Trade and Competitiveness in Argentina, Brazil and Chile

NOT AS EASY AS A-B-C

OECD

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Foreword

In 1999, the OECD launched the South-America programme with a focus on Argentina, Brazil and Chile (A-B-C). In parallel to country-specific studies, the governments of A-B-C expressed an interest in assessing the determinants of international competitiveness in South America. This region has indeed been facing a persistent challenge to generate sufficient foreign exchange to service external debt and finance imports needed to sustain domestic demand growth. Over the past decades, the mixed performance of the tradable sector has been at the roots of poor economic growth and several crisis episodes. More recently, however, the external sector has been a driver of growth in the region, as it benefited from strong international demand and booming commodity prices. The sustainability of this export-led growth over the long-run is still an open question.

Against this background, this study takes a fresh look at which market mechanisms and policy interactions support the strengthening and diversification of the tradable sector in Argentina, Brazil and Chile. The book revisits the impact of exchange rate regimes on the relative price of tradables to non-tradables and, more broadly, resource allocation within the economy. The determinants of market performance are considered, providing a taxonomy of market structures whose interaction with trade policies in OECD countries is analysed. The study also looks at policies and framework conditions to attract foreign direct investment, which is crucial to increase competitiveness in certain sectors. The potential and constraints of agriculture and food manufacturing, which are among the strongest revealed comparative advantages of A-B-C, are discussed in a separate chapter. Finally, policies promoting competition in non-tradable services, which are crucial to avoid distortions in the allocation of resources and support competitiveness of the tradable sector, are assessed.

Several contributions to this monograph benefited from discussions at seminars at the Institute for the Integration of Latin America and the Caribbean, (INTAL, Inter-American Development Bank), the Brazilian Institute for Applied Economic Research (IPEA), the Central Bank of Chile

and the Economic Commission for Latin America and the Caribbean (ECLAC).

This project was carried out by the Economics Department in cooperation with the Directorate for Food, Agriculture and Fisheries, the Directorate for Financial and Enterprise Affairs and the Development Centre. Financial support from the Spanish government is gratefully acknowledged.

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Editorial assistance was provided by Kathleen Gray. Statistical and technical assistance was provided by Anne Legendre, Thomas Chalaux, and Muriel Duluc. This publication is under the responsibility of the Secretary-General of the OECD.

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Executive summary

by Nanno Mulder and Joaquim Oliveira Martins

The development of the tradable sector has been, and remains, a permanent concern for policy makers in Argentina, Brazil and Chile (A-B-C). Strengthening international competitiveness is key to the region's perennial challenge to generate a net export surplus sufficient to finance debt-service obligations without constraining domestic demand growth. The policy debate on the tradable sector often focuses on the risks of specialisation in primary goods related to their declining share in international trade and price volatility. Until the early 1980s, trade barriers and low income elasticities of primary goods were used as an argument to justify import substitution policies and controls on imports of capital goods. Following trade liberalisation of the late 1980s and 1990s, a more horizontal approach was adopted. The main policy issues evolved towards how to diversify exports and produce more value-added products. In this context, the existing trade barriers in OECD countries are seen as an obstacle preventing these economies from realising their competitive potential. By limiting exports these trade barriers jeopardise sustainable growth. They reduce the capacity to import, in particular investment goods that underpin transformation and long-term growth.

Domestic policies have not always been consistent with the aim of developing the tradable sector. In Argentina, despite the economic drive from market-oriented reforms during the 1990s, the economy was unable to accommodate to the constraints of a fixed exchange rate enshrined in a currency board. Although a Competitiveness Law was passed in 2001, this was insufficient to reinvigorate the economy. In early 2002, Argentina had to abandon the currency board and fell into a severe economic and debt crisis. After defaulting on public debt and a large exchange rate correction, the Argentinean economy started to recover in 2003. In Chile, despite early and far-ranging liberal reforms, the slowdown of investment and growth following the emerging market crises of 1997-98 gave weight to the view that the country's traditional export structure is a handicap as it makes it less resilient to external shocks. Brazil, where structural reforms were

undertaken in the early 1990s within a fragile macroeconomic framework, had to abandon its managed peg regime in 1999. Since then, the depreciation of its exchange rate and the successful control of inflation have supported a progressive reorientation of domestic firms towards foreign markets. More recently, the country has considerably increased its trade surplus and diversified exports in terms of markets and products.

