and some that had no difference between genders, two reported neutral results, and only one that reported higher returns for men (p.971). Using the data from all 27 studies Dougherty (2005) concluded that female returns to education were statistically significant in their difference from male returns (p.972). Although, this particular study was confined to data from the United States, other regions are being studied and similar results are being identified across the globe (Dougherty, 2005, p.972). However, it is puzzling to note that women have higher returns to education, yet lower salaries and wages (Dougherty, 2005, p.972). Dougherty (2005) attempts to identify reasons for this disparity (p.972).

In order to determine the reasons that lead to greater returns to education for women, Dougherty (2005) collected data on 6,111 people who were between the ages of 14-21 in 1979 (p.973). The main hypothesis of Dougherty's (2005) study was centered around the differences in pay between men and women attributable to discrimination, tastes, and circumstances (DTC) (p.970). The theory in the study was that women generally earn less because of discrimination in pay versus their male counterparts, personal tastes for jobs that generally earn less (ex. teachers and service sector positions),

and circumstances, such as having children, that make women more susceptible to accepting positions that are more conducive to their lifestyles, rather than positions with higher pay (Dougherty, 2005, p.970). The study seeks to understand if women's education yields higher returns due to the positive effects of education diminishing the influence of DTC factor's on women's employment decisions (Dougherty, 2005, p.973).

Using the Blinder and Oaxaca decomposition method, Dougherty (2005) explored the relationship between an additional year of schooling and the wage impacts due to DTC factors (p.976). Dougherty's (2005) study found that education and DTC factors are negatively correlated with a one percent decrease in DTC variables for every extra year of schooling (Dougherty, 2005, p.976). These findings align with the idea that the negative impact of education on DTC factors is related to a greater increase in wages and returns on education for women (Dougherty, 2005, p.976). Dougherty (2005) created a regression indicated that around half of the differential between female and male returns could be caused by the DTC factors (p.976).

A possible explanation for the findings on DTC variables is that women who have more education generally possess certain qualifications or titles that require established levels of compensation that level the pay between males and females (Dougherty, 2005, p.973). Another explanation is that women who are more educated are more likely to branch out of traditional roles and seek higher paying jobs. Furthermore, educated women may be able to afford childcare and other services that allow them to work more demanding, higher paying jobs (Dougherty, 2005, p.973). A final explanation is that women who are educated are simply more equipped to identify and combat

discrimination and, therefore, only accept positions with acceptable compensation (Dougherty, 2005, p.973).

Another hypothesis tested by Dougherty (2005) was that females gain higher educational attainment without necessarily more formal educational titles than that of males (Dougherty, 2005, p.978). Essentially, even though women and men spend the same time in school, women learn more due to the fact that they make better use of their time in the school system (Dougherty, 2005, p.978). Therefore, if this hypothesis is correct, the return differential is reflective of the differential in actual knowledge and skills gained from education, but not the actual time spent in schools (Dougherty, 2005, p.978). To test the hypothesis researchers used high school grades, to measure educational attainment. While flawed as a measure of educational attainment, high school grades, were the most readily available indicator of attainment in schools. While females performed higher in every subject specified, better grades for women, as a group, were not found to be a significant indicator of earnings in the future (Dougherty, 2005, p.978). Therefore, better female educational attainment was not found to be a significant driver of the return differential (Dougherty, 2005, p.978).

Another hypothesis that Dougherty (2005) investigated was that the occupations that females pursued valued education more (when compared to other factors such as seniority, rank, etc.) when deciding compensation than those of men (Dougherty, 2005, p.978). Meaning, that the upward mobility of women was more directly tied to the educational level achieved by these women creating higher returns for educational attainment (Dougherty, 2005, p.978). This theory would fit into the demographic data of entrepreneurial jobs, union workers, or manual labor jobs being predominantly dominated

by men, but also having low returns to increased education (Dougherty, 2005, p.978). However, Dougherty (2005) found no evidence to corroborate this hypothesis (p.979).

