

A Macro-level Exploration of the Links between Fertility Decline and Gender Equality

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THE FERTILITY & EMPOWERMENT NETWORK

The Fertility & Empowerment (F&E) Network is a group of academic and applied researchers committed to reinvigorating the connection between gender, fertility decline and development through both theoretical and applied research. The F&E Network is housed at the International Center for Research on Women and funded by The William and Flora Hewlett Foundation. The F&E Network aims to advance a research agenda on issues intersecting these three themes that is of interest to researchers and policymakers alike, and to support the professional development of experienced and emerging scholars with an interest in gender and population.

Fertility & Empowerment Network members have conducted a series of case studies addressing whether and to what extent fertility declines in lower and middle income countries have led to gains in women's well-being, women's empowerment or transformations to gender equality. The F&E Working Paper Series serves as a platform for the collective presentation of this rich body of work.

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ABSTRACT

This study investigates the hypothesis that fertility decline fosters changes in gender equality by investigating macro-level patterns of fertility decline relative to changes in the labor and education sectors using national-level time-series data from approximately 30 low- and middle-income countries. We examine the temporal ordering of changes in women's labor force participation and fertility, overall and for women ages 25-34, as well as the relative labor force dynamics of men and women to determine if fertility decline preceded changes in these domains and whether the dynamics of the gender gap suggest changing opportunity structures for women. We then examine trends in women's and men's educational attainment relative to aggregate fertility decline, focusing on secondary and tertiary education to reflect shifts in the level of schooling most likely to empower women and representing significant parental and societal investments in women and girls. We find that gaps between men's and women's labor force participation and post-primary education narrowed following declines in aggregate fertility, and sometimes concurrently. Thus the analysis lends qualified support for the hypothesis that fertility decline fosters shifts in the gender dynamics of two key domains.

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INTRODUCTION

Many low- and middle-income countries have experienced fertility declines and the dramatic expansion of contraceptive options in recent decades, often in a single generation. A number of scholars have suggested that fertility declines and gaining access to the means to control fertility can function as levers for change in gender relations at the societal level, and perhaps foster an increase in gender equality (Dyson 2001; Malhotra 2012; Mason 1997; McDonald 2000; McNay 2005). Yet there has been little in-depth analysis of such relationships across a range of low and middle-income countries—or within even a single country. Such research that examines these relationships empirically and their consequences for women and men, and for gender relations more broadly has important policy and program implications.

While an in-depth understanding of the relationship between fertility declines and changes in gender relations will require a complex research agenda, an initial step is to analyze the macro-level trends on some measures of fertility and gender dynamics in a subset of countries. In this paper, we undertake this critical analysis by examining data over time on the gender dynamics within two key social institutions, the labor market and education system, in approximately 30 low- and middle-income countries. Our purpose is to determine if fertility decline could be a cause of changes in gender relations in each of these sectors and a catalyst for improvements in gender equality.

Understanding these relationships is relevant to policy concerns and challenges facing a growing number of low- and middle-income countries. Many of these countries are simultaneously experiencing shifting age structures, higher aspirations, increasing female education and labor force participation, and rapid changes in the global economy in addition to lower fertility levels, and need a better understanding of how these changes are interconnected. Moreover, while gender equality and women's empowerment are increasingly priorities on the development agenda, the possibility that fertility decline is one driver of changes or improvements in gender equality has received relatively little attention. By focusing on the connection between shifts in fertility rates and the gender dynamics within the labor market and the education system, this paper contributes valuable information that could help governments and local and international actors design policies and programs to maximize the benefits of fertility decline.

BACKGROUND AND JUSTIFICATION

Fertility has long been understood to be a key component of family, social, cultural, and economic systems. The rapid and significant decline in fertility and women's increased access to a range of fertility control options mark significant changes in the fundamental workings of traditional societies. Thus, fertility decline—dramatic in both magnitude and speed in many places—may well foster significant ripple effects in social norms, systems, and structures, especially those institutions that are centered upon fertility and childrearing. Thus many scholars have posited that the rapid decline in fertility over the last several decades in many low- and middle-income countries and the more widespread placement of fertility control in the hands of women may foster changes in gender relations and gender systems at all levels of traditionally patriarchal societies, including kinship systems and institutions like the labor market and the education system (Dyson 2001; Malhotra 2012; Mason 1997; McDonald 2000; McNay 2005).

Theoretical arguments from several disciplines support this hypothesis. Demographers suggest that the decreasing mortality and increasing life expectancy typically accompanying fertility decline mean that women spend smaller proportions of their lives bearing and rearing children than in previous generations (Davis 1982; Davis 1984). Consequently, women have the opportunity—and perhaps the need—to take on new roles, in the labor force, political arena, and elsewhere. Some scholars contend that when women no longer spend the majority of their lives bearing and rearing children, the traditional division of labor may be undermined and men's motivation to maintain control over women's sexuality and reproduction is diminished (Davis 1982; Davis 1984; Dyson 2001; Mason 1997). Moreover, women with longer lifespans relative to men and lower fertility are also more likely to be widowed and lack children to care for them as they age, increasing their motivation to support themselves economically (Bauer 2001; Davis 1984). These factors may push women into the labor force and other new domains and force the renegotiation of social roles. To the extent that these transformations increase women's agency and resources, they may empower women individually and as a group, and may help to break down barriers to gender equality at the societal level.

Based on these contentions, fertility decline could eventually foster widespread repercussions on the gender dynamics occurring within social institutions. These hypothesized repercussions may well take time to manifest across broad swaths of a society because they involve the transformation of deeply entrenched social norms. Such changes are unlikely to be sudden or to take place

uniformly throughout society. However, particular social institutions may show evidence of shifts earlier in the process of fertility decline.

The labor market and the education system may be particularly sensitive to dynamics of fertility decline, for several reasons. First, the "role incompatibility hypothesis" proffered by economists suggests a simple, rather mechanistic association between labor force participation and childrearing in many societies, and predicts that reduced fertility may free up more of women's time to participate in the labor market and reduce the opportunity costs of her participation. Thus, societies experiencing fertility decline may well see a rise in women's labor force participation beginning early on in the fertility transition. With respect to education, demographic theory suggests that parents with fewer children are more able to invest in the "quality" of their children (Becker 1965), implying that increased investments in children's education may be an early consequence of fertility decline. Relatedly, slower population growth may permit governments to increase their investments in education as well, with benefits accruing to girls. Moreover, as female labor force participation increases, the economic returns to women's schooling may also increase, creating incentives for girls and their families to invest in education as the fertility decline persists (Bloom et al. 2009). Thus, changes in women's labor force participation and educational attainment may be early consequences of fertility decline and perhaps initial markers of changes in women's roles and society more broadly. Consequently, we focus our investigation on these domains. [We discuss the limitations of using these domains in greater detail below.] The labor market and education system are also two of the only domains with sex-disaggregated, macro-level data available for a sufficiently large sample of countries, over a long enough period, to examine this hypothesis at the societal level.¹

Data and conceptual limitations aside, understanding the macro-level dynamics of the labor force and post-primary education domains, alone and in relation to fertility decline, is nonetheless important for several reasons. First, education and employment are two important life dimensions, and any significant shifts in opportunities for women in these sectors are important markers of social change. That women in low- and middle-income countries have entered both sectors in large numbers in recent decades marks an important societal shift worthy of investigation and explanation. Moreover, education and labor force participation are two domains in which women

¹ Some potentially useful indicators of women's status or gender relations—such as age at marriage or contraceptive prevalence—have macro-level data available but are also proximate determinants of fertility. Thus they cannot be considered as outcomes of fertility decline.

may exert self-determination; their entry into these domains may enable them to exert control over their lives and increase their access to resources and privilege. And finally, understanding whether these significant shifts taking place in societies around the world are associated in any way with fertility decline may provide insight into dynamics emerging in countries currently experiencing demographic transitions.

