

CHAPTER 5. GROWTH AND LOCATION

Economic growth lies at the heart of economic development and for many countries growth must be driven by industrialisation. Thus this chapter considers two of the major concerns of developing country policy makers and ultimate justifications of regional integration arrangements. We first ask how RIAs affect long-run growth and find that the preference for North–South over South–South RIAs based on the analysis of static effects holds for dynamic effects as well. Modern growth theory – the theory of endogenous growth – stresses the role of knowledge in fostering productivity and growth. It also stresses that knowledge can be effectively transferred from one country to another through international contact and trade. Rich countries are knowledge-rich and so are likely to provide far more access to technology than are poorer trading partners: RIAs that switch imports from richer to poorer sources are thus likely to have a perverse effect on members’ growth rates. RIAs might also help countries boost their growth rates by supporting institutional reform, and again this effect seems likely to be stronger for developing countries joining with richer partners than with poorer ones.

The direct evidence on RIAs and growth is subject to some methodological reservations, but is actually pretty consistent. There is little evidence that RIAs between developed countries stimulate growth, some recent evidence that North–South RIAs may affect growth, and none that RIAs between developing countries do so. Casual consideration of the recent performances of, say, Portugal, Poland and Mexico, and formal analysis of the effects of North–South versus South–South RIAs, suggests that serious North–South integration may foster growth, reinforcing the views above about the relative merits of the two types of partners for developing countries.

Second, we ask how RIAs will affect the development and location of industry in developing countries and whether they could materially affect countries’ growth prospects. The discussion of investment in chapter 4 suggested that RIAs can stimulate investment, and thus might have a beneficial effect on either industrialization or growth. Here, however, we move beyond investment to consider the economics of agglomeration (or clustering).

While economists have long been aware of the fact that industry tends to cluster into particular locations, they have only recently learned to model it formally and thus to start to identify precisely the combinations of conditions that must be satisfied for it to occur. The theory arose from attempts to understand the possible effects of the enlargement and deepening of the European Union – Krugman and Venables (1990) – and so lends itself directly to the consideration of RIAs. The theory is, however, very young; the models do not yet appear to be very realistic and have not yet been accompanied by much empirical evidence. Thus they are more parables than forecasts. However, they offer considerable insight into qualitative factors and address such a major concern of policy makers and publics alike, that we need to explore their implications for developing countries here.

Creating an RIA is likely to affect the incentives for industry to agglomerate, usually to increase them because it increases market size and allows more effective exploitation of the links between firms. An RIA may attract industry into member

countries at the expense of non-members, although if it is small, such effects will also be very small. RIAs will also frequently cause industry to relocate between the members. For RIAs between poor countries this seems likely to increase inter-member inequalities because it makes it easier for firms to agglomerate in the more prosperous countries while still selling in the others. For RIAs involving richer members, on the other hand, the results are less clear cut, and it is quite possible that poorer members will experience strong industrialization following an RIA. For developing countries, integration with richer neighbors (North-South RIAs) looks better from an agglomeration point of view than does South-South integration.

5.1 South-South Regionalism Rarely Boosts Growth, though North-South Can

In the final analysis, the principal objective of trade policy is economic growth. Any change that generated even a small increase in the long-term rate of economic growth would result in cumulative gains that would easily swamp any static and medium term benefits of the sort discussed so far. If openness stimulates growth, as is often claimed, is it not reasonable to expect that partial openness (regionalism) would at least partially stimulate growth - especially since it appears frequently to affect investment rates? The remainder of this chapter examines these claims and finds little evidence for them among developing countries and finds some in North-South RIAs. As with so much of what has gone before, even when regionalism does have beneficial effects, it is also true that non-discriminatory openness will typically have them as well.

A well-structured RIA might increase a member country's underlying growth rate, raising its development trajectory by, for example, increasing credibility (Chapter 4) or reducing security tensions (Chapter 7). These, in turn, could raise capital and labor productivity, lead to additional investment and knowledge flows, and push an economy several notches up on the development path.

The scope for policy-driven growth is a contentious issue among economists. The traditional (neoclassical) view of economic growth admits no means to influence the long-term growth rate, which is set exogenously according to rates of population growth and technical progress (Solow 1956). Even if policy can affect the rate of capital accumulation, it can only affect the growth rate temporarily. As capital accumulates faster, it runs into diminishing returns, so that eventually the extra investment is completely absorbed by the extra depreciation associated with having extra capital stock, and the capital-output ratio eventually stops increasing. Hence, while the level of income is increased (and the medium-term growth rate while the economy approaches its new growth path), the long-term growth rate is not. More recent endogenous (self-generated) growth theory, on the other hand, holds that the returns to capital (especially human capital—Lucas 1988--and knowledge capital—Romer 1986, 1990) are not diminishing at the aggregate level because of positive spillover effects, so that policies that affect the accumulation of these can raise long-term growth rates of output and income permanently. This view posits that income depends linearly on the levels of physical and human capital, and on technical and scientific know-how (knowledge capital), so that

changes in these variables determine growth. It argues that these changes are amenable to policy, and identifies the legal and institutional frameworks as key determinants.

The theoretical literature on openness and growth has not generated robust findings on the link between RIAs and growth. Though openness is typically positively associated with growth, especially where trade or FDI is a medium for transferring knowledge, this is not necessarily true for regional integration. However, recent empirical work indicates that North-South RIAs are likely to generate productivity gains to the developing partner (see Section 5.1.2).

5.1.1 Knowledge and Institutions are the Keys

Accumulating physical capital can have little effect on long-term growth, as it eventually runs into diminishing returns. Human capital is different. While individual human capital is also expected to run into diminishing returns, one person's return can be positively affected by the average level of available human capital through positive spillover effects. For instance, an engineer is likely to be more productive if she can interact with and learn from other qualified engineers than if she cannot. Thus, the average level of human capital may rise without running into diminishing returns, and can thus have an impact on long-term growth (Lucas 1988).