IV) Counter Arguments

A) Transfers of Productivity

It is important to note that not all increases in GDP represent an increase in productivity. Since informal labor is not included in GDP, as more women go to work in formal positions GDP inherently has to increase (United Nations Women, 2015, p.201). Therefore, when women are drawn from the informal sector their productivity is sometimes being transferred, not necessarily created (United Nations Women, 2015, p.201). This fact is also important for increases in wages. Increases in wages are often shown as increases in recorded wages from formal work. So while many increase in wages represent raw increases in income, not all increases in wages represent true increases in cash flow to an individual if they were previously engaged in informal wage work.

B) Endogeneity

A drawback of the relationship between educational parity and economic growth, economic participation, and increased wages is the endogeneity of the variables (United Nations Women, 2015, p.197). It is exceedingly difficult to separate whether the countries with higher GDP, wages, and employment of females use their increased earnings to send more women to school or whether educated women are part of the underlying increase in such factors (United Nations Women, 2015, p.197).

C) The Screening Hypothesis

The “Screening Hypothesis” is a criticism that the societal returns to education, are not as high as previously believed (Layard & Psacharopoulos, 1974, p.995). The Screening Hypothesis essentially purports that employers use education as a method by which to screen out intrinsic intelligence and talent of employees, but does not actually produce more productive employees (Layard & Psacharopoulos, 1974, p.985). Layard and Psacharopoulos (1974) report that if the Screening Hypothesis is true it would also mean that the returns to education are not benefitting society as a whole by creating increased productive capacity and innovation and therefore, higher GDP, and economic growth, but rather individuals are simply gaining a title to qualify the skills they already possess pre-education (p.985). Therefore, only the individual would benefit from additional schooling because it allows him/her to achieve greater pay by distinguishing himself/herself from other competitors in the job market (Layard & Psacharopoulos, 1974, p.985).

Essentially, the Screening Hypothesis is that schooling only serves to demarcate those with prior abilities, thus providing them high returns, but is not providing economic returns to society due to enhanced capacity of the workforce. Due to this phenomenon, people will seek out more education than is productively valuable (Layard & Psacharopoulos, 1974, p.985). If verified, the Screening Hypothesis would indicate that employers are simply granting more educated employees higher salaries because they have no alternate information on which to base their compensation (Layard & Psacharopoulos, 1974, p.986).

Layard and Psacharopoulos (1974) indicate that The Screening Hypothesis is difficult to test because it has been shown through many studies that education level affects future earnings, but it is difficult to understand why this is true. The delineation between screening effects and productivity increases due to education is difficult to assess and also variable across industries (Layard & Psacharopoulos, 1974, p.995). There is evidence that screening is part of the reason for increased returns, however, not the most significant part.

One reason that disproves the Screening Hypothesis is that when comparing people who dropout to people who complete coursework, the rates of return to education are similar (Layard & Psacharopoulos, 1974, p.990). This finding suggests that the signaling of having completed a degree is not as powerful as the knowledge gained while in a certain program (Layard, & Psacharopoulos, 1974, p.990). Furthermore, another finding that implicates that the Screening Hypothesis is not a large factor in educational returns is that as people grow older and gain more employment experience the effect of educational differences increases (Layard, & Psacharopoulos, 1974, p.992). Meaning, even after people have entered the workforce and no longer need education to signal their value to employers, educational level still predicts higher wages (Layard & Psacharopoulos, 1974, p.992). Therefore, it is reasonable to conclude that education offers people additional insights that are significant throughout their job experience (Layard & Psacharopoulos, 1974, p.992). A final argument that negates the Screening Hypothesis is that if education was mainly used to provide a screen for employers, another, less expensive, service would have entered the market to screen out employees without years of lost opportunity costs and additional expenses (Layard, &

