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Terms of trade, economic growth, and trade patterns: a small open-economy case

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Abstract

By incorporating human capital accumulation into a dynamic trade model, we examine the relationship between the growth rate and the specialization pattern of a growing economy. We found that as long as its autarky price differs from the world price, a small open-economy eventually specializes completely. Furthermore, the impact of the terms of trade on the growth rate depends on the trade pattern. Specifically, if a country specializes in a capital commodity, the growth rate is unaffected by the terms of trade. If it specializes in a consumption commodity, its growth rate is significantly influenced by the terms of trade. © 2000 Elsevier Science B.V. All rights reserved.

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1. Introduction

In the literature on endogenous growth, the relationship between trade patterns and the growth rate is almost always ignored. Using cross-country data, Barro and Sala-i-Martin (1995) empirically investigated determinants of economic growth. Without providing theoretical reasoning, they found that the growth rate in real per capita GDP was positively correlated with an improvement in the world price. In a

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small open economy context, conventional static trade theory demonstrates that an improvement in the terms of trade raises the “absolute level” of national income. However, this framework cannot be used to investigate the effects of the terms of trade on the growth rate. In contrast, using a dynamic trade model of a small open economy, this paper investigates the relationship between an improvement in the terms of trade and the “growth rate” of national income. We find that it is the trade pattern that determines the effect of the terms of trade on the growth rate of national income.

In this paper we use an endogenous growth model with two factors, physical and human capital, and two commodities, a pure consumption commodity and a commodity used for both consumption and investment. Human capital accumulation is the engine of growth. The literature on endogenous growth generated by human capital accumulation, including that of Lucas (1988), King et al. (1988), King and Rebelo (1990), Mulligan and Sala-i-Martin (1993) and Mino (1996), usually uses only one commodity for both consumption and investment. Therefore these papers cannot have investigated the effects of changes in the terms of trade. There are also two-commodity dynamic trade models with optimizing agents (e.g., Chen, 1992; Baxter, 1992; Ono and Shibata, 1994), but they do not incorporate endogenous growth.

There does exist literature where the effect of trade on the growth rate is analyzed. A large number of studies have been made within a framework of imperfect competition and increasing returns. For example, in Grossman and Helpman (1991) and Rivera-Batiz and Romer (1991), a monopoly right over a new product provided the incentive for R&D, which was the engine of growth. In contrast, little attention has been given to the case of perfect competition and constant returns.

By incorporating human capital accumulation as an engine of growth into a two-commodity dynamic trade model, we can investigate the relationship between trade and growth in a model with perfect competition and constant returns.¹ In this setting, a small country necessarily specializes perfectly under free trade. Moreover we shall demonstrate the following two propositions: (1) If a country specializes in a capital commodity, changes in the terms of trade do not affect the growth rate. (2) If a country specializes in a consumption commodity, an improvement in the terms of trade raises the growth rate.

The plan of this paper is as follows. In Section 2, we examine which specialization pattern obtains depending on the terms of trade. In Section 3, we investigate the effect of an improvement in the terms of trade on the growth rate under each specialization pattern. In the last section, we discuss the contributions of this paper.

¹Pecorino (1994) as well as Bond et al. (1997) presented a two-country version of a perfect competition and constant returns model which is similar to ours.

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