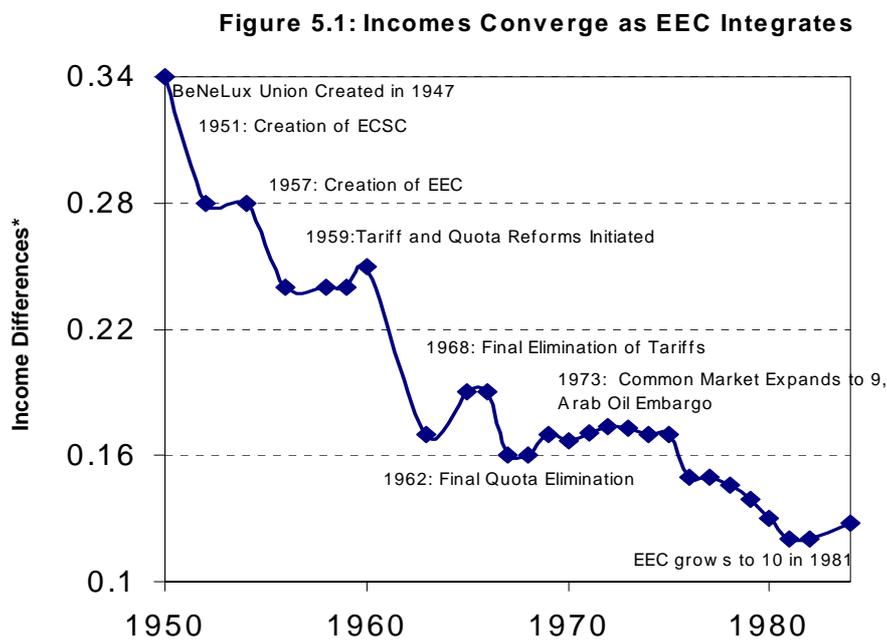
Knowledge is given the primary role in endogenous growth theory—increases in knowledge capital are expected to have a permanent positive impact on the rate of growth. Knowledge, once produced, has the public good characteristic that its use by one user does not prevent its use by another. Thus creating knowledge has large spillover effects to others, and is therefore likely to display increasing—rather than diminishing—returns.

Another important factor is the legal, institutional and regulatory framework, which includes the quality and stability of the political process, *de facto* property rights, and other institutional aspects. Olson (1996) reviews the factors determining per capita income and growth and concludes that “the most important explanation of the differences in incomes across countries is the difference in their economic policies and institutions” (p.7). Hall and Jones (1998) find that most of the variation in output per worker across countries cannot be explained by endowments. They conclude that a country's long-run economic performance is determined primarily by the institutions and policies that make up the economic environment within which individuals and firms make investments, create and transfer ideas, and produce goods and services. Recent studies by Acemoglu, Johnson and Robinson (2001) and Engerman and Sokoloff (1997) find that institutions play a fundamental role in explaining growth in the last few centuries.

Given this general framework, how can policy affect long-term economic growth? First, a government can promote investment in education and other forms of human capital. Second, it can improve its political and legal institutions to improve incentives to accumulate and innovate. Regional integration may be able to help, in terms of both policy integration (Chapter 6), and international politics (Chapter 7). If, by joining an RIA and taking policy integration measures, a country improves its legal and regulatory framework, it may obtain a growth benefit. There are, however, few examples outside the

EU of countries actually engaging in policy integration. Joining an RIA may also help a country improve its political system if this is a condition for membership (Chapter 7).

Trade policy can also play a major role in knowledge accumulation. Knowledge has international public good characteristics, with cross-border spillovers through trade, FDI, scientific exchanges, and the like. As most developing countries are not major producers of scientific or technical knowledge, it is important that they pursue foreign trade policies that enhance the acquisition of knowledge from abroad. If openness helps, what sort of openness? Is general opening up of the economy the best way to absorb



* Annual Standard Deviations of Log Incomes

Source: Ben-David (1993).

foreign knowledge? Or can developing countries do better through preferential trade liberalization?

5.1.2 Trade, Convergence and Spillovers

Ben-David (1993) offers convincing evidence that increasing mutual trade among affluent countries leads to upward convergence in per capita incomes. He shows that in the EC, EFTA, and the US and Canada, the strong increases in trade associated with increased trade liberalization coincided with a quite dramatic narrowing of per capita incomes across countries. As shown in Figure 5.1 there has been an almost continuous convergence in per capita incomes in Europe, from 1947 (when the Benelux Customs

Union was created), through 1951 (the European Coal and Steel Community), 1957 (the EEC), 1962 (when quotas were eliminated), 1968 (when internal tariffs were removed) to 1981. Income differences narrowed by about two thirds over the period, and that convergence was upwards, with the poorer countries experiencing faster growth than previously.

Do these results imply that a developing country has only to increase its trade with affluent countries to raise its growth? Not according to this approach (but see below). Ben-David (1994) finds benign convergence among industrial countries, with the poorer catching up with the richer, no convergence between middle-income countries or between them and other countries (including rich ones), and a malign convergence among poorer countries. He also finds (Ben-David 1998) that convergence is common between countries that are major trading partners (known as convergence clubs) but not among random groups of countries. This reinforces the view that trade is the mechanism through which convergence occurs, although it might also be other aspects of openness—such as FDI—which are strongly correlated with trade. Ben-David (1996) finds that convergence clubs are due more to convergence in rates of total factor productivity (TFP) growth than to convergence in investment rates, as did Henrekson et al (1997) for the EC and EFTA. These results suggest that convergence arises from the contact and information—i.e. the knowledge—generated by trade and FDI (as predicted by endogenous growth theory), rather than from incentives to accumulate physical capital.

Karras (1997) examines whether integration facilitates convergence in the per capita incomes of member countries by investigating convergence over 1960-90 in three RIAs: ASEAN (5 countries), EU (15 countries) and LAFTA (7 countries). He performs three empirical tests, all of which reveal strong convergence in the EU (the initially poorer countries grow more quickly), somewhat less strong convergence in LAFTA, and absence of convergence or even divergence in ASEAN. Karras concludes that regional integration does not guarantee convergence in the standards of living of member countries, but that convergence may be associated with the degree of economic integration—as manifested in the reduction of protection, enhanced internal trade, and increased policy coordination—which is highest in the EU and weakest in ASEAN. Another possibility is that convergence is more likely in North-North RIAs (the EU) than in South-South ones (LAFTA and ASEAN).

