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Gender equality and economic growth in Brazil: A long-run analysis



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ABSTRACT

This paper studies the long-run impact of policies aimed at fostering gender equality on economic growth in Brazil. The first part provides a brief review of gender issues in the country. The second part presents a gender-based, three-period OLG model that accounts for women's time allocation between market work, child rearing, human capital accumulation, and home production. Bargaining between spouses depends on relative human capital stocks, and thus indirectly on access to infrastructure. The model is calibrated and various experiments are conducted, including investment in infrastructure, a reduction in gender bias in the market place, and a composite pro-growth, pro-gender reform program. The analysis showed that fostering gender equality, which may partly depend on the externalities that infrastructure creates in terms of women's time allocation and bargaining power, may have a substantial impact on long-run growth in Brazil.

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1. Introduction

In recent years Brazil has achieved much success in reducing poverty and income inequality. According to World Bank data, relative poverty (based on a PPP US\$2 per day metric) has fallen markedly, from 21 percent of the population in 2003 to 11 percent in 2009. Extreme poverty (based on a PPP US\$1.25 per day metric) also dropped significantly, from 9.8 percent in 2004 to 6.1 percent in 2009. At the same time, income inequality fell significantly. Between 2001 and 2009, the income growth rate of the poorest decile of the population was 7 percent per year, while that of the richest decile was 1.7 percent; as a result, income inequality (as measured by the Gini index) fell markedly, from 0.594 in 2001 to 0.521 in 2011—a 50-year low. Key drivers of these achievements have been low inflation, sustained economic growth (at a yearly average of 4.0 percent during 2002–08 and 5.1 percent during 2010–11), a reduction in the skill premium, well-focused social programs, and real increases in the statutory minimum wage.¹

Despite these achievements, however, income inequality remains high and the quality of human capital continues to be a source of concern. Although universal coverage in primary education has been achieved, quality at both the basic and secondary levels remains a concern. Growth and private sector activity continue to be hampered by various barriers and reg-

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¹ See Cornia (2012) and Lustig et al. (2012) for a discussion of what accounts for the reduction in inequality in Brazil during the past two decades.

ulations, as well as inadequate infrastructure and a weak business climate.² Gender inequality remains also high, despite some significant improvements. In 2003, under his first presidency, Luiz Inácio Lula da Silva created a federal governmental body with the objective of dealing with gender equality issues. This also led to the creation of a National Plan for Women's Policies (NPWP), which was adopted in 2004. The Plan reaffirmed the commitment by the Brazilian Federal Government and by the other governmental bodies to incorporate a gender perspective in public policies. The Plan foresaw several concrete actions to be implemented by different government sectors in cooperation with the private sector, and addressed some specific needs of mothers, specifically with reference to health care before and during pregnancy and at birth, and child care and education. Brazil's first female president, Dilma Rousseff, also promised when elected in 2010 to make gender equality a priority. At the same time, however, there has been limited effort to quantify the impact of gender-based policies on gender inequality and economic growth in Brazil.

This paper attempts to fill this gap by offering a quantitative analysis of the long-run impact of policies aimed at fostering gender equality on economic growth in Brazil, especially through their impact on women's time allocation and intrahousehold bargaining power. The analysis is based on a gender-based overlapping generations (OLG) model in which women's time allocation takes center stage.³ The approach proposed here is to calibrate the steady-state solution of the model and focus therefore on the long-run effects of public policy. The underlying view is that gender-based policies are unlikely to produce tangible economic results in the short run—often not even in the medium run; what matters therefore is a good understanding of the long-run effects. A key feature of our analysis is that we endogenize women's bargaining power by relating it to time allocated by women to human capital accumulation and indirectly to access to infrastructure, which has a direct impact on time devoted to home production.⁴ This creates a novel channel through which public policy can affect gender equality and economic growth. We also relate life expectancy to health status in adulthood; as a result, changes in health outcomes may affect growth through a life cycle effect.