The mixed performance of the tradable sector has been evoked as one of the causes of the weak growth performance in South America during the 1990s. Supporting this view is the fact that most of the crisis episodes in South America have been associated with a pronounced imbalance of the contributions to growth of the tradable and the non-tradable sectors. In times of fast growth and acceleration of imports, the domestic tradable sector was unable to keep pace. Ultimately, large trade deficits led to a tightening of macro-economic policies, a fall in domestic demand and a slowdown in economic growth.

Against this background, this study aims at contributing to the understanding of the market mechanisms and interactions supporting the strengthening and diversification of the tradable sector. A top-down approach is followed, starting with the discussion on the impact of exchange rate policies on the relative price of tradables to non-tradables. This has been one of the main channels influencing factor allocation between these two broad sectors. Along these lines, the first chapter relies on an econometric model to disentangle the role of fixed exchange rate regimes relative to other factors in explaining trends in relative prices, such as the traditional Balassa-Samuelson effect, capital inflows, government expenditure and terms-of-trade.

Within the tradable sector there are different types of markets. In those comprising relatively homogeneous products and small firms, labour costs are the main determinant of market performance, although exogenous trade barriers may be an obstacle to the emergence of the most competitive producers in international markets. In contrast, in markets featuring strongly differentiated products and few but large enterprises, the competitiveness of firms depends not only on labour costs, but also requires large investments in research and development (R&D) and marketing. In turn, these investments create endogenous entry barriers (through high sunk costs), which may constrain the ability of new entrants from emerging markets to upgrade towards differentiated products. Along these lines, Chapter 2 develops a taxonomy of market structures. It then discusses how market imperfections, together with policies, influence specialisation and export performance. In this regard, trends in A-B-C are compared with those in three OECD countries (Ireland, Korea and Mexico).

In markets characterised by imperfect competition, trade and international capital flows are actually complementary rather than substitutes. Foreign direct investment (FDI) also provides positive spillovers for the diffusion of knowledge, the adoption of best practices and improvements in the business environment. In particular, in order to penetrate markets with differentiated products, domestic enterprises can benefit from the global production networks of multinationals to overcome market-induced barriers. However, evidence from A-B-C in the 1990s, as discussed in Chapter 3, does not fully exemplify these propositions, notably because FDI to these countries has been mainly directed to upstream industries in the context of massive privatisation programmes.

Among the strongest revealed comparative advantages of A-B-C are agriculture and food products. A discussion of their potential and the constraints to further development is presented in Chapter 4. The chapter shows that the large potential to expand this sector has to be set against the many tariff and non-tariff barriers that limit market access, notably for more value-added agro-food products. Successful product differentiation strategies have helped to partially circumvent these barriers, but their scope could be further developed.

Finally, the development of the tradable sector also depends on the existence and performance of market institutions and policies. In particular, performance of the tradable sector depends on the degree of competition in non-tradable services, which are not exposed to external market discipline. In A-B-C, competition policy is particularly important as market concentration and state enterprises have been dominant features until recently. A review of the relevant literature and case studies in Argentina discussed in the last chapter provide reference arguments as well as insights from experience.

The most important findings of the study can be summarised as follows:

- In Argentina and Brazil fixed or quasi-fixed exchange rate regimes contributed in the past to distort the relative price between the tradable and non-tradable sectors and pushed the centre of gravity of the economy away from the tradable sector. The Chilean experience, with a more flexible exchange rate regime, provides a counter example of these effects.

- The tradable sector in A-B-C is confronted with pervasive market barriers. For homogenous goods in which South America has its main comparative advantages, exports suffer from tariff peaks and non-tariff barriers existing in OECD countries. For differentiated products, South America faces natural market barriers created by the need to incur high R&D or advertising outlays. While trade policy barriers could be reduced by trade agreements, endogenous market

barriers could only be overcome by entering international production networks through joint ventures, sub-contracting and, perhaps most importantly, foreign direct investment (FDI).

- All three countries have succeeded in attracting substantial amounts of FDI, but for the time being foreign investments have mainly targeted primary sectors in which these countries already have competitive advantages, and to specific segments of the non-tradable sector (mainly infrastructure and banking). In the light of these observations, FDI does not appear to have directly contributed to the diversification of the tradable sector in A-B-C. Except for some positive developments in niche markets such as the car industry, more efforts could be made to attract investment in sectors producing differentiated goods. In contrast to A-B-C, FDI contributed to a radical change in the structure of specialisation in Mexico. This case is unique in the region, but it may also be fragile in the light of a strong dependence on the US market and rather low levels of domestic R&D. Thus, Mexico could remain very sensitive to pure price competition.