A more formal stream of work on trade and productivity is Coe and Helpman (1995) and Coe, Helpman and Hoffmaister (1997). They seek to explain the level of total factor productivity (TFP) across OECD and developing countries respectively. Coe, Helpman and Hoffmaister construct an index of total knowledge capital (measured by accumulated investment in R&D) in each industrial country. They then assume that trading partners get access to a country's stock of knowledge in proportion to their imports from that country – total imports in the earlier paper, imports of machinery and transport equipment in the later one.

In both exercises access to foreign knowledge is a statistically significant influence on productivity. For developing countries, Coe, Helpman and Hoffmaister find that TFP is related both to the *openness* of the economy (imports/GDP) and to the latter's interaction with the *access* to foreign knowledge that its foreign trade provides. Thus, an

economy benefits from foreign knowledge first according to how open it is in general, and second according to whether it imports mainly from those countries that have the largest knowledge stocks. These results are intuitively very attractive and suggest, again, that trade is a major conduit for spillovers between countries.

Lumenga-Neso, Olarreaga and Schiff (2001) argue that the new approach developed by Coe and Helpman (1995) was not carried through to its logical conclusion because countries also obtain 'indirect' knowledge spillovers through trade. The idea is that since a country, say France, obtains knowledge spillovers from trading with other OECD countries, the level of knowledge *available* to France is larger than the level it *produces*. Therefore, any country (say, Belgium) trading with France will obtain not just 'direct' knowledge spillovers from the knowledge France produces but also 'indirect' spillovers from the knowledge France acquired through its trade with other countries. Lumenga-Neso et al. (2001) find that these indirect spillovers are larger than the direct ones, that they both have a significant impact on TFP. They also perform various tests and obtain statistically superior results compared to those obtained by Coe and Helpman (1995).¹

Coe and Helpman's approach has also been extended in recent work focusing on developing countries. In an industry-level analysis, Schiff, Wang and Olarreaga (2002) show that Southern countries' TFP responds more strongly to North-South trade than to South-South trade. Another finding is that R&D-intensive industries in the South learn mainly from trade with the North and low R&D-intensity industries learn mainly from trade within the South. Thus, North-South RIAs tend to favor the development of R&D-intensive industries while South-South RIAs tend to favor the development of low R&D-intensity industries. Schiff et al. (2002) conclude that forming a South-South RIA may delay the transformation of member countries to a high-R&D economy by reducing technology spillovers from the North.

Work on Latin America (Schiff and Wang, 2002a) shows that the interaction between education and OECD knowledge spillovers has a positive effect on TFP in R&D-intensive industries, implying virtuous growth cycles--with increases in education resulting in increases in the TFP of R&D-intensive industries, greater demand for skilled labor (which is typically complementary with technology), increased demand for education, and so on. Moreover, given that R&D stocks of the OECD grow continuously over time, the interaction effects between education and OECD knowledge spillovers implies that education has permanent effects on productivity growth in R&D-intensive industries. And since these industries benefit mainly from spillovers from the North,

¹ Coe and Helpman (1995) and Coe et al. (1997) assume, rather than test, that imports from industrial countries provide the correct weights with which to combine their stocks of foreign knowledge to reflect importers' access to it. Keller (1998) shows that Coe and Helpman's results are little better than can be obtained through a 'random' weighting. However, Lumenga-Neso, Olarreaga and Schiff (2001), who extend the Coe and Helpman approach by taking 'indirect' knowledge spillovers into account, obtain results that strongly dominate Coe and Helpman's and weakly dominate Keller's. And Coe and Hoffmaister (1999) show that the weights used by Keller were not truly random and find that Coe and Helpman's results are superior than those obtained with random weights, in which case R&D spillover effects are non-existent. Both sets of results suggest that trade is an important channel for knowledge spillovers, though the testing of alternative hypotheses remains to be done.

these interaction effects provide another argument for North-South rather than South-South RIAs in Latin America. The FTAA and the Chile-EU FTA as well as prospective North-South RIAs such as the EU-Mercosur FTA should help in this regard.

Keller (2002) shows that the impact of technological knowledge on TFP falls as the distance between the knowledge exporting and importing countries increases. Though he does not specify the channel of knowledge diffusion, this effect seems most likely to apply via trade. This would seem to suggest that in choosing a partner in the North, a developing country is better off, *ceteris paribus*, choosing a close rather than a distant one. According to this view, Mexico is better off selecting Canada and the US as trading partners than Japan or the EU. This is supported by the findings of Schiff and Wang (2002b) who show that the impact of foreign knowledge from the US and Canada on TFP in Mexico is several times larger than the impact from the rest of the OECD, with respective elasticities of .36 (significant at the 1% level) and .06 (not significant).

5.1.3 Choosing the wrong partners can harm growth

An important implication of Coe, Helpman and Hoffmaister's (1997) work is that any trade policy—including formation of an RIA—that switches a developing country's imports of machinery and equipment from countries with high stocks of knowledge to countries with lower stocks may harm growth. On the other hand, an increase in openness is likely to result in faster TFP growth. Thus, countries seeking to accelerate TFP growth should pursue trade policies that increase openness and avoid switching trade from countries with high knowledge stocks to countries with lower stocks. A similar result can be inferred for output growth from the work of Madani (1999) on the Andean Pact. She examines the effect of intermediate goods imports in three Andean Pact countries (Bolivia, Colombia, and Ecuador) from the mid-1970s to the mid-1990s and finds that the growth effect of these imports from outside the bloc is positive for the three countries but is ambiguous for intra-bloc imports. She also found that the positive effect is stronger in the more knowledge-intensive industries.

