Teen Fertility and Labor Market Segmentation in Madagascar
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1 | Introduction

Women’s economic opportunities are both an important outcome and driver of successful economic development (Duflo 2012). In recent decades, increasing rates of female participation in the labor market and declining fertility across the globe were simultaneously witnessed (Heath and Jayachandran 2016). Fertility rates are often cited as an important determinant of female employment outcomes (Verick 2014). Adolescence may represent a critical window for intervening to influence the economic opportunities of women (Bandiera et al. 2015), as early childbearing and marriage can interrupt human capital accumulation (Field and Ambrus 2008; Baird, McIntosh, and Özler 2011; Herrera and Sahn 2015).

Women represent the majority of informal sector workers in developing countries, especially in sub-Saharan Africa where adolescent pregnancy rates are high. Using a unique panel data set from Madagascar, specifically designed to capture the transition of a cohort of young women (and men) from adolescence to adulthood, we explored the effects of teenage pregnancy on young women’s labor force participation and sector of employment. We examined this issue for a cohort of young women between the ages of 21 and 23 years old at the time of the survey. This question is particularly salient in Madagascar, where one in three girls between the ages of 15 and 19 have a child or are pregnant for the first time (Demographic Health Survey, 2009).

We further explore the extent to which the effect of early childbearing on labor market outcomes is direct, due to the demands of motherhood, and indirect, operating through reduced human capital as a consequence of pregnancy, forcing women to prematurely terminate their education (Herrera and Sahn 2015). Understanding the role teenage pregnancy plays in female employment and sector selection is especially pertinent in the context of Madagascar, and in sub-Saharan Africa more generally, where childbearing during adolescence is common and approximately 80 percent of the female labor force is self-employed or unpaid family workers.

We investigate the effect of the timing of first birth, with an emphasis on the period of adolescence. Evidence on the causal effect of adolescent childbearing on young women’s labor market outcomes in developing countries is scarce. We address the endogeneity between fertility and employment outcomes by instrumenting the timing of the first birth with community-level data on access and exposure to condoms since the women were aged 15. We then estimate a multinomial logistic (MNL) model of female labor market participation and sector selection for our cohort of 21- to 24-year-old women, distinguishing between those who are engaged in the formal sector, the informal sector, not working, and currently enrolled in school.

2 | Analysis and Findings

Unlike previous work in this literature, we find that among our cohort of young women, between 21 and 24 years of age, those who had their first child during adolescence or post-adolescence are more likely to participate in the labor market than those who do not yet have children. However, the timing of motherhood matters in determining the labor sector in which these women are employed. Women who, as teen-

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agers, had their first child are 55 percent more likely to be working in the informal sector than those who had their first child post-adolescence.

We use data from the Madagascar Life Course Transitions of Young Adults Survey. In 2011–2012, this survey re-interviewed a cohort of 1,749 young adults between the ages of 21 and 24 who were originally surveyed in 2004, when they were between 13 and 16 years old. This survey was specifically designed to capture the transition from adolescence to young adulthood and, thus, collected detailed information on individual and household characteristics as well as family backgrounds.

In 2012 and 2004, these surveys also interviewed community leaders, teachers, and health personnel regarding the community-level availability of social and economic infrastructure and services, including family planning, and the date these services first became available in the community. We complement this information at the community level with the 2001 and 2007 national commune census data, which include a broad range of information on basic public services and infrastructure.

Of the young adults surveyed, 859 are women, 466 of whom gave birth at least once by the time of the 2012 survey. Due to missing information for certain variables, our final working sample includes 788 women, 414 of whom were mothers by 2012. The average age at first birth in this sample is 18 years, which is consistent with the 2009 Demographic Health Survey (DHS) national-level data.

The average age that teen mothers and young mothers gave birth to their first child is 16.77 and 20.23, respectively. Not-yet mothers completed higher levels of education than the other two groups, with differences in the average educational attainment of each fertility timing category being statistically significant. On average, not-yet mothers have 9 years of schooling, whereas young mothers have 7 years, and teen mothers have 5.9 years.

Table 1 describes the labor outcomes of the women in this sample, based on the timing of their first birth. Both young and teen mothers have higher labor market participation rates than their not-yet mother counterparts. Approximately 60 percent of the not-yet-mothers report that they are currently working in the informal or formal sectors, compared to 83 percent and 89 percent of the young and teen mothers, respectively.

We classify a woman as employed in the formal sector if her main employment activity is in public administration, in a formal public or private enterprise, or if she works in a nongovernmental organization (NGO). She is also categorized as employed in formal work if she works in a family enterprise or performs domestic work in another household and earns regular wages or a salary for that work. We classify a woman as employed in the informal sector if her main employment activity is working in a family-owned enterprise or performing domestic work in another household and her remuneration status is listed as self-employed or unpaid. She is also classified as employed in the informal sector if her main employment activity is listed as self-employment.

