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Real exchange rate, technological catching up and spillovers in a balance-of-payments constraint growth model☆

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Abstract

The main objective of this work is to investigate the theoretical interrelationships between economic growth, the National Innovation System (NIS) and the real exchange rate (RER) in an export-led growth model. Formally, this work presents new changes in the Kaldor–Dixon–Thirlwallís model by the introduction of the RER, the NIS and a function that captures the endogeneity of productivity in the industrial sector. In the short term the equilibrium growth rate depends on the real exchange rate level and of the NIS development, which responds to the size of the technological gap, the public and private investments in R&D in relation to the output growth rate ratio and the absorption capacity for technological spillovers. In the long run, assuming the constancy of all exogenous variables, the convergence of the growth process depends on the output growth elasticity in relation to exports, the price elasticity of exports and the elasticity of productivity growth relative to output growth of the economy in general and to industry, in particular.
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JEL classification: E12; O11; C22

Keywords: Economic growth; Exports; Endogeneity of the international trade income elasticities and National Innovation System

Resumo

O objetivo do artigo é aprofundar a investigação das inter-relações teóricas entre crescimento econômico, Sistema Nacional de Inovação (SI) e a taxa de câmbio real em um modelo do tipo *export-led*. Em termos formais propõem-se novas alterações no modelo de Kaldor–Dixon–Thirlwall, a partir da introdução do nível da taxa real de câmbio e do desenvolvimento do SI, o qual passa a responder ao tamanho do hiato tecnológico, a taxa de crescimento dos investimentos públicos e privados em P&D (como proporção da taxa de crescimento do produto) e a capacidade de absorção de *spillover* tecnológicos. Além disso, é levada em consideração no modelo a endogeneidade da produtividade no setor industrial. No curto prazo a taxa de crescimento de equilíbrio depende da taxa de câmbio real e do desenvolvimento do SI. No longo prazo, a convergência do processo de crescimento depende do comportamento da elasticidade do crescimento do produto em relação às exportações, da elasticidade preço das exportações e

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da elasticidade do crescimento da produtividade em relação ao crescimento da produção da economia em geral e da indústria, em particular.

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Palavras Chaves: Crescimento Econômico; Exportações; Endogeneidade das Elasticidades e Sistema Nacional de Inovações

1. Introduction

The core argument in the "standard" cumulative causation model is about the existence of feedback processes which reinforces the initial conditions (Veblen, 1915; Myrdal, 1957; Kaldor, 1966, 1970). Kaldor developed the idea of the cumulative growth which can be represented by the Kaldor–Verdoorn Law. His argument was that growth is demand led and, in particular, export led. This theoretical approach is represented by exported-led cumulative causation models (ELCC).

An increase in the exports growth rate has two main effects on the income growth rate. First, it increases the income growth rate through the dynamic Harrod foreign trade multiplier. Second, by relaxing the balance-of-payments constraint. Besides, it permits greater growth of other "autonomous" components of demand. That is, the growth of other supposedly autonomous expenditures is actually endogenous to export growth.

The cumulative mechanism was first formalized by Dixon and Thirlwall (1975a) and the pioneer work of Thirlwall (1979) introduced the standard balance-of-payments-constraint growth model (BPCG).[1] Based on the Kaldor–Dixon–Thirlwall framework it is introduced a new role for the Real Exchange Rate (RER) in the traditional BPCG in this paper.

In the post-Keynesian literature the relationship between the RER and economic growth has been largely neglected. In the traditional BPCG framework changes in the real exchange rate are assumed to be irrelevant for long-term growth, since some empirical evidences present either that price elasticities of exports and imports are low, meaning that the impact of a real exchange rate devaluation on the growth rate of exports and imports is small, or that terms of trade do not show a systematic trend of appreciation or depreciation in the long run (McCombie and Roberts, 2002, p. 92).[2] Notwithstanding, new evidences emphasize the important role of competitive RER in relaxing the balance of payment constraint on growth.

In general, this literature highlights the fact that a competitive and stable level of the RER can spurs investment by means of structural changes which, in turn, affects the balance of payments constraint. Therefore, the exchange rate policy can affect growth, not only due to the short run competitiveness effect, but also because it can provide incentives to investments, as well as to technological development. Indeed, as Missio and Jayme Jr. (2012) and Ferrari et al. (2013) highlighted, the level of RER can affect long run economic growth by means of their endogenous effects on trade income elasticities, besides the changes on short run price elasticities of exports and imports. Similarly, Razmi (2015) has argued that most countries (especially developing/emerging) are better described as small open economies in which exports are constrained by domestic aggregate supply rather than by foreign demand. By this way, the level of the RER does affect BOP-constrained growth, but it affects the capital accumulation and thereby the export supply rather than through effects on export demand (which is infinitely elastic for a small open country).[3]

In this context, the objective of this work is to put effort in the theoretical investigations of the interrelationships between economic growth, NIS and the real exchange rate (RER). In order to do so, it will be formally included in the analysis three new features: (i) the definition of the real exchange rate level according to the difference between the actual real exchange rate in relation to its industrial equilibrium level [as proposed by Bresser-Pereira et al. (2015)]; (ii) the endogeneity of NIS, which starts to respond to the size of the technological gap, the growth rate of public and

[1] Blecker (2013), in special, identify the key theoretical differences between the ELCC and BPCG approaches and evaluate how and to what extent they can be reconciled by representing both in a common analytical framework.

[2] Missio et al. (2014) argument that these analyses do not explore the effects that variations of the real exchange rate might have on capital accumulation and technological innovation. The mechanisms involved are characteristic of developing countries (Rapetti et al., 2012, p. 736).

[3] See also Boggio and Barbieri (2016) to see alternative ways of thinking about the role of the RER level in heterodox open economy growth models.

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