- Agricultural and food products are the largest contributor to exports in A-B-C and continue to have a strong potential for expansion. First of all, in Argentina and Brazil there is still a large amount of permanent pasture that can be converted into arable cropland. A-B-C also have room to increase labour and land productivity, and exports of processed food products. In this regard, Chile has succeeded somewhat in developing differentiated products out of primary clusters, the wine industry being a notable, but not unique, example. To increase production and exports of food products, A-B-C must lower the costs of logistics, improve access to credit, and have a better co-ordination of the different actors in the food chain. The increasingly concentrated structure in the food industry worldwide suggests that FDI may play a critical role to foster the development of this important segment of the tradable sector.

- Promoting competition is not only relevant to tradables, but also, and even more so, to non-tradable sectors sheltered from international competition. A non-tradable sector sitting on high rents distorts the allocation of resources at the expense of the tradable sector. Competition policy in A-B-C has evolved from the enforcement of competition on the basis of private claims, to competition advocacy and its contribution to the design of regulatory reforms. However, A-B-C still need to strengthen their competition policies and regulatory frameworks, particularly in

infrastructure. Notably, additional private investment in electricity is needed in all three countries but can only materialise if the regulatory environment is perceived by investors as sufficiently attractive and legally stable.

1. The impact of exchange rate regimes on real exchange rates in South America, 1990-2002

by Anne-Laure Baldi and Nanno Mulder*

ABSTRACT

This chapter explores the relationship between exchange rate regimes and real exchange rates, as defined by the relative price of non-tradables to tradables, in Argentina, Brazil, Chile (A-B-C) and Mexico from 1990 to 2002. According to the literature, the real exchange rate is determined in the long run by the Balassa-Samuelson effect, but in the medium run also by government expenditure and terms of trade. Here another determinant is explored, which is exchange rate regimes. Fixed exchange rate regimes distorted relative prices of tradables to non-tradables. Moreover, fixed regimes attract portfolio inflows that increase demand and prices for non-tradables. Econometric tests confirm that exchange rate regimes had a strong impact on relative prices in all countries except Chile, which managed its exchange rate more flexibly.

* Nanno Mulder: Economics Department of the OECD. Anne-Laure Baldi: University of Paris X. A first version of this chapter was written with Anne-Laure Baldi when she was an intern in the Economics Department. The authors are grateful for comments from Joaquim Oliveira Martins, Romain Duval, Sabrina Lucatelli and Silvana Malle. The authors also thank the participants of the Latin America meeting of the Econometrics Society, and of seminars in Santiago (ECLAC, Banco Central), Buenos Aires (IADB-INTAL) and Rio de Janeiro (IPEA), and in particular Pablo Garcia, Daniel Heymann and Elcyon Caiado Rocha Lima. Thomas Chalaux provided an excellent contribution to the econometrics and Anne Legendre very competent research assistance. The views expressed are those of the authors and do not necessarily reflect those of the OECD or its member countries.

Introduction

The real exchange rate, defined as the relative price of non-tradables (P_n) to tradables (P_t),[1] is a key driver of domestic resource allocation and international competitiveness. A fall in this ratio indicates that production in tradables is likely to be more profitable that in non-tradables, and provides as such an incentive for resources to move from the latter to the former sector. The real exchange rate is also a proxy of international competitiveness: given the relative prices in the rest of the world, an increase in the relative price means that a country now produces tradable goods in a relatively less efficient way (compared to the rest of the world) than before (supposing price indices fully capture quality changes). The interpretation of a fall in the relative price of tradables or real depreciation is symmetrical (Edwards, 1989).

Although the real exchange rate follows an equilibrium upward trend in the long run due to the Balassa-Samuelson (BS) effect,[2] it may deviate from this trend in the short and medium run due to other factors. These include government expenditure and terms of trade. For example, an increase in government expenditure on mostly non-tradables will increase their price and correspondingly the (P_n/P_t) ratio will tend to increase more rapidly than due to the BS effect only. A lasting 'misalignment' of relative prices may cause a non-sustainable reallocation of resources from the tradable to non-tradable sector.

