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European Integration and Economic Development

Impact of Regional Integration on Economic Growth and Geography

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GENERAL INTRODUCTION

The world trading system is divided into an expanding succession of free or regional trade areas (FTA or RTA) whose implications in terms of growth and convergence are still unclear.

The European Union, pursuing its process of deepening/enlargement, will admit new members in the coming years. At the same time, an FTA for the Americas has been further discussed with a new impetus over the last years. Moreover, in its constitutive act, the African Union has clearly established its willingness to create an African RTA. Both MERCOSUR and ASEAN, despite the economic troubles encountered by their respective members over the last years, expect to pursue their own economic integration.

The constitution of these regional blocks aims at storing up the benefits of free-trade while limiting its potential disruptive consequences thanks to negotiations in small groups of countries with similar interests. The reality of the regionalization of trade is indeed striking. Intraregional trade - measured as a percentage of the region's total trade - has been regularly increasing over the last fifty years in two of the major trade areas : from 50 to 60% in Europe and from 20 to 30% in East Asia [1].

However, these statistics do not provide an explanation of whether this increase in intraregional trade is due to trade policies (i.e. membership to a regional trade area), the geographic proximity of the trade partners or the size and wealth of the trading economies[2]? Moreover, we shall point out that although regional blocks seem to have increased intraregional trade, they have also raised their trade with non-members. Tolerated by article XXIV of the GATT [3], RTAs have thus been flourishing over the last decades although their estimated effects have not been thoroughly determined.

What are indeed the gains and losses associated with membership to a regional trade

[1] That measure stayed rather stable (around 30%) in the Americas.

[2] To distinguish among these explanations we can control for these factors that contribute to the volume of bilateral trade. The standard framework for analysing bilateral trade is the gravity model. This model, as we will see in Chapter 3, provides a robust approach to estimate bilateral trade patterns.

[3] Over 200 RTAs have been notified to the GATT/WTO.

area ? Do regional unions promote convergence or divergence of income levels amongst member states ? Does the regionalization of economic activity impede world welfare ? The theoretical literature of economic integration since Viner (1950) and Meade (1953) has been ambiguous about the potential effects of regional integration [4]. Viner discussed the effects of regional blocks by suggesting a distinction between trade creation and trade diversion effects [5]. Actually, the common decrease in the level of trade barriers over the past decades among insiders as well as with outsiders has strongly limited the potential disruptive consequences of trade diversion [6].

Indeed, according to traditional trade theory, regional integration fosters growth. Regretfully, expected gains from integration seemed rather weak as exemplified in the classic references for the European Union : the Cecchini report (1988) and Baldwin (1989). They estimated that the gross national product of the whole union would increase by an order of 2.5 to 6.5% between 1993 (implementation of the Single Market) and 2000. However, none of these two studies identified clearly the potential dynamic gains of integration. Actually, based on static frameworks, traditional approaches focused on once-off or temporary gains and missed the eventuality of permanent gains.

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New theories have then laid emphasis on alternative approaches to account for dynamic growth and convergence.

Endogenous growth theories have shown that thanks to the broadening of the market size and of inputs supply, economies of scale can be generated and productivity

[4] See Boudhiaf and Siroën (2001) and Siroën (2000) for an analysis of the relationship between - global and regional - economic integration and development.

[5] Trade diversion occurs when members of a regional area reorient their trade towards higher-cost fellow members and thus away from former low-cost non-members trade partners. In this case, where trade diversion overtakes trade creation, regional blocks may reduce world welfare.

[6] Moreover, the case for trade diversion concerns mostly integration among dissimilar countries and does not apply easily to the EU case. Indeed, most of the studies interested in estimating the creation and diversion effects of the European integration conclude that the former will largely overtake the latter. We shall even notice that the formation of the EU also provided new export opportunities for their non-member trade partners.

enhanced. By taking into account the dynamic gains of economic integration thanks to trade liberalization, permanent growth appears attainable. For instance, Frankel (1997, Chapter 11) noticed that although "there is a strong case to be made in favor of regional trading arrangements, that case cannot necessarily be made in terms of the static economic welfare effects of reducing barriers within each group while leaving those toward non-members unchanged".

The recent empirical literature has provided interesting results concerning the dynamic effects of regional integration for the member countries. Ben-David (1996, 1993) has noticed some evidence of convergence within the European Union. Differences in terms of per-capita incomes have been decreasing over the integration process due to the catching-up of lower income countries such as Ireland, Spain and Portugal. From 1988 to 2001, these countries have accomplished a strong convergence pattern. From respectively 64%, 72% and 59% of the European GDP per capita average, they have reached 118%, 84% and 72%. Candidate countries also hope that by entering the EU they will experience a similar convergence process [7].

However, the impact of deepening (through economic and monetary integration) and widening (through enlargement) of the EU have also raised new issues. Based on **new economic geography theories**, concerns about the eventual de-industrialization of the periphery following economic integration have surged over the last years. Indeed, whereas Midelfart-Knarvik et al. (2000) insisted on the growing specialization of the EU at the country level, Kim (1995) observed the reverse trend in the American case after specialization in the country reached its peak between the two world wars. Europe seems indeed to be at a different stage of its economic/geographic evolution than the United States. The current trend in Europe may raise concerns about the risk of a core-periphery setting between a rich centre and a poor periphery.