The corollary of this is that a developing country contemplating forming an RIA is usually better off choosing a partner with a high—and quickly growing—stock of knowledge. If a RIA among developing countries results in trade being diverted away from more to less knowledge-intensive suppliers—such as Argentina switching from US and Japanese to Brazilian capital goods—it may harm TFP growth. The static analysis of RIAs has long observed that trade diversion is potentially harmful. Dynamic analysis suggests that trade diversion may be harmful (beneficial) if the diversion is from a source with a high (low) stock of knowledge to one with a lower (higher) stock.

An illustration is Winters (1998) who applies the Coe, Helpman and Hoffmaister approach to simulate the impact on TFP growth of an FTA between Lebanon and the EU. He conservatively assumes that signing a Euro-Med Agreement shifts 4% of Lebanese imports from the US and Japan to the four large EU economies, which have lower R&D stocks. This lowers the R&D capital stock to which Lebanon has access by 12.5%, causing a 1% reduction in Lebanon's TFP. But, the agreement will also very probably result in an increase in the openness of the Lebanese economy, which will offset the dynamic diversion effect. Provided that this increase was by more than 2.5% (from 8.5%

to 8.7%), Lebanon would show a net increase in TFP. Even so, the analysis raises the question as to whether the EU is the best partner for Mediterranean or Eastern European countries from the viewpoint of knowledge spillovers, as other areas—such as the US or Japan—have typically generated more knowledge. On the other hand, spillovers are also affected by closeness in geography, language and history (Keller, 2002), which may lower the cost of absorbing knowledge from European sources and adapting it. Thus, for example, importers in Morocco may find it easier to learn how a machine operates if it is imported from France than from Japan, because they share the same language and often have long-standing relationships with French traders.

Another illustration is Schiff and Wang (2002b) who show that, in the case of NAFTA, trade diversion in Mexico is dynamically beneficial because it is from a source (OECD outside North America) with a small impact on TFP to one (the US and Canada) with a larger impact. With the estimated elasticities of TFP with respect to foreign knowledge from the US and Canada of .36 and with respect to the rest of the OECD of .06, they simulate the effect of NAFTA and find that it raised TFP in Mexico by 6 to 7% (with .5% due to trade diversion and the rest due to trade creation).²

Although this analysis indicates that an RIA with a country or region with a large or fast-growing stock of knowledge may lead to dynamic gains, such gains might not last forever. Regions that generate the most knowledge today may not do so in the future. For instance, the UK was the leader during the industrial revolution and Japan led in various industries in recent decades. A country that had RIAs with Japan and East Asia might have obtained significant dynamic benefits before 1990, but, given the present crisis in that region, might now be losing relative to one which operated a non-preferential trade policy. Thus, from a long-term viewpoint, non-discriminatory trade liberalization, which allows you to choose partners in an undistorted way, will probably be the optimal policy in a world where it is hard to predict what region will generate the most knowledge in the future, and where it is difficult to get in and out of RIAs. That is, unilateral free trade may be optimal from a long-run dynamic as well as a static viewpoint.

Another reason why unilateral MFN liberalization may be optimal is that knowledge travels not only from North to South (through trade and FDI) but also between Northern countries through licensing mechanisms, trade, and FDI. Hence, the level of knowledge of a Northern country depends not only on its own production of knowledge but also on how much knowledge it acquires from other Northern countries. Thus, an OECD country may produce relatively little knowledge itself, but may have access to additional knowledge from large knowledge producers through trade. This is likely to reduce the cross-country variation in knowledge stocks in the North. Lumenga-Neso et al. (2001) show that though the cross-country coefficient of variation of *produced* technological knowledge stocks is .70 for OECD countries, it is only .29 with respect to *available* knowledge stocks—where available stocks include spillovers from trade with other OECD countries. Thus, a developing country may benefit from trading with a Northern country even if that country generates little knowledge indigenously because

² Schiff and Wang (2002b) tested whether the difference in effects was due to NAFTA itself by allowing the various parameters to differ in the post-NAFTA period from the pre-NAFTA one. None of the parameters was found to be significantly different in the later period.

the latter has acquired knowledge from other Northern countries. As explained in Lumenga-Neso et al. (2001), this may be one of the reasons for Keller's (1998) finding that random trade patterns offer as good an explanation of TFP patterns as do Coe and Helpman's actual trade shares. Given the present level of understanding of how knowledge transfers are generated, non-preferential trade liberalization seems likely to be the more robust policy recommendation. However, for a few countries such as Mexico, North-South integration may make sense. And if the preferential route is chosen, a robust result seems to be that a poor country will gain little or nothing from an RIA with another poor country and that a North-south agreement is preferable.

The theory of endogenous (self-sustaining) growth is predicated on the assumption that the knowledge spills over from one enterprise to another without the latter having to purchase it. That is, on an externality. This is what reconciles decreasing returns at the firm level with constant or even increasing returns at the industry or economy level. Such externalities provide a justification for policy intervention, for, as is well known, in the presence of externalities, market outcomes are not optimal. The work of Coe, Helpman and Hoffmaister is perfectly consistent with this view, which suggests benefits to an activist policy that shifts imports towards high-knowledge suppliers. In fact, however, the model also works in the absence of such externalities – i.e. with developing country importers paying for and internalizing all the knowledge they receive through trade. In this case, they could be expected to choose their trade patterns correctly and, even if they could raise growth rates by choosing a different pattern of supply, are rational in not doing so because of the cost involved. In these circumstances there is no case for intervention to stimulate growth. Then, an RIA, which artificially disturbed the pattern of trade, would be distortionary. We do not claim that there are no spillovers in knowledge diffusion through international trade, but we do want to caution against the view that there certainly are. However, even in the presence of knowledge spillovers, unilateral MFN liberalization may be optimal because knowledge advantages may not last.