Malhotra (2012) has reviewed the body of literature investigating the underlying hypothesis we explore here: whether fertility decline has been associated with changes in women's empowerment at the individual level and gender equality at the societal level. A reasonable number of studies have hypothesized a relationship between these phenomena, but the number of empirical tests of these relationships, especially in low- and middle-income countries with recent fertility declines, has been relatively limited. A small subset of that literature has incorporated some analysis of the labor force and education sectors, and has investigated these relationships at the societal level rather than strictly at the individual level (i.e., investigating whether individual women with fewer children have higher levels of labor force participation). Hardee and colleagues (2004), for example, examined the impact of increasing access to contraception and lower fertility on women's status and the gender system in rural China. By examining different measures of women's status—defined to include increased job, educational, and leisure opportunities; increased participation in household decision-making; and reduced responsibility for household work—they concluded that while women in rural China were better able to achieve their own aspirations due to access to birth control and fertility reduction, the gender system has not changed fundamentally to shift the relative power of women as a group compared to men. Similarly, Amin and Lloyd (2002) used an explicitly gendered framework to examine the relationship between fertility decline and women's status in Bangladesh and Egypt and found increases in girl's absolute school enrollment and enrollment relative to boys', and in the proportions of women working for cash following fertility decline in both countries. They concluded that fertility declines appear to have improved women's empowerment as a group in both countries, but particularly in Bangladesh. However, Schuler and colleagues (1995) disagree with respect to Bangladesh, contending that the country's family planning program and its consequent fertility decline did not change the relative power of men and women or foster structural changes in gender equality.

These studies have provided a relatively rare examination of the relationship between fertility and gender relations at the societal level rather than at the individual level. Furthermore, because they incorporated qualitative data on more systemic aspects of the settings under study, they provided a rich, contextual assessment of the gendered functioning of individual societies, that is, the relative

power of women and men as groups, and were able to yield more nuanced conclusions about the role of fertility decline in changing women's lives across multiple domains and at multiple levels. However, these studies have been fairly limited in their exploration of the gender dynamics *within* each sector—for example, they have typically included single measures of women's labor force participation or educational attainment. Moreover, while these studies provide contextualized depictions of individual countries or compare the contexts of a few countries, they do not provide evidence from a broad range of countries to provide a more far-reaching test of this hypothesis.

A somewhat separate body of literature has investigated straightforward associations between fertility decline and increases in women's labor force participation, but often at the individual level and without a nuanced investigation of gender dynamics. For example, several researchers have found strong associations between lower fertility and greater access to contraception and greater labor force participation among U.S. women (e.g., Bailey 2006; Goldin & Katz 2000; Smith-Lovin & Tickamyer 1978). Analysis of this relationship in one area of Bangladesh found no association between fertility decline and women's labor force participation (Lundberg, Sinha, & Yoong 2010). One effort involving macro-level data (rather than individual-level data) used data from 97 developed and developing countries between 1960 and 2000 examined the association between total fertility and women's labor force participation (Bloom, Canning, Fink, & Finlay 2009). Across these countries, they found that a single birth reduces an individual woman's labor supply by approximately 2 years over her reproductive life. At the macro-level, they found that the overall fertility reduction during the demographic transition increases total labor force supply by 18 percentage points, or 8 additional years of lifetime labor.

The literature examining the consequences of fertility decline for women's educational attainment has been considerably more limited; the vast majority of literature examining education and fertility decline has examined the relationship in the opposite direction—the implications of women's education for fertility (e.g., Diamond, Newby, & Varle 1999; Glewwe 1999; Jejeebhoy 1995; Montgomery & Lloyd 1999). However, a number of studies have examined the association between reduced fertility and investments in children's schooling, though without necessarily distinguishing the results by the sex of the child and typically focusing on the impact for individual families with lower fertility rather than on the societal-level impact of lower fertility. For example, one study in Vietnam found that most of the association between reduced fertility and increased children's education at the family level disappeared after accounting for factors like urban/rural residence and parents' education (Anh et al. 1998). Another study from Bangladesh examined the

impact of the Matlab family planning program in Bangladesh and found higher levels of children's schooling in program areas compared to non-program areas (Schultz 2009).

As noted above, this portion of the literature has lacked a strong focus on gender. While these studies generally acknowledge that gendered norms and constraints influence women's labor force participation and education decisions, they have typically provided only a cursory examination of the gender dynamics operating within each sector. They have examined simple proportions of women participating in the labor market or attaining a certain amount of education, typically without comparing similar dynamics among men or boys. In addition, this literature has generally lacked a macro-level perspective that would capture change at the societal level, especially across multiple countries. Because of the numerous, complex factors influencing schooling and work decisions, and the dynamism of social processes, analyses at the individual or family/household level cannot provide a complete picture (Amin & Lloyd 2002; Malhotra 2012; Malhotra & Schuler 2005; Mason 1997).

The present study, described in greater detail in the next section, addresses the limitations of previous research on this topic in several ways. First, it adds to the meager literature examining the implications of fertility decline for gender relations in low- and middle-income countries with relatively recent fertility declines. The many contextual differences between industrialized countries during their demographic transitions and currently industrializing countries—with forces like globalization, an influx of international aid and actors, the legacy of colonialism, and widely varying economic opportunities coming to bear—combined with the rapidity of their fertility declines, suggest that research on such countries is needed to understand how demographic change will play out in industrializing countries and which contextual factors may facilitate or impede the transformative potential of fertility decline in these settings.

Second, this study includes a more in-depth investigation of gender dynamics within the labor and education sectors than previous studies have, incorporating comparisons of the dynamics between men and women to shed light on their relative positions, and by investigating differences by cohort, to focus the analysis on age groups most likely to combine productive and reproductive roles. Moreover this analysis further exploits the timing of these changes in outcomes relative to fertility decline to elucidate the potential causal impact of fertility decline on the gender dynamics in each sector.

Third, because the extent and significance of the possible repercussions of fertility decline suggests that these changes would be most evident in countries well past the initial stages of fertility decline,

the present study examines the dynamics among a set of countries with relatively mature fertility transitions. In addition, because this hypothesis describes a *process* of social change, the analysis must be conceptualized across time and generations rather than as a cross-sectional analysis.

Consequently, we consider the relative timing of fertility decline and different gender dynamics operating within the labor market and the education sector using data spanning as much as five decades to shed additional light on the consequences of fertility decline within each sector.

Finally, the question of whether fertility decline affects gender relations is most salient at higher levels of aggregation than the individual or family level because it pertains to relations between women and men as groups. Thus, analysis of this hypothesis should incorporate the analysis of outcomes measurable at meso- or macro-levels rather than at micro- or individual- levels, and is most instructive if it is conducted across numerous countries rather than in just a few. Thus, in this study, we use national-level data from approximately 30 countries. We describe the study in greater detail in the next section.

THE PRESENT STUDY

In this study, we conduct a macro-level exploration of the patterns of fertility decline in relation to changes in two domains—the labor market and the education sector—across approximately 30 countries over the past several decades. We examine the temporal ordering of any observed patterns to determine, for example, whether the evidence suggests that fertility decline precedes changes in the gender dynamics within these dimensions or suggests a two-way causal relationship. We also analyze any insights that emerge from the trends or clustering of countries about the gendered functioning of these domains.