Development and geography economists have shown long ago that cumulative processes

[7] Indeed, the European integration processus requires some thorough reforms if the EU wishes to reach its ambitious objectives in terms of growth and convergence set in Lisbonne in 2000 (Sapir Report, 2003).

in terms of both growth and localization of firms may trigger the relocation of economic activities in a concentrated area and introduce asymmetric developments. This could result in a core-periphery pattern with a center profiting disproportionately from free-trade and a periphery shrinking in parallel.

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We are thus facing several questions related to the implications of regional integration. We suggest to group them around three main questions and to answer them thanks to a theoretical and empirical approach.

Our objective is to answer the following questions : 1) What is the impact of regional integration on economic development ? What we mean by economic development is the growth and location of economic activities. This first question leads us to envisage two more interrogations : 2) How and where are the new goods and the new firms created following the integration process ? 3) How can regional integration encourage the transition from asymmetry to symmetry ? These questions suggest the existence of a particular relationship between growth and geography that might favor convergence. The presence of that potential relation is at the origin of our methodological choice that consists in pursuing a synthetic approach based on two different theories [8].

The first theory, growth theory, demonstrates **how** new activities are created. The second theory, economic geography, explains **where** these new activities are created. We dispose hence of two theories that we ought to combine in order to answer the questions previously asked. We thus need to determine the logical link between growth and geography. In Chapter 1, we identify that link. We can then envisage the construction of our own theoretical model in Chapter 2. And then, finally, we can check its conclusions thanks to an empirical model in Chapter 3.

[8] Actually, our analysis will allow us to answer two more questions : 1) What is the impact of regional integration on non-member countries ? 2) If we assume that newly created products may be copied, what about the incentives to continue innovating for the researchers ?

Chapter 1 proposes a survey of the literature on economic integration based on economic geography and endogenous growth theories.

This survey shows the logical links between these two theories while noticing their specificities. We first point out the existence of a common framework for the two approaches based on economies of scale and monopolistic competition in the manufacturing sector. Both theories use the model of industrial organization proposed by Spence and Dixit-Stiglitz, adapted to the international case by Ethier and Helpman-Krugman. Although assumptions are similar, each theory uses its own tools to develop its own approach of the effects of economic integration. Economic geography insists on the role of transaction costs to explain the influence of centripetal and centrifugal forces in determining the localization of firms. Endogenous growth studies the role of technical change and knowledge spillovers in explaining economic growth. The survey concludes by emphasizing the interest of building a synthetic model to answer the questions asked earlier.

Chapter 2 draws directly from the preceding chapter and builds a synthetic model.

This model insists upon the link connecting the decrease in transport costs and the spread of knowledge spillovers to explain growth in specific locations. The introduction of the migration of firms and of the imitation of products, triggered by the phasing out of trade barriers, helps us to obtain stylized facts close to economic reality. It is then possible to envisage an empirical approach directly inspired by the theoretical one.

This is the purpose of Chapter 3, whose aim is to test empirically the conclusions of the theoretical model.

Using gravity and knowledge equations, we propose quantified answers to the issues raised earlier. Gravity equations permit us to estimate the influence of trade policy and geographic proximity on trade volumes. Moreover, knowledge equations allow us to measure the impact of foreign knowledge, through bilateral trade flows, on total factor productivity.

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Chapter 1

Regional Integration and Economic Development : A Synthetic Approach

Abstract Regional integration affects economic development in the member countries through two main channels : growth and localization of the economic activities. The theories of endogenous growth and economic geography enable us to understand these mechanisms. We study in this chapter their similarities and specificities before suggesting their useful combination within a single model. Indeed, both theories are based on the same Spence-Dixit-Stiglitz monopolistic competition framework. However, they suggest two different approaches to deal with the impact of economic integration. We consider that a third path, by proposing a synthetic approach, better answers the issues raised in terms of economic convergence and divergence by these two sets of models.

Keywords : regional economic integration, endogenous growth, economic geography

JEL Classification : F12, F15, F43, O18, O30, O41, R11, R12, R13

1.1 Introduction

The question that new growth and new geography theories are trying to answer is the following : How (new growth) and where (new geography) new goods and new firms are created ? Our answer goes through the construction of a model of synthesis between new growth and new geography theories to answer the how and where since the two are connected and interdependent. Our objective is indeed to show that the combination of growth and geography theories allows us to better understand the linkages between growth and location.

Indeed, a clear geographical dimension is present in growth theories through spillovers and likewise a growth dimension is present in geography theories through ad hoc dynamics (comparative static). As a result, it appears that economic concentration explains growth through the innovation and production process. Not only are the questions connected, the assumptions are also similar (Section 1.2). However, there still remains some clear specificities for both sets of theories (Section 1.3) that allow us to propose a synthetic framework (Section 1.4) [1].