The table illustrates that young Malagasy women are largely employed in the informal sector; indeed, 62 percent of our sample women work in the informal sector, and only 12 percent work in a formal job. While the majority of all women in Madagascar work in informal jobs, the likelihood of women working in lower quality jobs appears to be exacerbated by motherhood. Nearly 73 percent and 80 percent of the young and teen mothers, respectively, in our sample work in the informal sector, compared to less than 50 percent of not-yet mothers.

Our findings that teen mothers and young mothers are more likely to participate in the labor market than not-yet mothers contrasts with some previous work, such as Agüero and Marks (2008), who found that fertility does not have a causal effect on female labor participation. Similarly, our results differ from other studies that found a negative effect of fertility on women’s labor market participation in developing countries (Cruces and Galiani 2007; Cáceres-Delpiano 2012). One important consideration in how our results differ, however, is that unlike the other literature cited that looks at the broader issue of fertility impact, we focus on the effect of the timing of first birth among young women on labor force participation.

Thus, while having a child increases the probability that both young and teen mothers are working, the timing of their first birth matters in explaining the types of jobs in which they are working. Having her first child during adolescence strongly increases the likelihood that a woman will be employed in the informal sector in her twenties. However, if that first child is instead born to a mother in young adulthood, then her first birth appears to have no statistically significant effect on her labor market sectoral selection, even if it does increase the likelihood of these categories.

<table>
<thead>
<tr>
<th>Non-Participation (%)</th>
<th>Not-Yet Mothers</th>
<th>Young Mothers (AFB &gt; 18)</th>
<th>Teen Mothers (AFB ≤ 18)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>47.46%</td>
<td>12.30%</td>
<td>14.89%</td>
<td>8.85%</td>
<td>11.93%</td>
</tr>
<tr>
<td>N</td>
<td>46</td>
<td>28</td>
<td>20</td>
<td>94</td>
</tr>
<tr>
<td>Informal (%)</td>
<td>46.79%</td>
<td>72.87%</td>
<td>79.20%</td>
<td>62.31%</td>
</tr>
<tr>
<td>N</td>
<td>175</td>
<td>137</td>
<td>179</td>
<td>491</td>
</tr>
<tr>
<td>Formal (%)</td>
<td>13.90%</td>
<td>10.11%</td>
<td>9.73%</td>
<td>11.80%</td>
</tr>
<tr>
<td>N</td>
<td>52</td>
<td>19</td>
<td>22</td>
<td>93</td>
</tr>
<tr>
<td>Student (%)</td>
<td>27.01%</td>
<td>2.13%</td>
<td>2.21%</td>
<td>13.96%</td>
</tr>
<tr>
<td>N</td>
<td>101</td>
<td>4</td>
<td>5</td>
<td>110</td>
</tr>
<tr>
<td>Total (%)</td>
<td>47.46%</td>
<td>23.86%</td>
<td>28.68%</td>
<td>100.00%</td>
</tr>
<tr>
<td>N</td>
<td>374</td>
<td>188</td>
<td>226</td>
<td>788</td>
</tr>
</tbody>
</table>

Note: AFB denotes age at first birth.
that she is working. We find that by postponing the first birth by one year, a young women’s probability of working in the informal sector decreases by 7.2 percent, and this effect is statistically significant at the 10 percent level (p-value = 0.077).

**Figure 1** Predicted Probability of Working in the Informal Sector (95% CIs)

3 | Conclusions and Recommendations

Our findings indicate that while motherhood in general increases the likelihood of working, the timing of fertility influences the magnitude of this effect and the type of work in which young women are employed. Teen mothers, however, are much more likely to be working in the informal sector. The larger concern is that not only does early childbearing increase female labor market participation in lower quality, less desirable jobs, but such a finding will have deleterious consequences for a women’s work opportunities across their life-course. The push of these young women into informal jobs is especially troubling given that 90 percent of our sample women who report working in a family-owned enterprise also report their remuneration status as “unpaid.” Our results, therefore, highlight the importance of preventing teenage pregnancy, as an effective modality for improving the human capital and labor outcomes of young women in developing countries.

Our results are broadly consistent with others such as Agüero and Marks (2008), who found that having children was a barrier to work in the paid labor sector, and Urdinola and Ospina (2015), who found that teen mothers in Colombia were more likely to have lower quality jobs. These findings thus focus attention on policies that prevent teenage pregnancy to facilitate higher school attainment and, thereby, reduce the likelihood of young women being driven into low-quality jobs in the informal sector. Additionally, the fact that we also find a substantial, direct, non-school-mediated effect of adolescent childbearing on working in the informal sector highlights the importance of policies, such as access to childcare, that support young mothers in caring for their children while working in higher quality jobs.