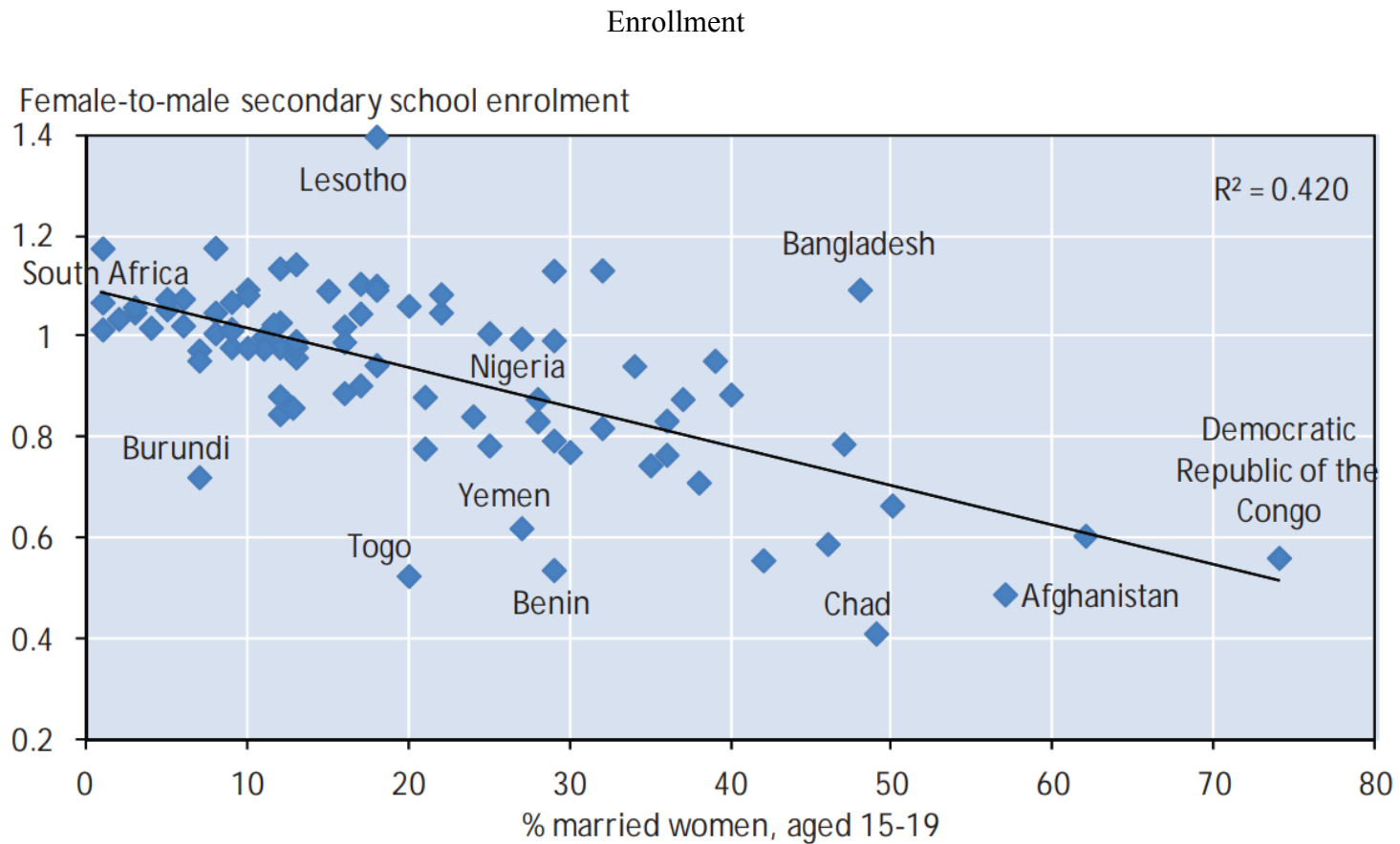
Psacharopoulos, 1974, p.995). Taken together these three explanations (rates of returns for dropouts are as high as those who complete coursework, the rate of return differentials to educational attainment do not decrease with age, and the lack of a cheaper substitute to screen for intrinsic ability) provide sufficient evidence that the Screening Hypothesis is not a significant counterargument to societal benefits of education (Layard & Psacharopoulos, 1974, p.995).

V) Factors that Impede Educational Parity

Given such overwhelming evidence that women's education is beneficial, not only for women's personal economic well-being, but also that of the overall economy, why are there still such large gaps in women's education across the globe? There are a variety of reasons that still prevent females from pursuing an education. Childhood marriage, differences in the opportunity cost of female and male students, societal norms, and the lack of a safe schooling environment all impede the further progression of women's education in many regions (OECD, 2012, p.23,26,43).