5.1.4 FDI and knowledge spillovers

Blomstrom and Kokko (1998) describe three forms of knowledge spillovers from the presence of FDI: (i) local firms improve their productivity by copying some technology used by affiliates of foreign firms operating in the local market; (ii) the entry of an affiliate leads to more severe competition in the host economy so that local firms are forced to use existing technology and resources more efficiently; and (iii) competition forces local firms to search for new, more efficient technologies. Though these potential spillover effects seem analytically plausible, results from the empirical literature are mixed at best, though they are more promising for the fourth. One reason for the mixed results is that foreign firms may take actions to limit spillovers to the host country's domestic firms. A fourth form of knowledge spillover, which is empirically more promising, is the effect on domestic upstream firms selling to affiliates of foreign firms or on domestic downstream firms buying from them—so-called backward and forward linkages. The effect on the productivity of upstream and downstream firms is more promising because foreign firms typically procure domestic inputs of better quality than do domestic firms, and because they produce better intermediate products to be used by

downstream firms or require downstream firms to improve the marketing and distribution of their final products.

Studies on FDI and productivity of domestic firms typically find no *intra*-industry spillover effects or even negative ones. Aitken and Harrison (1999) use data from Venezuela to study whether domestic firms benefit from FDI, and find (1) a positive relationship between increased foreign equity participation and plant performance, suggesting that *individual* plants do benefit from foreign investment; and (2) productivity in domestically owned plants declines when foreign investment increases, suggesting a *negative* spillover from foreign to domestic enterprise. One possible explanation is that FDI reduces the share of the market left for domestic firms, and that under economies of scale, a smaller output implies a higher average cost. Another is that foreign firms typically select the best workers, leaving less productive workers for the domestic firms. One issue left unresolved and that may affect their results is causality, i.e., whether plant performance improves because of FDI or whether FDI goes to better-performing plants. Kokko (1996) uses Mexican data to examine whether there are significant spillovers associated with competition effects from foreign presence. He finds that there is *no* significant competition effect.

Haddad and Harrison (1993) find, for Morocco, *no* significant relationship between higher productivity growth in domestic firms and greater foreign presence in the sector. Djankov and Hoekman (2000) study the effects of FDI on Czech firms and find that foreign investment has the predicted positive impact on local total factor productivity growth of *recipient* firms, but joint ventures and FDI appear to have a *negative* spillover effect on firms that do *not* have foreign partnerships.

On the other hand, empirical studies have found that FDI generates inter-industry spillovers through backward and forward linkages. Thus, a foreign firm buying local inputs is likely to help the local upstream firm in ensuring that these inputs possess some required characteristics or are of a minimum quality. Similarly, the foreign firm may sell inputs that are tailored to the downstream firms and raise their productivity. For instance, Kugler (2001) has found this to be the case for Colombian firms, and similar evidence has been found for other developing countries (e.g., Indonesia).

Smarzynska (2000) shows for transition economies in the early 1990s that, within high and medium technology sectors, foreign investors who are leaders in technology and marketing techniques tend to engage in wholly owned projects rather than share ownership in order to minimize leakage, and that this does not hold in low R&D industries. Smarzynska (2002) also finds for Eastern Europe and the former Soviet Union that weak intellectual property rights (IPR) protection deters investors in high R&D sectors that rely heavily on IPRs and encourages projects that focus on distribution rather than production.

A conclusion one can draw from this work is that IPR protection is an important component of measures to attract technology-intensive FDI. We have seen in Chapter 4 that domestic policy reforms are essential to attract FDI. It would seem that in order to attract R&D-intensive FDI, RIAs may require good IPR laws.

FDI in the export sector is likely to be more attractive than in the import-competing sector, first because it is less likely to result in static welfare losses (see Chapter 4), and because it is likely to be internationally competitive since it exports to the world market or to benefit from preferential access in partners' markets. For instance, the formation of NAFTA resulted in attracting FDI in export-oriented activities and is likely to result in a "quality ladder" phenomenon over time, with increased productivity. On the other hand, MERCOSUR has resulted in some tariff-jumping FDI, such as in the automobile sector, with production of goods—much of it for export to Brazil—that are typically not competitive in OECD countries. These conclusions are supported by the findings of Balasubramanyam et al. (1996) that the growth effect of FDI is stronger in countries that pursue policies of export promotion rather than import substitution. The likelihood of FDI going to the export sector can be increased by reducing protection to import-competing sectors.

5.1.5 Cross-country evidence on openness and growth

Despite its well-known shortcomings as a research technique – for example, its almost complete inability to establish causation – huge use has been made of cross-country regression as a tool for exploring the determinants of economic growth. We review here some of the main studies on trade and growth based on cross-country regressions. Many of them have included openness in one form or another and nearly all have identified a positive relationship between openness and growth. Several of the earlier works of this genre – Dollar (1992), Sachs and Warner (1995), Edwards (1998) – have received rather rough treatment recently at the hands of Rodriguez and Rodrik (2001). The latter argue that these studies' measures of openness are so flawed that the relationship remains unproven, especially as it pertains to the trade as opposed to macro-economic (exchange-rate) dimensions of openness.³ It is important to note, however, that Rodriguez and Rodrik do not argue that openness hinders growth – there is no general evidence for this proposition at all – but merely that the positive relationship is not fully established yet. Rodriguez and Rodrik's views have also been challenged by Bhagwati and Srinivasan (1999), who argue that the case for openness was based on far more than cross-country regressions, and thus that losing that strand of evidence should not much affect the overall conclusion. Commenting on Rodriguez and Rodrik, Jones (2001) estimates some 100 specifications and concludes that trade restrictions are harmful to long-run incomes and that the effects are potentially large, though there is a large amount of uncertainty regarding the magnitude of the effects. He also concludes that cross-country growth regressions are a coarse tool for addressing this question.

An influential recent study is Frankel and Romer (1999), who go to great lengths to sort out the causation between trade and growth. They show that that part of trade that is due to purely exogenous factors such as population size, land area and distance, seems to generate improved growth rates – i.e. that large countries close to large markets grow faster. From this they tentatively infer that other parts of trade – those due to policy – will

³ Commenting on Rodriguez and Rodrik, Hsieh (2001) provides suggestive evidence that restrictions on capital-goods imports have important adverse effects on growth, and particularly so for developing countries. This is consistent with the findings of Coe et al. (1997) discussed in Sections 5.1.2 and 5.1.3.

also boost growth. The latter conclusion seems quite reasonable since many of the trade barriers that countries impose seem analytically equivalent to transportation costs, which Frankel and Romer have shown to be inimical to growth.