The remainder of the paper is organized as follows. Section 2 provides a brief review of gender issues in Brazil. Section 3 presents the model. Section 4 presents the calibration and Section 5 presents several experiments designed to reduce gender inequality: spending reallocation toward infrastructure, a reduction in gender bias in the market place, an increase in mothers' time allocated to their daughters, and a composite pro-growth, pro-gender adjustment program involving some element of tax reform. Section 6 offers some concluding remarks.

2. Background

In the past two decades, Brazil made much progress in reducing gender inequality. According to the results of a 2010 study by Brazilian Institute of Geography and Statistics (IBGS), illiteracy rates for women 15 years old and above fell from 20.3 percent in 1991 to 13.5 percent in 2000 and 9.8 percent in 2008. Brazilian women are now generally more educated, with female participation in tertiary education exceeding significantly male participation. As a result, the share of the female labor force with tertiary education increased from 7.4 percent in 1992 to 8.5 percent in 1999 and 11.9 percent in 2007, compared to 5.3, 6.2, and 7.3 percent for males, respectively. Working women have an average of 8.8 years of schooling, while their male counterparts have an average of 7.7 years. This is important because, as discussed in the next section, educated mothers tend to have greater bargaining power within the household over intrafamily allocation of monetary resources, be better able to act on their preference for investing in children, and have a greater impact on family decisions regarding the allocation of children's time to household chores. Professions that traditionally were dominated by males, such as law, medicine, and engineering, are becoming more balanced in terms of gender, and some already have more women than men. The proportion of women in the workforce rose from 52.8 percent to 57.6 percent between 1998 and 2009, whereas the share of women in wage employment in the non-agricultural sector rose from 35.1 percent in 1990 to 41.6 percent in 2007. The ratio of female to male labor force participation rate increased from 52.2 in 1990 to 63.9 in 1995, 66.7 in 2000, and 73.3 in 2010.

However, gender gaps in access to formal employment and market income still persist in Brazil. The proportion of women with formal jobs increased from 41.5 percent in 1999 to 48.8 percent in 2009, but it is still lower than that of employed men, which stood at 53.2 percent in 2009. At the same time, women in formal sector employment work less than men—an average of 36.5 h a week in 2009, against 43.9 h for men. Even though there has been progress in the share of women employed in the non-agricultural sector, their comparative advantage in education has not been reflected in relative market wages—in spite of the average higher skill level of the female labor force. In 2008, women's wages were 84 percent of men's and the gap increases at higher levels of education.⁵ Among those with 12 or more years of schooling, women earned merely 58 percent

² According to the World Economic Forum's *Global Competitiveness Report* for 2012, Brazil ranks 64 out of 142 countries for the quality of its infrastructure (118 for roads, 122 for air transport, and 130 for ports). See Ter-Minassian (2012) for a perspective on Brazil's current challenges in the area of structural reform.

³ See Agénor (2012a) and Agénor and Canuto (2012) for earlier contributions. Gender-based OLG models include a seminal paper by Galor and Weil (1996), and subsequent contributions by Zhang et al. (1999), Leung et al. (2004), Greenwood et al. (2005) and de la Croix and Vander Donckt (2010). Other important recent contributions on the economics of gender include Doepke and Tertilt (2011), which we discuss further later, and Fernández (forthcoming). None of these contributions, however, considers jointly the interactions that we focus on here.

⁴ In Agénor (2012a), in equilibrium women's bargaining power depends solely on the relative amount of time that mothers allocate to their sons and daughters—a parameter that is determined by social norms and is therefore exogenous. In addition, in the model presented here, dynamic stability conditions can be explicitly established and numerically evaluated.

⁵ There are also considerable gender differences across regions. For instance, wage gaps tend to be lower in Rio de Janeiro than in Sao Paulo; the largest gaps are found in the Northeast. Note that these disparities are not unique to Brazil; see Nopo (2012).

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