One social variable that affects the education of women is childhood and teen marriage. The likelihood of a girl entering marriage early in her life, measured as percentage of girls ages 15-19 who are married in a certain population, is associated with an increased dropout rate in female in secondary education (OECD, 2012, p.23). Figure 2-10 shows the data collected by the OECD (2012) that indicates a negative relationship between female enrollment in secondary school and the proportion of 15-19 year-old women married in a population. It is important to note, however, the link between childhood marriage and secondary education is complex and endogenous .

Figure 2-10: The Relationship Between the Proportion of Females 15-19 Married and the Gender Gap in Secondary



Source: Organisation for the Economic Cooperation and Development. (2012). *Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM 2012*. Paris, France: Author p.25

UNICEF found in 2005 that women are less likely to get married young if they remain in school, however, when females drop out of school almost 30% of women in one study cited marriage as the reason (OECD, 2012, p.26). Early marriage limits a woman's access to education and leads to higher rates of adolescent fertility, which reduces the likelihood a woman will either stay in school or enter the formal economy (OECD, 2012, p.25).

Another factor that may account for the lack of female enrollment and completion of school is that many schools are not safe environments for many women. Gender-based violence and harassment lead many females to leave school or simply never enroll (OECD, 2012, p.43). Women are put at risk through their commutes to school, the lack of female restrooms, and a large proportion of male teachers and administrators (OECD, 2012, p.43).

Another barrier to the education of females is the relatively larger opportunity cost of women's education due to females not being able to perform expected domestic duties (OECD, 2012, p.39). The costs of education include direct costs, like that of uniforms, books, and tuition, which are essentially the same between boys and girls (OECD, 2012, p.39). However, the indirect opportunity costs can differ based on the sex of the students and their perceived value by society (OECD, 2012, p.39). While both boys and girls face the cost of lost labor and chores, younger women are also valued for caretaking for younger sibling and other domestic activities not included in formal economic payment (OECD, 2012, p.39). For example, the OECD (2012) reports that collecting water takes around four or five hours in some communities and if a girl is in school she loses that productive time (p.39). Furthermore, there are more females on the

culp of deciding whether or not to attend school due to societal tendency to educate boys over girls and differences in opportunity cost can cause the decision to fall in either direction. Therefore, programs targeted at reducing costs increases the enrollment of girls at a higher rate than that of male counterparts even if the programs were not aimed specifically at female students (OECD, 2012, p.39).

VI) Solutions

The process of eliminating gender gaps in educational outcomes is complex and will require commitment from various groups globally and within each country to rectify the inequities (United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2018, p.47). Main objectives that have been shown to lead to improvement in women's educational attainment are increasing affordability and accessibility of school, and creating more inclusive and safe school environments (Kwauk et al., 2016, p. 104).

A) Affordability

Across the globe, primary, secondary, and tertiary school costs are not always fully subsidized by the government, leaving families to cover tuition, books, uniforms, and other opportunity costs of education (Kwauk et al., 2016, p.107). Both financial and opportunity costs of education impact the likelihood of a family to send their children to school and often boy children are prioritized over girl children (UNESCO, 2018, p.48). In order to address this problem, scholarships, stipends, cash transfers, and elimination of school fees have all been implemented to attempt to alleviate the financial barrier to education for women (Kwauk, 2016, p.108). Conditional cash transfer programs that

provide cash or in-kind payment to families that have children who complete or remain in school is one method of increasing female enrollment (UNESCO, 2018, p.48). In Bangladesh the conditional cash transfer program, “Female Secondary School Stipend Programme”, increased educational attainment for eligible girls by 2.7 years and, additionally, raised the attainment of their younger siblings by 10% (UNESCO, 2018, p.48). Another intervention in Bangladesh set up a stipend for females that covered tuition and book, uniforms, supplies and transportation if the girls attended regularly, achieved minimum grades, and did not marry while in school (Kwauk et al., 2016, p. 114). This program saw female enrollment rise from 27% to 44% (Kwauk et al., 2016, p. 113). In Zimbabwe, providing a stipend for school fees, and supplies for orphan girls decreased the drop-out rate of the participating girls by 50% (UNESCO, 2018, p.48). By studying hundreds of interventions that target cost reduction of schooling for girls, Kwauk, Sperling and Winthrop (2016) determined that providing incentives for education is particularly helpful for females and helps to increase enrollment (p. 119).