All the studies noted above refer to non-discriminatory liberalizations. The direct evidence that RIAs stimulate growth is weak. Henrekson, Torstensson and Torstensson (1997) use a cross-section regression to suggest that European integration enhanced members' growth rates over 1976-85, possibly by as much as 0.6-0.8 percent per year, operating through technology transfer rather than through investment. Other commentators, however, have failed to replicate these results, and Baldwin and Venables (1995) state that no study has identified positive growth effects for non-European RIAs. Vamvakidis (1998), for example, shows that the EU's marginally significant positive impact disappears once one has taken the openness of the individual member countries into account. Vamvakidis' results are probably more reliable than Henrekson et al.'s because of his longer time period and the fact that the latter sought to capture general openness via a price distortions index due to Dollar (1992) which Rodriguez and Rodrik (1999) argue is flawed. Vamvakidis does find beneficial effects on a country's growth rate from having large and rich open neighbors, but this is quite independent of RIAs. Cross-country growth regressions by de Melo, Montenegro and Panagariya (1992) and Brada and Mendez (1988) similarly find no growth effects from RIAs over the 1960s to 1980s.

The strongest and most direct approach to identifying the growth effects of non-European RIAs is Vamvakidis (1999). He uses panel data to explore whether countries' growth rates changed when they liberalized their trade, comparing the ten years before the liberalization with the ten years after. He finds quite strong evidence that non-discriminatory liberalisations boosted growth, while discriminatory ones (i.e. RIAs) did not. Vamvakidis did not explore the effects of the RIAs created or revived in the 1990s because we do not yet have ten years' 'after' data, but with this exception (namely the possibility that things are better now), he has provided quite convincing evidence that RIAs are neither good nor bad for growth.

5.2 Agglomeration and Industrialization

Comparative advantage is not the only force that influences the location of activity in an RIA. As economic centers start to develop, so 'cumulative causation' mechanisms come into effect, leading to clustering (or agglomeration) of economic activity, and extending the advantage of locations that have a head-start.⁴

Spatial clustering of economic activities is all pervasive. Cities exist because businesses, workers and consumers benefit by being in close proximity. Particular types of activity are frequently clustered, the most spectacular examples being the electronics industries of Silicon Valley, cinema in Hollywood, and the concentration of banking activities in the world's financial districts. Clustering also occurs in many manufacturing industries – for example US automobile manufacturing in the Detroit area, or industries such as medical equipment, printing machinery and others studied by Porter (1998).

⁴ This section is based on Fujita, Krugman and Venables (1999).

5.2.1 The balance between centripetal and centrifugal forces

Clustering or agglomeration typically arises from the interaction between ‘centripetal’ forces, encouraging firms to locate close to each other, and ‘centrifugal’ forces, encouraging them to spread out. The centripetal forces are usually classified in three groups (Marshall 1920). The first are knowledge spillovers, or other beneficial technological externalities that make it attractive for firms to locate close to each other – in Marshall’s phrase, “the mysteries of the trade become no mysteries, but are, as it were, in the air.” The second are various labor market pooling effects, which encourage firms to locate where they can benefit from readily available labor skills – perhaps by attracting skilled labor away from existing firms.

The third centripetal force arises from ‘linkages’ between buyers and sellers. Firms will, other things being equal, want to locate where their customers are, and customers will want to locate close to their suppliers. These linkages are simply the ‘backwards’ (demand) and ‘forwards’ (supply) linkages of Hirshman (1958). They create a positive interdependence between the location decisions of different firms, and this can give rise to a process of cumulative causation, creating agglomerations of activity.⁵

These centripetal or agglomeration forces can operate at quite an aggregate level, or can be much more narrowly focused. For example, aggregate demand creates a backwards linkage, drawing firms from all sectors into locations with large markets. Other forces affect broad classes of business activity – providing basic industrial labor skills, or access to business services such as finance and telecommunications. In contrast, knowledge spillovers affecting particular technologies, or the availability of highly specialized inputs might operate at an industry level. In this case the forces work for clustering of the narrowly defined sector, rather than for clustering of manufacturing as a whole.

Pulling in the opposite direction are ‘centrifugal forces’, encouraging the dispersion of activity. These include congestion, pollution, or other negative externalities that might be associated with concentrations of economic activity. Perhaps the most obvious indicator is the very high rents in major cities. Competition for immobile factors will deter agglomeration, as the price of land and perhaps also labor is bid up in centers of activity. Similarly, the presence of many firms in the core areas increases competition and drives down margins. Finally, of course, there are demands to be met from consumers who are not located in the centers of activity; dispersed consumers will encourage dispersion of producers, particularly if trade barriers or transport costs are high.

5.2.2 Trade liberalization can aid industrialization

Trade liberalization affects the balance of these forces through at least three mechanisms (Puga and Venables, 1998). Reductions in a country’s import barriers improve the market access of firms located in its partner countries. Opening a country’s markets to increased product market competition from foreign firms reduces the

⁵ This argument only works if there are increasing returns to scale in production. (If not, firms can put small plants in many different locations).

profitability of local firms. And lower import barriers means cheaper imported intermediate goods and, hence, higher local profitability. The mix of these effects depends on the type and extent of liberalization—unilateral, multilateral, or regional—and on the relative strengths of the centrifugal and centripetal forces.

Multilateral reduction of trade barriers can increase the profitability of industrial location in developing countries by decreasing the price of imported intermediate goods and offering firms better access to larger developed countries markets. However, it can also reduce profitability by making markets more competitive. The first two effects, combined with large wage differences between Northern and Southern countries, can dominate and cause industry to move to the South. As the world trading system has become more open, industrial production has gradually moved from the US, Western Europe and Japan to developing countries in Latin America, Southeast Asia, and Eastern Europe. However, the spread has been quite uneven across developing countries, as the stronger centripetal forces in middle-income countries make them more attractive as industrial locations. For example, in 1995 Asia (with 33% of developing countries' total income) received 65% of all FDI flows to developing countries, while Latin America (31% of income) got 27% and Africa (8% of income) only 5%.