In the analysis, we compare the dynamics of women's labor force participation and post-primary educational attainment with men's position in each sector relative to the timing of fertility decline. In this gender gap analysis, we pay particularly attention to changes in female rates that clearly exceed men's, as these offer more compelling evidence that changes are due to changing opportunity structures for women and shifts in gender dynamics rather than economic growth, general policy changes, or other contextual factors. Furthermore, we pay particular attention to the labor force dynamics of women ages 25 to 34 because they are the most likely to combine parenthood with labor force participation.

Finally, we also add considerably to the conceptual strength of our education analysis by focusing on secondary and tertiary educational attainment as opposed to primary schooling. Post-primary education is more consistently and strongly associated with women's empowerment at the individual level than primary education (Jejeebhoy & Sathar 2001; Malhotra, Pande, & Grown 2003). Women who achieve secondary schooling are more likely to have greater decision-making power in the household (Kritz & Makinwa-Adebusoye 1999; Kritz, Makinwa-Adebusoye, & Gurak 2000), are at lower risk of domestic violence (Sen 1999) and actively participate in the formal labor market (Cameron, Dowling, & Worswick 2001; Mammen & Paxson 2000) compared to women who have only received primary education. On the structural level, given that only 60 percent of developing countries have achieved gender parity in education even at the primary level, and only 30 percent and 6 percent have achieved it at the secondary and tertiary levels respectively (MDG Report 2009), countries with significant proportions of women attaining secondary or tertiary schooling have clearly made a greater commitment to women's education. While there is no guarantee that this commitment translates into greater societal-level gender equality, it may be a step in that direction. By restricting our analysis to post-primary attainment, we ensure that our findings reflect shifts in

the level of schooling most likely to empower women and foster fundamental shifts in gender systems, not just gains in basic human development.

These more in-depth analyses get us conceptually closer to measuring changes in the societal-level gendered functioning of the labor force and education domains, and allow us to glean as much information as possible from the available historical, macro-level data.

DATA AND METHODS

A. Measures

Fertility: We use estimates of total fertility rate (TFR) from the United Nations World Population Prospects for five-year intervals between 1955 and 2010.

Labor force participation: The indicators of the labor market come from the International Labor Organization's (ILO) Key Indications of the Labor Market database (6th Edition²). The ILO defines labor force participation as "actively engaging" in the labor force, either by working or looking for work. Because women are more active in the non-formal economy than men, these data may underestimate women's overall labor force participation, but they are the best source of historical, macro-level data available for this sector. We use estimates of the proportion of men and women ages 15-64 participating in the labor force from 1980 through 2008, as well as estimates for women ages 25-34.

Post-primary education: We draw from education data compiled by Barro and Lee (2001) from 142 countries, 109 of which have data for every interval between 1960-2000. The dataset includes sex-disaggregated data for seven levels of schooling calculated at five-year intervals. We combine secondary and tertiary schooling variables to create a "secondary or higher" attainment variable for men and women ages 25 and over.

B. Sample Selection

The countries in our sample were selected based on the extent of their fertility decline, current fertility level, and population size. Because we posit that fertility decline is a main driver of social change, sufficient fertility decline has to have taken place, and long enough in the past, for subsequent change to have occurred. Thus, this study includes only countries with relatively

² The 7th Edition of the KILM database does not contain data for 1980-1989, despite claims to the contrary on the ILO website.

mature fertility transitions and examines changes spanning several decades. Specifically, we include countries with a:

- TFR in 1955 of greater than or equal to 3.5;
- TFR decline between 1955- 2010 greater than or equal to 2.5 and a 2010 TFR of less than or equal to 3.5; and
- Current population greater than or equal to 5 million.

This selection process yielded a list of 41 countries, from which we excluded an additional 5 that gained independence since the early 1990s (Azerbaijan, Tajikistan, Uzbekistan, and Yemen). We further excluded 5 countries from the labor force participation analysis (Hong Kong, China, Cuba, Chile, and the Republic of Korea) because the bulk of their fertility decline occurred before 1980, the first year that labor force participation data are available, yielding a final sample of 31 countries (see Table 1). Five countries were excluded from the education analysis (Cambodia, Cuba, Egypt, Libya, and Morocco) because they do not have data available; we also exclude China because the first available observation is from 1975, when its fertility decline was already well underway. The final sample for the education analysis is 33 (Table 1).

Table 1: Sample of Countries by Outcome

Labor Force Participation (N=31)	Education (N=33)
Algeria	Algeria
Bangladesh	Bangladesh
Bolivia	Bolivia
Brazil	Brazil
Cambodia	Chile
Colombia	Colombia
Dominican Republic	Dominican Republic
Ecuador	Ecuador
Egypt	Egypt
El Salvador	El Salvador
Honduras	Honduras
India	Hong Kong
Indonesia	India
Iran	Indonesia
Libya	Iran
Malaysia	Jordan
Mexico	Malaysia
Morocco	Mexico
Myanmar	Myanmar
Nepal	Nepal
Nicaragua	Nicaragua
Peru	Paraguay
Philippines	Peru
South Africa	Philippines
Sri Lanka	Republic of Korea
Syria	South Africa
Thailand	Sri Lanka
Tunisia	Syria
Turkey	Thailand
Venezuela	Tunisia
Vietnam	Turkey
	Venezuela
	Zimbabwe

C. Analysis

For each outcome, we conducted a series of bivariate analyses separately for each country. We created graphs for each country that include the total fertility rate from 1955 to 2010 and the relevant outcome variable for data points from each year that data are available.

Labor force participation

For this analysis, we test the hypothesis that as fertility declines, women's participation in the labor force increases in both absolute terms and relative to men's (hereafter, called the gender gap). We first compare women's and men's overall labor force participation over time, in absolute and relative terms, and examine these dynamics in relation to the trajectory of fertility decline. We then

examine absolute changes in labor force participation among women ages 25-34, the cohort most likely to combine productive and reproductive roles, in relation to the timing of fertility decline.³

Post-primary education

In this analysis, we test the hypothesis that as fertility declines, an increasing proportion of women will attain post-primary education and the gap between men's and women's attainment will narrow. First, we examine overall trends in women's and men's post-primary educational attainment in relation to fertility decline. We then examine the gender gap in educational attainment and compare the timing of the observed dynamics with the dynamics of aggregate fertility decline.

RESULTS

Since we posit that fertility decline may cause changes in the gender dynamics in the labor force and education sectors, the strongest empirical support for our hypothesis would exist if gains in the outcome in question clearly lag behind fertility declines. A concurrent pattern may also support our hypothesis, as it could suggest that the causal influences are bi-directional. However, since concurrent changes might also indicate that another factor is causing changes in both fertility and in the labor market or education system, we consider a concurrent pattern to be weaker evidence than a lagged pattern. If we find that changes in the labor market or the education sector predate the fertility decline, this would contradict our hypothesis and provide support for a one-way causal relationship in the opposite direction.

We include tables summarizing the distribution of countries and include several country-specific graphs to illustrate particular findings. We selected country-specific graphs that most clearly demonstrated a given finding, but where possible, selected a "typical" country rather than an exceptional case. The complete set of individual graphs is available upon request from the corresponding author.

A. Labor Force Participation

Table 2 summarizes results from the analysis of data from the 31 countries in the labor force participation analysis. Overall, our analyses show four main patterns. First, we find a pronounced increase in labor force participation for women overall and for women ages 25-34, and a pronounced decrease in the gender gap. Second, we find that in more than half of the countries, this

³ The KILM database does not provide data for women ages 20-34, which would better represent the age group of women most likely to combine productive and reproductive activities.

increase either follows or is concurrent with the fertility decline. Third, we find that there seems to be a “take-off” in younger cohorts’ labor force participation when TFR reaches about 3 or 4 children per woman. Fourth, we find that younger women—those ages 15-24 years—do not show such notable increases. We discuss these results in greater detail below.

