WAGE AND FERTILITY GAPS IN DUAL ECONOMIES

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Abstract: Virtually all developing economies, now and in the past, have large gaps in labor productivity across sectors. We argue the presence of a traditional sector of family-based production, where markets for land and labor are nonexistent or underdeveloped, is important in explaining the persistence of large wage gaps. In the absence of land markets, intergenerational links make it more likely that low-wage workers do not relocate because they are compensated by inheritance of the family “farm.” The use of family labor on relatively small plots of land reduces the incentive to work long hours further widening gaps in annual hours and wages. Greater fertility and larger families also serve to compensate low-wage workers in the traditional sector, another factor reducing the incentive to migrate.

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1. Introduction

There is substantial evidence documenting the presence of large gaps in worker productivity across agricultural and nonagricultural sectors in the early stages of development (Caselli and Coleman, 2001; Gollin et al. 2004). These productivity gaps imply that labor is inefficiently allocated across sectors and that Total Factor Productivity (TFP) and aggregate economic growth increase as labor migrates from the low productivity traditional agricultural sector to the high productivity manufacturing sector. Indeed, differences in the allocation of labor across sectors have been shown to explain the majority of TFP differences across countries (Temple and Woessmann, 2006; Chanda and Dalgaard, 2008; Restuccia et al. 2008; Vollrath, 2009a.)

There is also evidence that the productivity gaps are more closely connected to differences in production methods and institutional arrangements regarding ownership than to the type of goods produced per se. Even within urban areas of developing countries, workers involved in modern firm-based production earn much higher wages than those involved in traditional family-based production (Rosenzweig, 1988, pp.756-757.) For this reason it may be more accurate to refer to gaps between traditional and modern sectors, rather than between agricultural and nonagricultural sectors. It is primarily because of data limitations that most of the focus is on productivity gaps between farm/rural workers and nonfarm/urban workers.

Table 1 gives examples of two dual economies—one from the historical United States and one from contemporary Sub-Saharan Africa. Both economies are dominated by traditional agriculture and have large productivity gaps between nonfarm and farm workers. The 6-fold

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productivity gap in Africa today is particularly large, although it is likely an overestimate due to unmeasured output on family and communal farms that is missed by national income accounting. The available survey data on wages and consumption reveals much smaller gaps between non-farm and farm or between urban and rural workers in Africa (Mourmouras and Rangazas, 2007a, pp.38-39; Henderson, 2010, Figure 4; Vollrath, 2009a, footnote 15, p.329). Actual gaps in wages and consumption in current developing countries are much closer to the 2 to 3-fold range witnessed in United States history.

Fertility is a related determinant of economic growth that differs significantly across sectors. Table 1 indicates that in the early stages of development average fertility is high. Moreover, fertility is much higher in the traditional sector than in the modern sector. This fact suggests that the movement of households from the traditional sector to the modern sector lowers the economy’s fertility rate. Reductions in fertility and population growth associated with labor migration to urban areas has the potential to raise labor productivity growth by increasing the accumulation of physical capital per worker and by reducing the fraction of the workforce made up of relatively low-productive children and young adults. Thus, migration of labor from the traditional to the modern sector can increase economic growth directly, due to the gap in labor productivity, and indirectly by reducing fertility.

Table 1. Dual economies

<table>
<thead>
<tr>
<th>% Modern</th>
<th>Productivity Gap</th>
<th>Total Fertility Rate</th>
<th>Fertility Gap</th>
</tr>
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<tbody>
<tr>
<td>United States—Beginning of the 19th Century</td>
<td></td>
<td></td>
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<tr>
<td>20</td>
<td>2 to 2.5</td>
<td>7</td>
<td>0.67</td>
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<tr>
<td>Sub-Saharan Africa—Beginning of the 21st Century</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>29</td>
<td>6</td>
<td>5</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Notes: United States—% Modern is the percentage of labor in non-agriculture in 1800 (David (2005), Table 2.2, column 2), Productivity Gap is the ratio of nonfarm to farm productivity in 1840 (David (1967), Total Fertility Rate is average fertility rate for the entire economy in 1800 (Haines (2000, Table 4), Fertility Gap is urban to rural fertility rate in 1800 (Greenwood and Seshadri (2002)). Sub-Saharan Africa—% Modern is the percentage of labor in non-agriculture in 1996 (Temple (2005, Table 1)), Productivity Gap is the ratio of nonfarm to farm productivity in 1996 (Temple (2005, Table 1)), Total Fertility Rate is average fertility rate for the entire economy in 1999 (Galor (2005) and in 2010 (UNESCOUIS Statistics in Brief, http//stats.unesco.org), Fertility Gap is the ratio of the urban to rural fertility rate between 1996 and 2003 for 24 African countries (computed from Shapiro and Gebresellassie (2008, Table 1)).

1 The same measurement issue can be raised about the historical gaps in the U.S., but Alston and Hatton (1991) make adjustments for non-cash payment and cost of living differences and find almost 2-fold real wage gaps as late as 1940.