1.2 The similarities between new geography and new growth theories

New trade, new growth and new geography theories all rely on a common framework based on economies of scale and monopolistic competition. The existence of increasing returns to scale and imperfect competition seems to be a rather realistic view of the structure of many industries and play a major role in the explanation of trade, location and the creation of knowledge. For instance, trade between similar countries can be explained if we allow for country-specific economies of scale, since these can foster specialization

[1] The Appendices at the end of this first Chapter provide a detailed explanation of all the technicalities used in Chapter 1 and Chapter 2.

(even if countries have identical relative factor endowments). Increasing returns to scale (IRS) also explain intra-industry trade (Helpman and Krugman, 1985). Moreover, the possibility of profiting from imperfect competition to invent new goods and the existence of public good features for knowledge contribute to explain economic growth.

As soon as we introduce positive externalities in trade, we have to depart from the traditional trade theory and rely on models allowing scale economies to trade in differentiated goods (Helpman and Krugman, 1985). Not until scale economies and imperfect competition had been incorporated into static theory could dynamic theories of the relationship between trade and technology evolve. Since externalities emerge as a consequence of market interactions involving economies of scale at the level of the individual firm, thus we must model an imperfectly competitive market structure : the workhorse is the Dixit-Stiglitz (1977) model of monopolistic competition and the particular formalization of Ethier (1982). Basically, this framework shows that the more differentiation, the more varieties, the more intense the specialization into a set of varieties, the more IRS (Section 1.2.1).

In a dynamic setting, the impact of external effects and of capital accumulation and the existence of differentiated goods in presence of economic integration has been analyzed by Rivera-Batiz and Romer (1991) and Grossman and Helpman (1991a and 1991b) combining new trade and new growth theories. These authors show that since most of the costs of developing a new technology occur before production begins and do not vary with the intended scale of output, innovation normally gives rise to dynamic scale economies. And since firms typically cover the costs of their up-front investments by exploiting market power generated by their inventions, innovation gives rise to imperfect competition (Section 1.2.2).

1.2.1 Increasing returns to scale

IRS [2] provide an interesting mechanism linking integration and growth. Indeed, trade openness, by increasing the size of the market for the producers, leads to greater specialization and - in the average - to a higher scale of production. The trade literature suggests then that trade is beneficial if it brings an expansion of the IRS sector. For instance, we expect that the smaller the country, the more it gains from trade due to international economies of scale. Ohlin (1933) had already recognized the complementary effect of IRS to differences in factor endowments in explaining trade. Another approach, relying more on dynamic economics, considers that trade in intermediate inputs raises both the level and rate of economic growth. In both sets of theories, free-trade fosters growth.

There are two main types of externalities. With external economies of scale, the doubling of the production factors by one firm doubles its production, but the doubling of the production factors by all the firms more than double the global production (Section 1.2.1.1). With internal economies of scale, the doubling of the production factors by one firm more than double its production (Section 1.2.1.2). We conclude Section 1.2.1 by recalling the link between IRS and imperfect competition (Section 1.2.1.3).

1.2.1.1 External economies of scale

There could be external economies of scale resulting from the inability of firms to appropriate knowledge completely. Here, the question of the diffusion of knowledge and of its extent is crucial. If we accept that goods contain ideas and that these ideas can be decrypted by importers, then diffusion can become international even in the case of private knowledge. Indeed, most of the sources of the economies of scale (and of imperfect competition) will depend on a dynamic process implying knowledge diffusion. The introduction of knowledge in the framework points towards dynamic models. Indeed, in

[2] Pecuniary externalities describe benefits from interactions through market transactions whereas technological externalities deal with the effects of interactions outside the market (e.g. information flows) that appear in an invisible fashion.

Helpman-Krugman (1985), the wish to bring the analysis of trade at the dynamic level is mentioned and will be completed by Grossman-Helpman (1991). Even if we keep the external economies of scale without considering the role of internal economies, we still need to determine the scope of these economies : national or international. As Ethier (1979) pointed out, if these scale economies arise in the production of intermediate goods that are tradable, then these economies apply also at the international level.

1.2.1.2 Internal economies of scale

Consider an industry in which output is manufactured from an assortment of intermediate inputs, with a greater number of inputs associated with more specialization and refinement of each stage of production. In this setting, it is reasonable to suppose that total factor productivity (TFP) will vary with the degree of specialization. A constant elasticity of substitution (CES) production function can be used to capture this idea and express the concept of differentiation. The differentiated products approach is one of the most used modeling technique of trade with IRS. It is based on the assumption that imperfectly competitive firms are able to differentiate their products so that their outputs become imperfect substitutes. Thus, goods have a natural hierarchical classification. There are a limited number of types of goods, each of which can be divided into many differentiated varieties.

Where X denotes final industry output, $m(i)$ represents the input of intermediate good i, and n is the number of intermediates employed. n is treated as a continuous variable for convenience. Given the number of intermediates in use, the technology exhibits constant returns to scale (CRS). It is assumed that each producer takes the set of available intermediates as given. Since each has an incentive to use some of every available input (that is, to specialize the production process as finely as possible) the number of intermediates in use is effectively beyond its control. Thus, each producer of final goods perceives CRS. The producers behave competitively, pricing their output equal to perceived marginal cost.