Table 2: Summary of Results from Analysis of Labor Force Participation Data

#	Country	Percentage Point Change 1980-2010		Relative Timing, Fertility Decline & Change in Overall Women's Labor Force Participation*			Percentage Point Change 1980-2010	Relative Timing, Fertility Decline & Change in 25-34 Cohort Women's Labor Force Participation**			Net Difference Male-Female 1980-2010	Timing of Gender Gap Dynamics***	
		Male	Female	Pre-cedes	Con-current	Follows		Cohort (25-34)	Pre-cedes	Con-current		Follows	Con-current
1	Algeria	5.9	19.2		X		29.4		X		13.3		X
2	Bangladesh	-3.8	2.0		X		6.9		X		5.7	X	
3	Bolivia	-2.1	27.9		X		36.3		X		30.0	X	
4	Brazil	-2.1	27.8			X	31.4			X	29.9		X
5	Cambodia	1.6	-3.7	X			-1.2	X			-5.3		
6	Colombia	4.0	31.3		X		32.5		X		27.3	X	
7	Dominican Rep.	-2.6	30.5			X	36.0			X	33.1		X
8	Ecuador	-4.0	26.2		X		32.9		X		30.2	X	
9	Egypt	-3.1	11.1		X		14.9		X		14.2	X	
10	El Salvador	-6.0	6.2		X		12.4		X		12.2	X	
11	Honduras	-5.3	5.6	X			9.6				10.9	X	
12	India	-4.3	-0.6				2.2				3.7		
13	Indonesia	4.4	6.6				5.0				2.1		
14	Iran	-3.8	12.6		X		17.0		X		16.4	X	
15	Libya	-2.1	11.7		X		19.8		X		13.8	X	
16	Malaysia	2.5	4.4		X		14.7			X	1.9		X
17	Mexico	-0.7	7.0			X	6.2			X	7.7		X
18	Morocco	-3.2	3.3		X		8.2		X		6.5	X	
19	Myanmar	-2.6	-1.4				6.1		X		1.2		
20	Nepal	-9.8	16.5		X		24.8		X		26.3	X	
21	Nicaragua	7.8	-0.3				-2.0				-8.1		
22	Peru	5.6	31.8		X		32.7		X		26.2	X	
23	Philippines	0.5	-0.2				-3.4				-0.6		
24	South Africa	-6.3	3.6		X		7.3			X	9.9		X
25	Sri Lanka	-6.5	4.6		X		5.7				11.1		X
26	Syria	2.4	9.7		X		10.8		X		7.2	X	
27	Thailand	-4.9	-10.3	X			-3.6	X			-5.4		
28	Tunisia	-10.0	8.2		X		20.5		X		18.2	X	
29	Turkey	-12.0	-4.5	X			6.1				7.4	X	
30	Venezuela	1.7	26.1			X	29.0			X	24.4		X
31	Vietnam	-5.3	-5.6				2.5			X	-0.2		
	N		23.0	4	17	4		2	15	7		15	8
	AVG	-2.1	9.9				14.5				12.0		
	MAX	7.8	31.8				36.3				33.1		
	MIN	-12.0	-10.3				-3.6				-8.1		

* The graphs for 6 countries were inconclusive.

** The graphs for 6 countries were inconclusive.

*** The graphs for 3 countries were inconclusive.

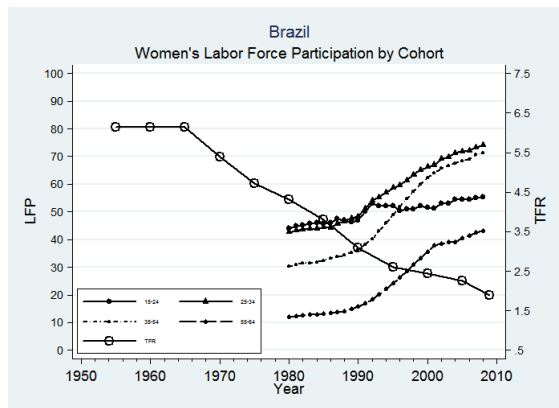
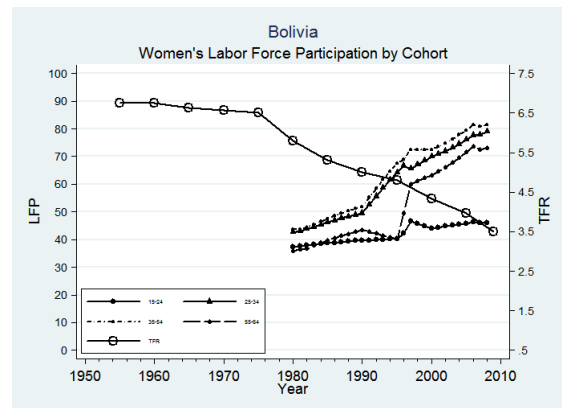
Descriptive results

Women's labor force participation has increased overall between 1980 and 2008 in all but 8 of 31 countries in this sample (Table 2). The average increase for all countries was about 10 percentage points (range: -10.3 to 31.8). This increase has been dramatic in some countries, such as in Dominican Republic, where it increased by 31 percentage points. In the remaining 8 countries, the decreases were small, with 6 experiencing decreases of less than 5 percentage points. By comparison, men's labor force participation decreased overall, with an average decline for all countries of about two percentage points (range: -12 to 7.8). Women in Latin America and the Caribbean had especially strong gains, gaining a mean of 20 percentage points between 1980 and 2008; comparatively, men in the region had a net loss of slightly less than 1 percentage point. Overall, women in the Middle East gained 8 percentage points, while women in East Asia experienced a mean net loss of slightly more than 1 percentage point.

Cohort-level results

Isolating the labor force participation dynamics of 25-34 year-old women reveals pronounced increases over time in 27 of 31 countries (Table 2). The average increase was 14.5 percentage points (range: -3.6 to 36.3). Among the 4 countries with decreasing cohort labor force participation, all had decreases of less than 4 percentage points. Regionally, 25-34 year-old women in Latin America and the Caribbean gained the most, with a mean gain of more than 23 percentage points, and 25-34 year-old women in the Middle East gained almost 15 percentage points on average. Conversely, women in East Asia gained only an average of three percentage points.

The timing of these cohort-level increases relative to fertility decline also suggests a two-way relationship between fertility decline and changes in this sector; in 7 countries, the increase in cohort labor force participation occurs after the bulk of fertility decline (Graph 1) and in 15 countries, the increase is concurrent with fertility decline (Graph 2). Conversely, in 2 countries, the main increase in labor force participation precedes the fertility decline, and the curves are inconclusive in 6 countries. These results mirror those from the analysis of women's overall labor force participation, which revealed that the changes for 17 countries occurred concurrently with fertility decline, 4 preceded fertility decline, and 4 followed it.

Graph 1: LFP Increase Follows Fertility Decline**Graph 2: Increase Concurrent Fertility Decline**

Notably, there seems to be a take-off in this cohort's labor force participation occurring in about half the countries (N=14) when the TFR reaches between 3 and 4 children per women; that is, the labor force participation curve suddenly increases in steepness when the TFR reaches this level. This dynamic is also visible in the overall women's curve, but is especially visible in the cohort data for 25-34 year-olds. In Tunisia, for example, the already-increasing curve increases in steepness as the TFR approaches 4, while in Dominican Republic and Venezuela, the takeoff occurs closer to when the TFR approaches 3.5 (data not shown). Given the available data, we cannot determine if this takeoff is related to the absolute fertility level, the speed at which the fertility decline occurred, or some other factor.

