

The Agricultural Productivity Gap in Developing Countries



In brief

- Data from developing countries indicates that the value added per worker in the non-agricultural sector is, on average, four times that of agriculture. Thus, this paper seeks to examine to what extent such a gap is still present using better measures of inputs and outputs to calculate this gap.
- To address this question, the authors developed a database of internationally comparable sectoral measures of human capital per worker, hours worked per worker and value added, which was constructed using household survey data as opposed to national income accounts.
- The results of this study indicate that, taking into account sector differences in hours worked and human capital per worker, there still exists a large productivity gap between agricultural and non-agricultural work.
- Thus, a key policy implication is that if there is a sectoral change from agricultural to non-agricultural work, there may be large gains to be had in reducing poverty as the average income of non-agricultural workers is roughly twice that of agricultural workers.
- However, in considering any rural to urban migration policy, one must potentially note the costs of such a policy, as well as the benefits. These costs include the increased demand on urban infrastructure and the possibility of higher crime rates. This paper does not evaluate such possibilities, merely the agricultural productivity gap.

Policy Motivation

According to national accounts data for developing countries, value added per worker is on average four times higher in the non-agriculture sector than in agriculture. Taken at face value this “agricultural productivity gap” suggests that labor is greatly misallocated across sectors in the developing world, and that policy makers should take steps to encourage workers to shift out of agricultural production and into the non-agricultural activities. In this paper we draw on new micro evidence from a large set of developing countries to ask to what extent the gap is still present when better measures of inputs and outputs are taken into consideration. We find that even after considering sector differences in hours worked and human capital per worker, it still appears that workers in the non-agricultural sector earn far higher wages than agricultural workers.

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Policy Impact

Our findings suggest that there may be large reductions in poverty rates associated with workers moving out of the agriculture sector. While policy makers often discourage movement of workers out of rural agricultural employment and into urban areas, our results suggest that they may be passing up an important channel for poverty reduction. Put differently, the benefits of movement from agricultural to non-agricultural employment seem to be large in the developing world; policy makers should take these benefits into consideration when they decide how to manage internal migration.

Audience

Our target audience is policy makers in developing countries responsible for policies pertaining to internal migration, and employment, broadly defined.

Implications

The average income of non-agriculture workers is roughly twice as high as that of agriculture workers, even after adjusting for average hours worked and education level of the household. This suggests that workers who migrate out of rural agriculture areas and into nonagricultural employment would have a high probability of moving out of poverty.

Summary of Research

In this project, we assess the role of measurement in accounting for the large “agricultural productivity gaps” observed in developing countries. To do so, we develop a new database of internationally comparable sectoral measures of human capital per worker, hours worked per worker, and value added constructed from household survey data (as opposed to national income accounts). We then use these

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data to ask whether the agricultural productivity gap in developing countries is still present once existing productivity numbers are adjusted using these improved measures of sectoral inputs and outputs. Our analysis addresses a basic, yet unanswered question: how much of the agricultural productivity gaps are due to problems of omitted factors and mismeasurement, as opposed to real differences in productivity?

To answer this question, we consider a sequence of adjustments to the data on agriculture’s shares of value added and employment. In the first set of adjustments, we construct measures of hours worked by sector for 51 developing countries and measures of human capital by sector for 98 countries, and use them to create improved measures of the labor input in agriculture. We also make adjustments for potential quality differences in schooling in urban and rural areas. In the second set of adjustments, we ask whether the measures of sector value added found in national accounts data are consistent with evidence from household surveys of income and consumption. We construct value added by sector from household data using our own new methodology, and apply it to the World Bank’s Living Standards Measurement Studies (LSMS) for ten developing countries. We find that sectoral income measures from the LSMS surveys are quite similar to those found in the national accounts.

We conclude that the agricultural productivity gaps in developing countries are most likely due to real differences in income by sector, rather than being artifacts of measurement error in national accounts data or simple differences in the composition of workers by sector. We find that even after all of our adjustments, the agricultural productivity gap is around two in the average developing country.

Implementation

“It would be a mistake for policy makers to only consider those costs when deciding rural-urban migration policy”

When implementing rural-urban migration policy, the costs of having more migration must be weighed against the benefits. This paper can be thought of as providing an estimate of the benefit to the average potential migrant, which is a doubling of income on average after migrating. This will lead to potentially large reductions in poverty rates given high enough rates of migration. The costs of migration include more demand on urban infrastructure, such as roads, electricity grids, and water and sewer lines, and the possibility of higher crime rates. Our paper does not provide an assessment of these costs, and indeed they may be hard to estimate in general. Still, it would be a mistake for policy makers to only consider those costs when deciding rural-urban migration policy.

Further Reading

The work of Beegle, De Weerd, and Dercon (2011) provides a very concrete look at the effects on rural-urban migrants in Tanzania. Looking at individuals who moved out of rural Kagera province from 1994 to 2004, poverty rates decline by 23 percentage points, compared to just 4 percent for persons remaining in Kagera. The reductions were even higher for the subset of workers who transitioned from agriculture to non-agricultural work.

Bryan, Chowdhury, and Mobarak (2011) conduct an interesting controlled experiment pertaining to internal migration in the developing world. The authors find that by providing rural farmers with a very small amount of cash, plus a list of potential employers in a nearby city, they are far more likely to migrate during the slow agricultural season. Furthermore, these workers and their families are much more likely to exit poverty than other workers who stayed behind.

References

Beegle, K., J. De Weerd, and S. Dercon (2011): “Migration and Economic Mobility in Tanzania,” *Review of Economics and Statistics*, 93, 1010–1033.

Bryan, G., S. Chowdhury, and M. Mobarak (2011): “Seasonal Migration and Risk Aversion,” Un-published Manuscript, Yale University. 2

About the authors

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