B) Accessibility

It has been shown that increasing accessibility of schools by decreasing the amount of time it takes to get to school and the distance to school is an especially important factor that affects female enrollment (Kwauk et al., 2016, p. 138). Through the construction of 2000 new primary schools in rural areas of Egypt, the country increased female enrollment in rural primary schools by 60% and the overall proportion of female students increased from 35% to 42% of students (Kwauk et al., 2016, p. 139). Afghanistan villages with schools saw an increase in female enrollment by 52% compared to villages without schools (Kwauk et al., 2016, p. 140).

In addition to the physical barrier that distance creates for schooling, it also creates a social barrier for children who have to travel outside of their home communities to go to school (Kwauk et al., 2016, p. 141). Small schools within communities that they serve, help to create a partnership between the school and the community and increase the participation of community members and parents (Kwauk et al., 2016, p. 141). In Bangladesh, small community schools were created to increase enrollment and help transition children to larger schools outside of their community (Kwauk et al., 2016, p. 142). This intervention increased completion of school from 67% to 94% and transferred 78% of students to the closest public school (Kwauk et al., 2016, p. 142). In Colombia, the Nueva Escuela program created new schools in rural communities and provided more flexible schooling schedules. Through Escuela Nueva, rural enrollment increased from 50% to 80% (Kwauk et al., 2016, p. 143).

C) Female-Friendly Schools

In order to promote female enrollment in schools, it is important to understand the cultural context of each country and region that inhibits girls from attending school. Creating “female-friendly” schools may include having separate facilities (schools and other facilities, like bathrooms), classes, female teachers, protection at school, and other related precautions that help females feel safe from violence, and prejudice and include females in the learning environment (Kwauk et al., 2016, p. 147). Providing menstruation products, separate bathrooms, gender training for teachers, and female teachers have been incorporated as interventions in various schools. These interventions are developed to increase female access to school and have been part of the improvement in completion and participation rates for females (Kwauk et al., 2016, p. 149).

Steps also need to be taken to eliminate violence (physical, sexual, and psychological) against women in and around schools (Kwauk et al., 2016, p. 152). One study reports that in South Africa, 30% of girls are raped in or around school (Kwauk et al., 2016, p. 152). Sexual assault in and around schools is common in many societies with many women being abused in return for better grades (Kwauk et al., 2016, p. 152). Furthermore, girls are particularly vulnerable to gender violence more so than their male peers (Kwauk et al., 2016, p. 152). Establishing clear mechanisms for reporting violence and educating teachers and students about the systems for violence reporting help to improve reporting of abuse and hold abusers accountable (Kwauk et al., 2016, p. 153). More research and implementation needs to be done to fully understand the implications and methods of improving violence against women in schools (Kwauk et al., 2016, p. 160).

VII) Conclusion

Across the world, barriers to full educational equality exist. In regions such as Asia, Sub-Saharan Africa, and India, women are finishing primary, secondary, and tertiary education at lower rates than men (Dobbs et al., 2015, p.47). Furthermore, in other regions, women are underrepresented in tertiary degree completion in mathematics, science, engineering and technology (WEF, 2017, p.32). Education is a key determinant in economic prosperity, not only for individuals, but also for countries and regions. Increasing education leads to greater productivity, wages, economic participation and economic growth (OECD, 2012, p.17). Due to the fact that women are overrepresented in the population of uneducated and poorly educated people, there is greater potential for

economic growth from women's education, although increasing education for all people remains important in many regions. Additionally, due to the fact that women's education has higher yields and can lead to better education and health for her whole family in the future, women's education should be an especially important goal for regions seeking to improve development and well-being (Patrinos & Psacharopoulos, 2018, p.11). In order to accomplish greater school enrollment and education attainment for females, governments, communities, and non-governmental organizations, should address the accessibility, affordability, and inclusivity of schools for girls and women (Kwauk et al., 2016, p. 104). In order to fully address problems with females not entering or completing school there need to be financial aids and incentives to females going to school, better accessibility to schools in local communities, and better practices that enable females to feel safe and welcomed in the school environment (Kwauk et al., 2016, p. 104).

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