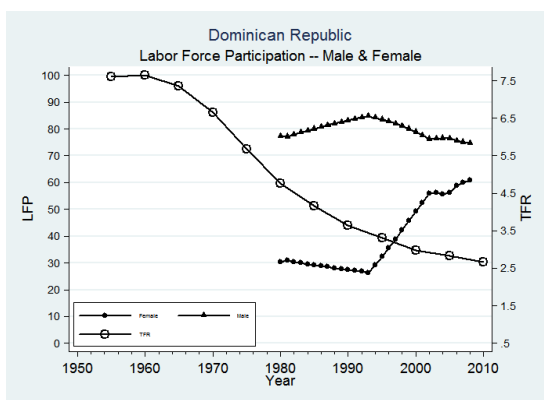
We also examined labor force participation curves for the cohort ages 15-24 (not shown). In contrast to the older cohort, the 15-24 cohort often experienced only moderate gains in labor force participation, even in cases where the gains for the 25-34 cohort were dramatic. Furthermore, in approximately half of the sample, the youngest cohort experienced a *decline* in labor force participation, sometimes dramatic (e.g., in Vietnam). Given that late adolescence and early adulthood are prime periods for pursuing additional education, these declines could indicate increasing educational opportunities for women and girls.

Gender gap results

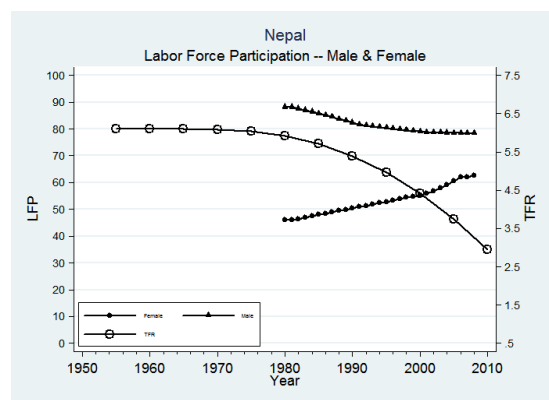
We examined the gender gap in labor force participation between men and women in each country over time, in relation to the fertility decline (Table 2). We first calculated the change in overall labor force participation between 1980-2008 separately for both men and women and subsequently subtracted the difference between them. We then visually inspected the graphs from each country and examined the overall parity—the differences between men and women at each data point in

each country—to learn more about the dynamics revealed in these calculations. We found that the gap in the proportion of women in the labor force compared to men narrowed in all but 5 countries between 1980-2008, although in some countries, the extent of narrowing was relatively small. Furthermore, among the 26 countries with a narrowing gender gap, we found that the gaps in 8 countries narrowed *following* the bulk of fertility decline (Graph 3- example from Dominican Republic) and the gaps in 15 countries narrowed *concurrently* with the decline (Graph 4- example from Nepal). [The graphs for 3 countries were inconclusive.] Thus the timing of the gender gap dynamics relative to fertility decline in each country supports the hypothesis that fertility decline could be an important driver of change in this sector for some countries.

Graph 3

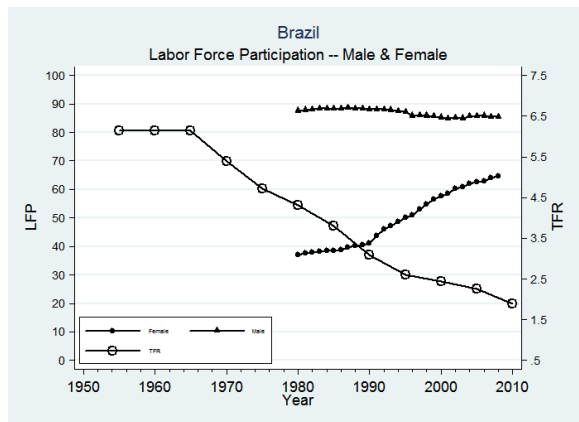


Graph 4

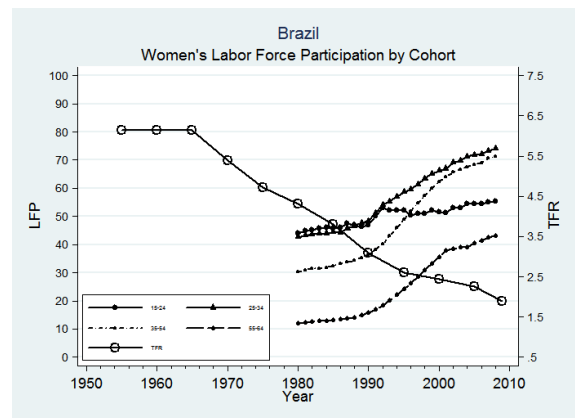


One additional dynamic of the narrowing gender gap is also worth noting, namely that the narrowing seems largely due to negative changes in men's labor force participation and increases—or steady levels—for women. In 9 countries out of 26 countries with a narrowing gender gap, both men's and women's labor force participation increased during that period but women outpaced men, while in 12 countries, women's labor force participation increased while men's *decreased*. In the remaining countries, 2 had men's labor force participation decreasing while women's remained steady, and 3 experienced decreases in the labor force participation of both sexes, but with greater decreases among men. The graph from Brazil (Graphs 5 & 6) illustrates several of these dynamics, including the apparent takeoff point when the TFR is approximately 3.5.

Graph 5



Graph 6



The gender gap dynamics in many countries were not as dramatic as those in Brazil, and we observed an apparent “take off” threshold in only 14 of the sampled countries. In the majority of cases, however, women have gained a presence in the labor force relative to men, suggesting that shifts in the opportunity structures for women in the labor market may be occurring. More importantly for our hypothesis, the temporal analysis also suggests that fertility decline could be a driver of these changes in some countries.

B. Post-Primary Education

The analysis of relationships between fertility and post-primary educational attainment rates in 33 countries (Table 3) shows an increase for women and men in all countries; however, in most cases the increase is concurrent with, rather than following, fertility decline.

Table 3: Summary of Results from Analysis of Post-Primary Education Data

	Country	Percentage Point Change 1960-2000		Relative Timing, Fertility Decline & Change in Women's Education		Net Difference, Male-Female	Overall Parity	Male-Female Parity
		Male	Female	Concurrent	Followed	1960-2000 *	1960-2000**	2000***
1	Algeria	27.5	19.2	X		-8.3		
2	Bangladesh	14.2	6.4	X		-7.8		
3	Bolivia	-6.9	2.8		X	9.7		
4	Brazil	7.1	10.0		X	2.9	X	X
5	Chile	26.2	28.3	X		2.1	X	X
6	Colombia	16.0	19.1	X		3.1	X	X
7	Dominican Rep.	20.3	28.0	X		7.7		
8	Ecuador	27.9	29.2	X		1.3	X	X
9	Egypt	42.5	27.9	X		-14.6		
10	El Salvador	13.7	15.0	X		1.3		X
11	Honduras	11.5	14.4	X		2.9	X	X
12	Hong Kong	36.0	45.0	X		9.0		
13	India	25.0	14.0		X	-11.0		
14	Indonesia	29.0	20.9	X		-8.1		
15	Iran	32.9	21.4	X		-11.5		
16	Jordan	52.2	41.2	X		-11.0		
17	Malaysia	41.0	43.0		X	2.0		
18	Mexico	36.0	33.4	X		-2.6		X
19	Myanmar	6.7	9.0	X		2.3		
20	Nepal	22.2	7.3	X		-14.9		
21	Nicaragua	12.9	22.6	X		9.7		
22	Paraguay	16.9	19.5	X		2.6	X	X
23	Peru	40.1	36.3	X		-3.8		
24	Philippines	34.3	39.3	X		5.0		X
25	Rep. of Korea	60.6	62.1	X		1.5		
26	South Africa	35.6	25.9		X	-9.7		
27	Sri Lanka	20.0	28.5		X	8.5		X
28	Syria	38.7	23.8	X		-14.9		
29	Thailand	14.3	15.8		X	1.5		X
30	Tunisia	24.2	16.3	X		-7.9		
31	Turkey	18.3	12.2		X	-6.1		
32	Venezuela	18.2	23.7	X		5.5	X	X
33	Zimbabwe	39.0	25.6	X		-13.4		
	N			25	8		7	12
	AVG	25.9	23.9			-2.0		
	MAX	60.6	62.1			9.7		
	MIN	-6.9	2.8			-14.9		

* Positive values indicate that the net change favored women and negative values indicate that the net change favored men. Countries with values +/- 5 percentage points were considered to have no gender gap.