Unilateral trade liberalization by one developing country can also attract industry and bring real income gains, despite more intense import competition, if cheaper imported intermediate goods becomes a dominant force. Industry will develop sooner and at larger scale, the greater the share of intermediates in production and the larger is the market in the liberalizing economy. However, the spread of industry to the South is likely to be slower than under multilateral liberalization, as unilateral liberalization does not improve developing countries access to large Northern markets.⁶

Preferential trade liberalization affects both the locational attractiveness of the bloc relative to the rest of the world and the relative attractiveness of different members. On the former, an RIA increases the locational advantage of members at the expense of the excluded countries. It allows member country firms to sell their output and buy their inputs on larger markets, setting off beneficial centripetal forces and pulling production and industry into the bloc and away from excluded countries (Puga and Venables, 1997, 1998)⁷. The strength of these effects will depend on the size and nature of the integrated market (i.e. its combined income/output and the depth of its integration), however, and many developing country RIAs will be too small to have significant location effects. For example, none of the active African RIAs has a GDP larger than Belgium: UEMOA is less than 10%, UDEAC less than 4%, and even SADC less than 65% of Belgium's GDP. Recalling the economies of scale arguments that are commonly made for European integration, it is plain that for many industries, such groups are well below the necessary size for attracting industry.

Moreover, even for industries where scale requirements are low, many South-South RIAs have failed to attract activity because, at least until recently, they have lacked

⁶ However, for many goods such access is already pretty free so unilateralism is not completely stymied.

⁷ Of course, these effects are additional to the (positive or negative) resource allocation effects analyzed in chapters 2 and 3.

the institutional preconditions. Most African RIAs have not only too small markets, but also poor infrastructure, lack of a sound legal framework, slow progress with economic reforms, heavy government intervention, a small and fragile private sector, and economic and political instability. Just as addressing these matters is the key to investment, as we argued in the previous chapter, so it is for industrial agglomeration. Unilateral reforms to achieve a sound business environment are the *sine qua non* of industrial development, and are far more important than issues of regional integration of any hue.

5.2.3 Inter-member distribution: divergence is likely in South-South RIAs

Turning to the internal distribution of industry, we need to ask how regional integration affects the balance between centripetal and centrifugal forces: can membership cause, or amplify, the clustering of economic activity, and if so might it widen income differentials between partner countries?

By reducing trade barriers, membership in an RIA makes it easier to supply customers from a few locations. This suggests that the balance of forces may be tipped in favor of agglomeration, although the ensuing relocation of industry could develop in several different ways.

One possibility is that particular sectors become more spatially concentrated, and this is likely if the centripetal forces act at a quite narrow, sectoral level. For example, industries in the US are much more spatially concentrated than in Europe (even controlling for the distribution of population and manufacturing as a whole), suggesting that further regional integration in Europe could cause agglomeration at the sectoral level (for example, Germany gets engineering, the UK financial services, and so on). The possibility that this might happen is generating some concern in Europe, although evidence for it is so far rather weak (see Midelfart-Knarvik et al. 1999). If it does happen it will create considerable adjustment costs as the industrial structure of different locations changes, but it will also create aggregate gains, as there are real efficiency gains from spatial concentration. This sectoral agglomeration need not be associated with increases in intra-RIA inequalities; each country or region may attract activity in some sectors.

An alternative possibility is that, instead of relatively small sectors each clustering in different locations, manufacturing as a whole comes to cluster in one or a few locations, de-industrializing the less favored regions. This outcome will be more likely to occur the smaller is manufacturing as a whole – either because it is a small share of the economies or because the economies are small overall. Small sectors need to concentrate to create critical mass, and if, additionally, the manufacturing share is small, fitting the whole of manufacturing into one (or a few) locations is less likely to encounter factor supply constraints and to lead to rising prices of immobile factors (such as land). Concentration will also be more likely if linkages are broad, across many industrial sectors, rather than narrowly sector specific. This in turn is more likely in early stages of development, where a country's basic industrial infrastructure – transport, telecommunications, access to financial markets and other business services – is thinly developed and unevenly spread.

This suggests that there is a real possibility that RIA membership could lead to agglomeration and divergence between member countries, reinforcing the effects of comparative advantage discussed in chapter 3. It seems likely that both comparative advantage and agglomeration are at work in some South-South RIAs, with both forces leading industry to agglomerate in the relatively richer and initially more industrialized members. As Nairobi, Abidjan and Dakar have attracted manufacturing, so they have started to develop business networks and the linkages that tend to lock manufacturing into the location. The process might be further accelerated by the propensity of foreign direct investment to cluster in relatively few locations. Agglomeration is then accentuating the forces for divergence that we outlined previously.

Industry agglomeration in a subset of member countries can create tensions within an RIA. Several South-South RIAs have failed because of disputes over the location of industry and the design of compensation schemes for perceived losers. In the 1950s and 1960s severe frictions between Kenya, Tanzania, and Uganda arose over the benefits from economic integration within the East African Common Market. Uganda and Tanzania contended that all the gains were going to Kenya, which was steadily enhancing its position as the industrial center of the Common Market, producing 70% of the manufactures and exporting a growing percentage of them to its two relatively less developed partners. By 1958, 404 of the 474 companies registered in East Africa were located in Kenya. By 1960 Kenya's manufacturing sector accounted for 10% of its GNP, against 4% in the other two states (Hansen, 1969). The community collapsed in 1977 as it failed to satisfy the poorer members that they were getting a fair share of the gains.

In other circumstances agglomeration forces can help to off-set the divergences associated with comparative advantage. For example, firms choosing a location in NAFTA may want both the agglomeration benefits of locating in the USA, and the factor price advantages of Mexico, but the latter may predominate. Thus, for example, in North-South arrangements, the South could become a preferred location for assembly—automobiles—or sub-contracting—textiles—industries (possibly in export-processing zones). This happened with the increase in automotive assembly-plants (maquiladoras) below the US-Mexico border: major investments in new capacity and plant expansions in Mexico by Japanese, German, and Italian auto parts producers (exceeding \$500 million) benefited from NAFTA-related changes to Mexico's Auto Decree, which liberalized foreign investment restrictions in the auto sector, and provided access to Mexican and Latin American markets (USITC, 1997).

