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Journal of Development Economics 82 (2007) 58–78

JOURNAL OF Development ECONOMICS

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The curse and blessing of fixed specific factors in small-open economies

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Received 11 February 2004; received in revised form 28 July 2005; accepted 9 November 2005

Abstract

This paper investigates how a country's specific-factor endowment affects its long-run economic performance. We build an open-economy version of the two-sector neoclassical growth model in which we introduce fixed industry-specific inputs in both activities. We show that differences in input shares between sectors can contribute to explain why nations that seem to have similar factor endowments can show very different income levels. In particular, under (productivity-adjusted) factor-price equalization, larger amounts of factors specific to the industry with a lower (larger) labor share lead the economy to enjoy larger (smaller) long-run income levels. The model can also account for overtaking episodes between countries along their development paths.

JEL classification: O41; F43
Keywords: Small-open economy; Specific inputs; Long-run income

1. Introduction

This paper introduces fixed specific factors into an open-economy version of the standard two-sector neoclassical growth model. The main contribution of the paper is to provide conditions under which a larger endowment of an industry-specific factor has negative effects and conditions under which it has positive effects on a country's long-run income level. The paper can therefore explain why some nations that seem to have similar

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doi:10.1016/j.jdeveco.2005.11.002

endowments can show very different income levels. Our hypothesis is that one source of this difference can lie in the input intensities displayed by the industries to which these factors are specific.

The importance of industry-specific factors has been recognized at least since the work of Ricardo (1817).[1] However, their impact on long-run income and growth is not yet well understood. To illustrate this, take the example of a very important set of specific factors: natural resources. These include land in agriculture, large bodies of water and coal in energy generation, and all kinds of minerals in their respective extractive industries. There is puzzling empirical evidence on the relationship between the natural-resource endowment and a nation's economic performance. On one hand, we observe that large factor endowments can sometimes be a curse in terms of income. For instance, in the past, there have been resource-poor economies such as the Netherlands and Japan that have outperformed resource-rich nations such as Spain and Russia. Nowadays, most Asian tigers are resource-poor, whereas growth losers such as Nigeria, Zambia, Sierra Leone, and Venezuela are resource-rich. Gylfason (2001) and Sachs and Warner (2001) also argue that resource abundant countries lag, on average, behind countries with less resources. On the other hand, natural-input abundance seems to be a blessing some other times. World Bank (1994) finds at least five nations that belong to both the top eight regarding natural capital wealth and the top fifteen regarding per capita income.

Solving this puzzle is important for several developing countries, such as the ones in the middle East and Latin America, where the discovery of natural resources has been considered as a positive precondition for more growth.

We study a world economy that has the production structure of the two-sector neoclassical growth model with consumption and investment goods, in the tradition of Oniki and Uzawa (1965), in which the different industries have different input intensities. Firms in both sectors employ product-specific factors. An alternative technology also allows producing investment goods using only mobile resources. Population is constant and consists of identical infinitely lived agents. There exists as well in the model a small-open economy that shares preferences and technologies with the rest of the world, but can have different specific-factor endowments.

The paper shows that larger amounts of inputs that are specific to an activity with a relatively large capital share lead the small nation to enjoy higher long-run welfare levels. On the contrary, larger stocks of factors that are specific to the less capital-intensive sector have a negative influence on capital accumulation. This negative influence totally offsets the positive effect of the larger specific-factor endowment and leads the economy to permanently lower income levels if the labor share of the technology to which this input is specific is sufficiently larger than the one of the technology that frees labor as a consequence of the increase in the specific factor. The negative effect, on the other hand, disappears if the small country specializes in the production of one good. Under specialization, a larger endowment always raises long-run capital and output.

[1] Recent evidence finds also support for the specific-factors model of international trade. Kohli (1993) reports estimates of the specific-factors and the Heckscher–Ohlin models of international trade for the US economy and finds that the former performs better than the latter, although US data display quite systematically some properties which are more in line with a Heckscher–Ohlin production structure. Rassekh and Thompson (1997) point out as well that a world in which each sector has some specific factor is at least as likely as one in which all inputs can freely move across activities. For differences between the Heckscher–Ohlin model and the standard specific-factors model of international trade, see for example Jones and Neary (1988).