** "X" indicates that most values (1960-2000) were within 5 percentage points.

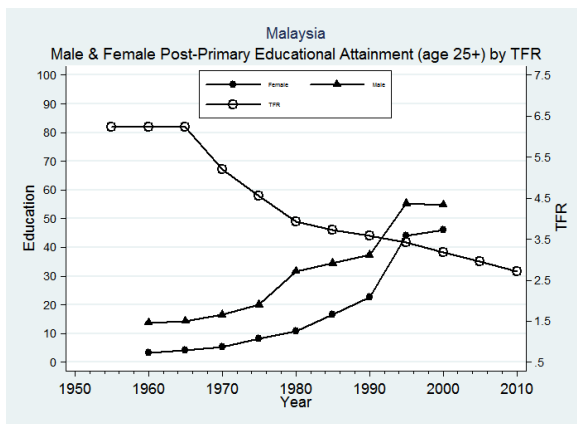
*** "X" indicates that the difference between men's and women's educational attainment was less than 5 percentage points.

Descriptive results

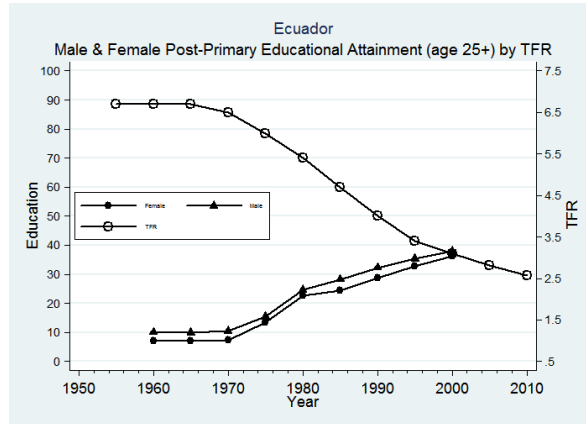
Women’s post-primary education attainment increased between 1960 and 2000 in all 33 countries (Table 3). The mean increase was 23.9 percentage points; the increase ranged from a low of 3 percentage points in Bolivia to 62 in Republic of Korea.⁴ Trends in men’s post-primary educational attainment are quite similar, although in most cases men’s attainment exceeded women’s in absolute terms. The mean increase for men was 25.9 percentage points (range: -6.9 to 60.6). Fourteen countries experienced gains for women greater than 25 percentage points, and 17 experienced similarly strong gains for men. It is noteworthy that attainment has increased for both sexes somewhat equally.

In terms of the timing of these changes relative to fertility decline, the gains for women in 8 countries followed fertility decline (Graph 7 – example from Malaysia) while women in most countries in our sample experienced increases concurrent with fertility decline (N = 25) (Graph 8 – example from Ecuador).

Graph 7



Graph 8



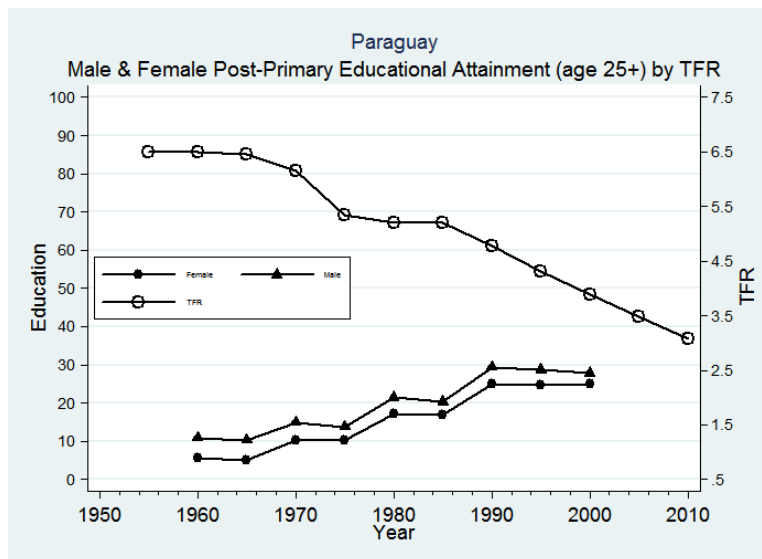
Results from gender gap analysis

Our analysis of the net difference between men and women’s attainment in 2000 compared to 1960 shows that, of the 33 countries in this analysis, men in 13 of them made larger gains in post-primary education than women did, while in 6, women made larger gains than men (Table 3). This indicates that in 2000, women in 6 countries had higher attainment rates relative to men than their

⁴ Note that the proportion of women with post-primary education in Bolivia was already fairly high in 1960 (23%, the third highest in the sample).

counterparts in 1960. In the remaining 14 countries, men and women made very similar net gains, with variations of 5 percentage points or less. However, because net changes cannot capture the nuances of changing trajectories over time, we also examined the overall parity by visually inspecting the curves for men and women and examined the differences between them at each data point in each country for differences greater than five percentage points. This inspection revealed slightly different results from the analysis of net differences: We found that men and women in 7 countries out of 33 had similar attainment levels across most data points between 1960 and 2000 (compared to 14 with identical net gains); the proportions of men and women with post-primary education in Brazil, Chile, Colombia, Ecuador, Honduras, Paraguay, and Venezuela were almost identical throughout the entire period under study, varying by less than five percentage points in either direction (Graph 9- example from Paraguay).

Graph 9



We also examined the dynamics of the gap between men and women in relation to fertility decline, but found no obvious pattern suggesting that the gaps were narrowing or widening in any systematic manner (not shown). Data from a few countries hinted that the gender gap began to narrow as TFR reached about 3.5 (e.g., Hong Kong, Sri Lanka), but the sample size is too small to make any definitive statement.

Encouraging is the fact that in 2000, 12 countries had almost no gender gap in post-primary education between men and women, and the mean difference between men and women across **all** countries was just only 7 percentage points. At the same time, the fact that in 13 cases, adult women

in 2000 are actually worse off in relation to men than they were in 1960 is cause for concern. Unfortunately the lack of data after the year 2000 limits our ability to determine whether these trends have continued (or intensified) during the last decade.

Finally, regional patterns in gender gaps illustrate the importance of context. All 7 of the Middle Eastern countries in our sample demonstrated a net gain for men between 1960 and 2000, and none of them approached parity between men and women in 2000. In fact, the mean difference in 2000 among the Middle Eastern countries in our sample in the proportion of men and women attaining post-primary education was 14.5 percentage points, more than twice the overall sample mean. In addition, men's gains in the Middle East were particularly strong, with a mean gain of 34 percentage points compared to the overall mean gain for men of 26 percentage points. Conversely, all but 2 of the 13 sampled countries in Latin America and the Caribbean demonstrated net gains for women, and the 2 showing net gains for men had increases of less than 4 percentage points. Moreover, only 4 of the 13 countries in Latin America and the Caribbean had not achieved parity in post-primary education by 2000. In our East Asian sample, although men and women in 5 of 7 countries made gains of similar magnitude between 1960 and 2000, only two countries had achieved near parity between men and women by 2000.