These examples suggest that, from the point of view of the participating developing economy, North-South arrangements are better than South-South ones because they give a Southern economy the benefits of both improved access to a large Northern market and low-cost Northern intermediates. For the same reasons, the Southern economies attract more industry under multilateral trade liberalization than under South-South schemes. In fact, it is possible that a North-South RIA will generate more industry for the Southern economy than would a multilateral liberalization, depending, among other things, on how important the Northern partner is in the South's total exports. Where this happens, however, it is at the expense of excluded Southern countries, which industrialize more slowly because they neither gain market access nor liberalize their own regimes – Box 5.1 (Puga and Venables, 1998).

Box 5.1 Modelling the agglomeration effects of RIAs

Puga and Venables (1998) outline a new approach for studying the effects of different types of trade liberalization (multilateral, unilateral, regional, and others) on the industrialization process in developing countries. Although their model is highly stylized, it provides the first formalization of phenomena that have been discussed at an intuitive level for a long time. They consider a model with three countries [one North (large) and two South (small)] where each country has two sectors: one is a perfectly competitive homogeneous commodity sector (called agriculture), the other is a monopolistically competitive industry (called manufactures) in which firms produce differentiated products with several varieties. In addition to real trade costs, ad valorem tariffs are imposed to all trade flows in manufactures. Trade in agricultural produce is free. For simplicity, Puga and Venables choose their initial parameter values such that at the status quo ante equilibrium, the two Southern countries produce only agriculture and no manufactures. From here they solve the model for progressively lower and lower levels of tariff barriers. Trade liberalization always attracts industry to the South, but the timing and magnitude of industrialization differ depending on the type of liberalization, and on the centripetal and centrifugal forces.

Under multilateral trade liberalization, industry initially starts up in only one of the two Southern economies – agglomeration economies make it unprofitable to maintain two ‘new’ locations before one has achieved a reasonable size. As trade barriers continue to decline, however, it becomes profitable for manufacturing to establish in the other Southern country as well, partly at the expense of the first, which suffers a small fall in its share of world industry. At tariffs below that point, the Southern economies are identical and further reductions in tariffs bring a steady relocation of industry from the North to these economies. Unilateral liberalization by the developing countries also promotes their industrialization because it makes for cheaper intermediate inputs from the North, but its effects are weaker than multilateral liberalization because it lacks the market access dimension.

Membership in an RIA may or may not be better than unilateral reform. South-South RIAs will be sensitive to the market size of member states, but above a critical level industry establishes in both of them because of the effective enlargement induced by the reciprocal reduction in intra-South barriers. The spread of industry is uneven, however, with industry initially developing in one of the countries and only spreading to the second at lower trade barriers. The Southern economies attract less industry than they would under multilateral liberalization because they do not benefit from better access to the Northern market or intermediate goods produced in the North.

Compared to a South-South arrangement, a North-South RIA offers better prospects for the participating Southern country. The spread of industry is quicker and larger, because the Southern economy benefits from both improved access to the Northern market and the low cost of intermediates. In this model, with only one Northern market/supplier, the participating Southern country is better off in a North-South RIA than under multilateral liberalization. Both deliver the same market access and cheap intermediates, but under the RIA competition is less strong because the excluded Southern country is presumed to get neither advantage. Even if the participating country is better off than under multilateral liberalization, however, the South as a whole is worse off, because the excluded South does not get any industry.

There are also likely to be locational effects within member countries. The strongest example is probably Mexico, where liberalization and accession to NAFTA have shifted the center of economic gravity from Mexico City to the northern border. Krugman and Elizondo (1996##) have argued that closed economies like pre-1986 Mexico are more prone to extreme agglomeration – because domestic linkages are all there are. The Mexican trade liberalization vis-à-vis the rest of the world started to undermine Mexico city’s dominance and disperse industry to other locations in the country. This was supplemented by the increasing importance of the USA as a trading and production-chain partner as it introduced border preferences and then signed NAFTA – see Box 5.1.

An important final point is that agglomeration forces will be strongest at ‘intermediate’ levels of trade barriers (or transport costs). When barriers are very high, each country will have its own industry to supply local consumers. When they are very low firms go where labor costs are cheapest, because they can bring in their inputs and ship their output at very low cost – as with the production networks described in box 5.1. But at ‘intermediate’ barriers firms are reluctant to move away from suppliers and other agglomeration benefits, yet able to supply foreign markets through exports.

Box 5.2 Regionalism influences within-country location: North America

If the main non-policy barriers to trade are transport costs, economic integration should increase economic activity in border cities (Hanson, 1996). The lure of frontier regions is stronger if production of final goods uses foreign intermediate inputs. After the US 1965 Automotive Products Trade Act eliminated barriers on motor-vehicle trade with Canada, motor vehicle production expanded along the Michigan-Ontario corridor.

Integration with the US has had strong effects on industrial location in Mexico. Industry has shifted towards states with good access to the US market. This integration has been effectively underway since the mid-1980s, when Mexico removed most barriers to foreign trade and lifted restrictions on foreign ownership. Mexico has developed a large export manufacturing industry, which specializes in the assembly and processing of foreign-made components. A large part of this industry imports most inputs from and ships most output back to US firms. The plants are overwhelmingly concentrated in Mexican cities on or near the US-Mexico border. Employment growth has been higher in regions that have larger agglomerations of industries with buyer/supplier relationships (Hanson 1998).

The growth of export production in Mexican border cities also makes US border cities a natural site for complementary manufacturing activities. Production activities in the US are relocating to cities on the border. US border cities specialize in the industries that produce parts and components for Mexican assembly plants. Hanson (1996) argues that NAFTA, by further lowering trade barriers, is likely to contribute to the further expansion of the bi-national production centers that are forming along the US-Mexico border. He finds that employment growth in US border cities is positively correlated with employment growth in Mexican export assembly plants.

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