

# Income Differences around Globe Go Beyond Physical, Human Capital

By Riccardo DiCecio

Compared with income inequality in the United States, differences in living standards worldwide are staggering. In 2000, real gross state product (GSP) per worker for Connecticut was approximately \$92,000; this is almost 90 percent larger than in Mississippi, where the total was nearly \$49,000.<sup>1</sup> In contrast, while real gross domestic product (GDP) per worker totaled almost \$1,000 in Burundi in 2000, it exceeded \$100,000 in Luxembourg.<sup>2</sup> How such large differences in GDP per worker can persist in an increasingly global world is one of the key questions in economics.

Some factors behind the persistent disparity in income per worker are obvious. There are large differences across countries in the amount (and quality) of factories and equipment available for production (that is, physical capital) and in workers' stock of knowledge and ability (that is, human capital). Physical and human capital, however, do not completely determine output per worker. In fact, large portions of the differences in income per worker between nations cannot be explained by the accumulation of either kind of capital alone. For instance, output per worker in Mexico is seven times that of China even though concentrations of physical and human capital are quite similar.<sup>3</sup> Income differences that cannot be explained by differences in physical and human capital are attributed to *total factor productivity* (TFP).

## Explaining Productivity

Productivity plays an important role in determining output. First, increases in productivity stimulate output for fixed levels of inputs by allowing for more efficient use of resources. Moreover, there is a strong relationship between productivity and human and physical capital. Higher

productivity leads to more investment, further increasing output. Because of the key role of productivity in determining output, understanding why productivity differs across countries is important for understanding global income-per-worker disparities.

The most productive nations share characteristics such as strong property rights, government transparency, limited corruption and limited barriers to entry. These forms of *social infrastructure* ensure that private investment and innovation are properly rewarded and that productive inputs are effectively used.

The effect of barriers to entry on productivity has received much attention in the economics literature. Ease of entry for new business fosters competition and, thus, encourages productivity. Where it is easier for new businesses to develop, established firms must constantly consider the threat of new competition, which increases productivity. Furthermore, it is crucial that capital and labor are allocated to their most productive use. For example, a 2009 study finds that reallocating productive factors (capital and labor) across firms such that their marginal products<sup>4</sup> equal those in the United States would lead to TFP gains of 40-60 percent in India and 30-50 percent in China in the manufacturing sector.<sup>5</sup>

Recent research has focused on the causes of misallocation of productive factors across firms/sectors and on the causes of distortions in industry structure. Two causes—financial constraints and the costs associated with regulation compliance—are discussed in the following sections. While earlier studies used statistical techniques to analyze the determinants of TFP, the more recent studies summarized below rely on

detailed economic models of firms' entry, operation and exit decisions.

## Starting a New Business: Financial Constraints

A poorly developed financial sector may hinder the creation of new businesses in some nations. In the developed world, credit is a part of everyday life. New business owners gain use of equipment and floor space that they cannot afford with cash because banks reasonably assume that people are willing and able to pay off debt. Elsewhere, however, microfinance loans totaling mere hundreds of dollars are viewed as rare and exciting business opportunities.

A 2009 study presents a model where borrowing constraints distort the number of firms, the allocation of entrepreneurial talent and the allocation of capital across firms.<sup>6</sup> The ability to pay for fixed operating costs depends on an individual's wealth and not on her entrepreneurial ability: Talented-but-poor individuals are inefficiently excluded from starting a business. Consistent with the data, the model predicts that high fixed costs result in sectors with fewer entrepreneurs (and establishments) than desired. Moreover, the establishments tend to be larger than the optimal establishment size. As a result, the least financially developed countries have TFP that is more than 40 percent lower than in the United States. Differences in financial development can explain 80 percent of the differences in income per capita between Mexico and the United States.

## Starting a New Business: Regulations and Entry Costs

Some barriers to entry are the direct result of government policy. From nation

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to nation, there are great differences in the obstacles entrepreneurs must endure before starting a new business. The World Bank's *Doing Business* survey finds it hardest to establish a new business in Guinea-Bissau, where entrepreneurs face 16 procedures, 213 days of waiting and fees totaling 323 percent of income per capita. In contrast, New Zealand's entrepreneurs can open shop after completing one procedure, waiting one day and paying fees totaling less than 1 percent of income per capita. Policy in the United States is also fairly encouraging. New businesses can begin after an average of six procedures, a six-day wait and paying fees less than 1 percent of income per capita. Although some barriers to entry will be present everywhere, regulatory barriers specifically differ between nations and play

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an important role in determining nations' productivity and output.


One convenient measure of entry barriers is the legal fees associated with starting a new business. The influence of these entry costs, measured as a percent of GDP per capita, has been proven to be substantial in the literature. A recent study finds that an 80 percent (of per capita GDP) increase in these entry costs causes a 22 percent reduction in TFP and a 29 percent reduction in GDP per worker.<sup>7</sup>

Current research finds further support for the importance of entry barriers, by focusing on a broader measure of entry costs which includes nonregulatory costs—for example, sunk investment, technology acquisition and advertising.<sup>8</sup> A higher entry cost implies that fewer entrants are willing to pay it, scaring away entrepreneurs who could potentially be highly productive. What's left is a pool of producers sullied by low-productivity firms. As a result, firms' average productivity and TFP are low.

The total effect of entry barriers on productivity is profound. For example, TFP declines by 0.14 percent for each 1 percent

increase in entry costs. This relationship—along with the large variation in entry costs—leads to large differences in economic outcomes across countries. In the model created by this author and fellow economist Levon Barseghyan, TFP is 35 percent higher and output per worker is 57 percent higher, on average, in countries with low entry costs than in countries with high entry costs.

Although high entry costs discourage the creation of legitimate businesses, they encourage the creation of illegitimate ones—that is, businesses concealed from public authorities to avoid paying taxes and complying with regulations. The creation of a separate “shadow economy” provides some relief to entrepreneurs, but it hurts the nation as a whole. Firms in the informal sector are smaller and less productive

than small legally operating firms.<sup>9</sup> By discouraging new legitimate businesses and encouraging a larger shadow economy, high regulatory barriers to entry lead to an economy populated by a few inefficiently large legal firms and many inefficiently small firms in the informal economy. 

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## ENDNOTES

- <sup>1</sup> These figures are calculated by dividing the 2000 real GDP (Bureau of Economic Analysis) by the labor force (Bureau of Labor Statistics).
- <sup>2</sup> See Heston, Summers and Aten. The figures reported are real GDP per worker (in international dollars, 1996 constant prices).
- <sup>3</sup> See Hall and Jones.
- <sup>4</sup> The marginal product of a productive factor is the extra quantity of output obtained by using one extra unit of that factor while keeping the other productive factors constant.
- <sup>5</sup> See Hsieh and Klenow.
- <sup>6</sup> See Buera, Kaboski and Shin.
- <sup>7</sup> See Barseghyan.
- <sup>8</sup> See Barseghyan and DiCecio.
- <sup>9</sup> See La Porta and Shleifer.

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