These results may indicate the importance of contextual factors in determining the degree of gender equality in secondary schooling. The literature suggests that in Latin America and the Caribbean, a relatively favorable environment for equal opportunity in post-primary education has existed for several decades; for example, significant investments in education have been made by a number of Latin American governments in the form of cash transfer programs (Desai 2010). Conversely, contextual factors common to the Middle Eastern countries in our sample, such as norms that support gender inequality, appear to constrain parity in education.

DISCUSSION

This paper comprises a multi-country, macro-level analysis of trends in labor force participation and post-primary educational attainment in relation to fertility decline in a sample of low- and middle-income countries. The primary motivation for this study was to examine existing patterns and determine whether there is broad support for the hypothesis that fertility decline functions as a lever for changes in gender relations in the two key domains of education and employment. We maximized the conceptual strength of our data by analyzing women's labor force participation during their peak productive and reproductive years, examining educational attainment at the post-primary level, and examining the dynamics of the gender gap between men and women for each

outcome as well as overall trends in each domain separately in each country. In this section, we discuss the findings from each analysis and then turn to more general conclusions.

A. Labor Force Participation

The analysis provides strong evidence that women are increasing their presence in the labor force around the world, and in most cases, increasing their labor force participation relative to men. That these narrowing gender gaps occurred in the majority of countries concurrently with or following fertility decline supports the hypothesis that the relationship between fertility decline and changes in the labor market is bidirectional: changes in the gender dynamics of labor markets may help to foster fertility decline *and* fertility decline may foster changes in gender dynamics of the labor force. In other words, these results provide qualified support for our hypothesis, but do not support it unequivocally. If these labor force dynamics are a sign of increasing life options for women and increasing gender equality, these results suggest that societal shifts towards greater equality are occurring. Further analysis of this hypothesis with more nuanced data is warranted.

Perhaps the trends that are inconclusive or provide relatively weak support for our hypothesis simply reflect that sufficient time has not elapsed since fertility has declined. Fertility declines in many countries occurred relatively recently and with tremendous speed. Consequently, these societies have not had much time to adjust to such significant shifts. More dramatic changes in the gender dynamics of the labor market may become apparent in future decades as these countries adjust to demographic changes and if fertility declines even further. Moreover, gains in women's (or men's) labor force participation are also contingent on favorable structural conditions; women may become sufficiently empowered to enter the labor market as a consequence of fertility decline, but if job opportunities do not exist, few will be able to capitalize on this potential venue for empowerment. Finally, our findings may also appear equivocal because the available data only measure formal employment. There is considerable evidence of women's participation in—and entrepreneurship within—the non-formal sector, particularly in contexts like Bangladesh, where norms concerning women's mobility and participation in public life constrain their economic activity to home-based activities. Data capturing women's formal and non-formal economic activity might reveal more conclusive trends.

Still, the gender gap analysis revealed several noteworthy dynamics. In a number of countries, women's labor force participation increased while men's declined. While we cannot determine the causes of these dynamics from this analysis, they are likely explained by broad sector shifts. In many countries, traditionally male-dominated sectors like manufacturing are shrinking while

women-dominated sectors, such as the textiles and service industries, are increasing. These shifts may bring about important changes in gender relations between spouses/partners as well as in broader society, especially if men cannot find work in different sectors. Economic stress is a risk factor for domestic violence (Benson and Fox 2004); if economic stress occurs in tandem with the loss of a significant gender role for men (i.e., breadwinner), the risk of violence—within the household and outside of it—may be even higher. Moreover, unless the gendered functioning of the labor market and broader society have indeed been altered fundamentally, such changes could presage increases in poverty and declines in health because women typically earn less, have less job security, and enjoy fewer prospects for advancement than men. Additional analysis and attention to policy and program supports to address these dynamics could be important in ameliorating such potentially negative consequences for women, families, and societies.

That a TFR of 4 or 3.5 appears to be a threshold for significant change in the labor force participation of the 25-34 year old cohort, as well as for women overall, is also notable. To the extent that women bear children and typically bear the brunt of childrearing responsibilities, this threshold suggests that sufficient fertility declines must occur before women are able to combine roles inside and outside the home in significant numbers, particularly in jobs that are not consistent with simultaneous childcare. This is consistent with the findings of Lam and Duryea (1999) who found that a negative association between fertility and women's labor force participation only appears when completed fertility has fallen to approximately 3 births per woman. Additional research should aim to understand the social dynamics behind this threshold, and to clarify what processes are taking place at the individual, household, and societal levels to facilitate this "takeoff". Other research should examine what increases in women's labor force participation during this life stage mean for women's quality of life; do women's childrearing and domestic responsibilities decrease as their economic participation increases, or do they simply experience a double burden, akin to the "second shift" identified in the United States (Hochschild & Machung 1989) ? Further research might also investigate whether such a threshold is evident in other dimensions of women's lives, and if so, whether the level of this threshold is consistent across dimensions.

In sum, these findings provide qualified support for the hypothesis that fertility decline is an important agent of change in gender relations in the labor market. More nuanced research could shed light on the processes by which fertility decline may function as a lever for change in this sector and under what conditions it has the greatest impact, and assess to what degree these changes indicate or portend improvements in gender equality. In addition, future data collection efforts should capture more in-depth measures of the gendered functioning of the labor market so

that we can analyze not simply whether women's labor force participation increases but also the nature and quality of women's participation in economic activities.

B. Education

The results from the education analysis are more varied. Most significantly, we found a universal trend of increased attainment in post-primary education for women. Inasmuch as this upswing in post-primary schooling translates into increased empowerment and participation in the economic and political spheres, we can be confident that women around the world are benefiting from these gains. At the same time, there is little systematic pattern in the gender gaps in post-primary education.

These equivocal trends may partly arise from data limitations. We are limited by the lack of education data beyond 2000. This is particularly problematic in countries that have experienced more recent fertility declines because we are unable to examine changes in post-primary attainment during the period when our theory predicts gains should begin to materialize. In addition, we measure attainment only for ages 25 and over. Thus, the data do not capture the most recent trends in post-primary schooling. While enrollment ratios would depict the more current situation, sex-disaggregated secondary and post-secondary enrollment data is not available for a large sample of low- and middle-income countries until 1975, so this analysis is not possible. Further research using updated data may, therefore, show stronger patterns and across more age groups.

The regional patterns evident in the education findings suggest the importance of contextual factors. Education is particularly responsive to direct policy interventions; for example, eliminating school fees can drastically change attainment rates in a short time (World Bank 2009). While most efforts in low- and middle-countries to date have focused on primary schooling, legal and/or policy differences might help to explain the regional patterns or trends within countries described above. Also profoundly relevant, of course, are gender norms that foster unequal investments in boys' and girls' education at the societal and the familial level, constrain girls' ability to participate equally in educational opportunities, and minimize the economic returns to girls' education. More broadly these results, coupled with the labor force analysis, underscore the potential role that cultural, economic, social, political, and legal factors play in moderating the potential gains to women and gender equality catalyzed by fertility declines.

More generally, the relationship observed between fertility and post-primary schooling demonstrates the plausibility that fertility decline may act as a lever for increased gender equality.

A more sophisticated understanding of the factors that condition such relationships, whether a threshold exists, and the mechanisms through which change occurs, are important areas for future research.

C. General Conclusions

What do these findings indicate about changes in the gendered functioning of each sector, or for society as a whole?

The literature abounds with studies using measures of women's educational attainment and labor force participation as proxy measures of women's empowerment at the individual level and, less frequently, of societal-level gender equality. They are considered both important indicators of women's empowerment (Kishor & Neitzel 1996) and important domains in women's lives (Malhotra & Schuler 2005).

However, many scholars have emphasized the inadequacy of these measures to capture the complexity and multidimensionality of women's empowerment, gender equality (e.g., Balk 1994; Govindasamy & Malhotra 1996; Kabeer 1999; Mason 1998), or even the experience of women within each sector. The simple, quantitative measures typically used in these studies, such as the proportion of women in the labor force or attaining a certain level of education, provide little information about these dimensions. For example, the proportion of women participating in the labor force does not capture the *quality* of employment or *motivation* for work (see, for example, Bauer 2001; Yu 2001). Variations in the motivation for entry into the labor force or the working conditions that women face will condition the extent to which increases in women's labor force participation actually represent increases in gender equality. If women are entering the labor force in response to extreme economic need, one would be hard-pressed to claim that increasing labor force participation signaled an increase in meaningful options for women or increased gender equality. Similarly, if jobs available to women are poorly paid or take place in hazardous conditions, it is not at all certain that labor force participation will be empowering at the individual level or help to remove barriers to greater gender equality at the societal level.

Thus, while our nuanced analyses move this study conceptually closer to capturing the gendered functioning of two key institutions than much of the existing literature, data limitations prevent us from discerning whether these changes indicate improvements in gender equality, within the sectors or in society more broadly. Nevertheless, one way that societal-level change can occur is through the collective experiences of individuals "bumping up" against societal gender norms. If, for example, enough women move into sectors that have previously been closed to them, societal

institutions might well begin to function more equitably. The substantial and widespread changes we have documented in the labor market and education sectors may well foster such changes. Further research with improved data may more accurately reveal these dynamics.

D. Limitations

In addition to the limitations of this study already noted, two other limitations condition the interpretation of our findings. First, we examined only bivariate associations in this analysis and cannot examine potential confounding variables, nonlinear relationships, or competing explanations, such as economic growth or ideational change, or account for the endogeneity of decisions concerning fertility, education, and participation in the labor market (Lloyd 1991; Mason 2001). Undoubtedly each of these factors may shape our results. However, there is a strong theoretical basis to support the role of fertility decline in shaping gender relations at the societal level, and our careful attention to temporal ordering provides further support to this argument. Moreover, the data to examine these issues in a cross-national, time-series analysis simply do not exist.

Second, concepts like gender equality are highly context-dependent; behaviors and attributes that signify empowerment in one context often have different meanings elsewhere (Malhotra & Schuler 2005; Mumtaz & Salway 2005; 2009). Thus, cross-national analyses such as these run the inherent risk of attributing similar meaning to commonalities in women's lives, which may in reality vary by society (Riley 1998).

While we addressed some of these limitations by conducting more nuanced analyses—analyzing women's labor force participation by cohort and in relation to men, restricting our analysis to include only post-primary educational attainment, conducting analysis of the gender gap in both outcomes and the dynamics of the narrowing and expanding gender gaps, and by focusing carefully on the temporal ordering of the phenomena we examine—these limitations still stand. We hope that future data collection efforts will attend to the limitations of these measures, and allow for more extensive cross-national analysis, as well as more country- or context-specific analysis.

E. Guidance for Future Research

Our findings, along with relevant theory, suggest a number of promising dimensions and themes for future research. One challenge facing researchers exploring this hypothesis is the question of how to determine the net consequences of fertility decline at the societal level. Rarely does social change of any sort result in a unidirectional impact on any dimension of social relations (Malhotra 2012;

McNay 2005). A social change as significant as fertility decline is likely to create negative repercussions for women in some dimensions and at some levels, while also yielding benefits in others. For example, if daughters' opportunities for schooling are constrained because they take on additional household labor while their mothers work outside the home, then women's labor force participation may represent a combination of empowerment and disempowerment at the individual level, gender inequality at the household level if husbands and/or sons are not similarly burdened, and ambiguous consequences at the societal level. One challenge for researchers is how to operationalize the measurement of these consequences in empirical research to capture the change process across multiple dimensions and at multiple levels. Thus it may be productive for future research to focus on the meso-level or other levels of aggregation and to examine more than one level of analysis at a time.

Relatedly, future research must attend to the potential influence of contextual factors in shaping both the pattern of fertility decline and the dynamics between fertility decline and changes in gender relations, and the extent to which context influences whether and how changes in gender relations manifest as improvements in gender equality. For example, the influence of the genocide in Cambodia is clearly evident in graphs of its TFR; after a decade of significant fertility decline between 1970 and 1980, the TFR rose from 4.7 in 1980 to 6.6 in 1985, likely in response to the loss of life from its genocide. Similarly, variations in labor force participation rates due to civil and economic turmoil are evident in El Salvador and Sri Lanka. From obvious social disruptions like war and economic booms or busts, to less momentous factors like political regime change or even policy change, it is clear that many forces can override fertility decline as an agent of social change or interact with fertility decline to produce context-specific results. Similarly, contextual factors may also moderate the gender-transformative possibilities of fertility decline, or impede societal-level change altogether. For example, in Italy, several scholars contend that the lack of policies and norms supporting women in combining motherhood and work outside the home, along with the rigid labor market structure and a strong tradition of family-based care (Anxo et al. 2007), may have limited the empowerment of Italian women and constrained the gender-transformative potential of fertility decline (Chesnais 1996; Perez & Livi-Bacci 1992). Given the resulting challenges of balancing family desires with professional opportunities in such a context, many Italian women have opted to forgo childbearing altogether—leading to the emergence of fertility levels well below replacement.

Promising themes for future research on this topic also include the effect on the fertility-gender relationship of the pace of fertility decline, the implications of specific contraceptive method types,

and the timing of fertility decline in women's lifecourse. The pace of fertility decline, for example, might influence the ability of a given society to "absorb" the changes. If fertility falls very quickly, an ensuing conservative backlash could prevent gender-equitable changes or, conversely, it may foment significant social unrest and foster dramatic changes in gender relations. Second, the type of contraceptive method(s) driving the fertility decline may also influence the nature of ensuing changes. Women-controlled methods (e.g., oral contraceptives) may enable women to strategically employ the means of fertility control to further their own ends in ways that more provider-controlled methods, like sterilization, or male-controlled methods, like condoms, may not. The availability of woman-controlled methods may well influence the gender-transformative potential of fertility decline. Third, the timing of fertility reduction in women's lifecourse may be another key influence on the societal-level consequences of fertility decline (Allendorf 2010; Lundberg, Sinha, & Yoong 2010). If women delay childbearing compared to women of previous generations, they would have more childfree time during adolescence and young adulthood to acquire additional human and social capital—with potentially empowering consequences for them as individuals and gender-transformative consequences for society. Conversely, if the reduction in time spent childbearing/rearing comes closer to the end of women's lifecourse, empowerment and gender equality may remain largely unchanged because women would gain childfree time when they are sometimes considered past their prime productive years, perhaps leaving them relatively unprepared to take on new social roles. These and other potential mediators and moderators between fertility decline and societal-level gender equality will be important dimensions in future research.

On the whole, our findings lend qualified support for the hypothesis that fertility decline may foster shifts in gender relations within the domains of labor force participation and higher education, and perhaps foster shifts in their gendered functioning as well. The results provide empirical evidence that the fertility-gender dynamic is ripe for further cross national, national, and sub-national research, as well as more in-depth, contextually-rich investigations. Our findings offer a foundation for such future research and for building a research and policy agenda that uses the fundamental connections between population and gender to address existing and emerging priorities worldwide.

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