The novelty of this chapter is that it adds another factor that causes deviations of the real exchange rate from its 'equilibrium trend', *i.e.* its fixed exchange rate regimes. These regimes have two effects. First, they force countries that are international price takers to adjust their local price of tradables to ensure price equalisation between them and their trading partners. Second, in countries with liberalised capital accounts, fixed regimes are often associated with high interest rates which attract large amounts of capital inflows that raise final consumption. As non-tradables are less elastic in supply than tradables, the price of non-tradables will rise relative to that of tradables.

The role of each of these real exchange rate determinants is assessed here for Argentina, Brazil and Chile (A-B-C) and Mexico from 1990 to 2002, during which very different exchange rate regimes prevailed. Argentina introduced a currency board in 1991, which lasted until the end of 2001. Brazil *de facto* fixed its currency to the dollar from 1994 to 1999 except for some mini-devaluations. Mexico and Chile constrained the depreciation of their currencies to a lesser extent, between 1990-94 and 1990-99 respectively. All countries changed to

(almost) fully flexible regimes between 1999 and 2002. The fixed regimes strongly accelerated the increase in relative prices, in particular in Argentina and Brazil after these countries fixed their currencies in 1991 and 1994 respectively. The increase in relative prices also accelerated during the "less than flexible" regimes in Chile and Mexico. The "overshooting" of relative prices was corrected in all countries following the switch to a flexible exchange rate regime.

In these countries, fixed regimes strongly affected the allocation of resources via their impact on relative prices. In particular, they caused a 'disproportionate' increase in the share of non-tradables in employment and GDP. Moreover, during the fixed-regime period the share of manufacturing in the tradable sector fell.

The chapter is organised as follows. First trends in the real exchange rate and the composition of employment and GDP in terms of tradables and non-tradables in A-B-C and Mexico are presented. Then the theoretical literature is reviewed on the main determinants of relative prices, focusing on Balassa-Samuelson and its extensions. Subsequently the role of exchange rate regimes is discussed. Finally, the relative impact of each determinant on the real exchange rate trends is assessed for A-B-C and Mexico for the period 1990-2002 using econometric analysis.[3]

Large swings in the real exchange rates in A-B-C and Mexico

Trends in real exchange rates (*i.e.* the price ratio of non-tradables to tradables, P_n/P_t), using three definitions, are shown in Figure 1.1 for A-B-C and Mexico for 1990-2002. These three definitions are (Box 1.1): (*a*) the non-tradable items of the CPI for non-tradables and the PPI for tradables; (*b*) the consumer price index (CPI) for non-tradables, and the wholesale (producer) price index (WPI or PPI) for tradables; and (*c*) the non-tradable and tradable categories of the CPI (Barros and Barbosa, 2002*a*, 2002*b*).

The first and the second definitions yield almost the same results, while trends of the third ratio (tradable components to the non-tradable components of the CPI) are different. This is because the numerator is a poor proxy of tradable prices (Box 1.1). Our 'preferred' ratio is the third that resembles mostly closely the prices of the tradable and non-tradable goods and services. For Chile and Mexico, a rise in relative prices can be observed during 1990-2002 corresponding to the BS effect. In Argentina and Brazil, this is not clear as there were large relative price swings.

Box 1.1. **The distinction between tradables and non-tradables**

Separating tradables from non-tradables is of key importance in the literature on domestic price structures and real exchange rates. In principle, only few commodities can be classified as purely non-tradable. Most commodities are traded between at least some countries, with transportation costs of goods, the service provider or consumer determining the degree of tradability. Nevertheless, the characteristics of some commodities make them inherently more or less tradable. Lacking a theoretical definition of tradability, many authors have looked instead to the extent to which commodities *are* actually traded. Most empirical studies, including the pioneering articles by Balassa (1964) and Samuelson (1964), used a shortcut and labelled manufactures as tradables and services as non-tradables. Others (for example Canzoneri, *et al*. 1996, Ito *et al*. 1999) added mining products to tradables.

No consensus exists on whether to include agricultural products in tradables. Strauss (1999), focusing on OECD countries, explicitly excluded them as *de facto* they are largely non-traded due to high protection by these countries. Motonishi (2002) excluded agriculture for another reason, as it is land-intensive and does not conform to the hypotheses of the Balassa-Samuelson model. Other studies, covering a wider group of countries, included agricultural products in tradables without justification.

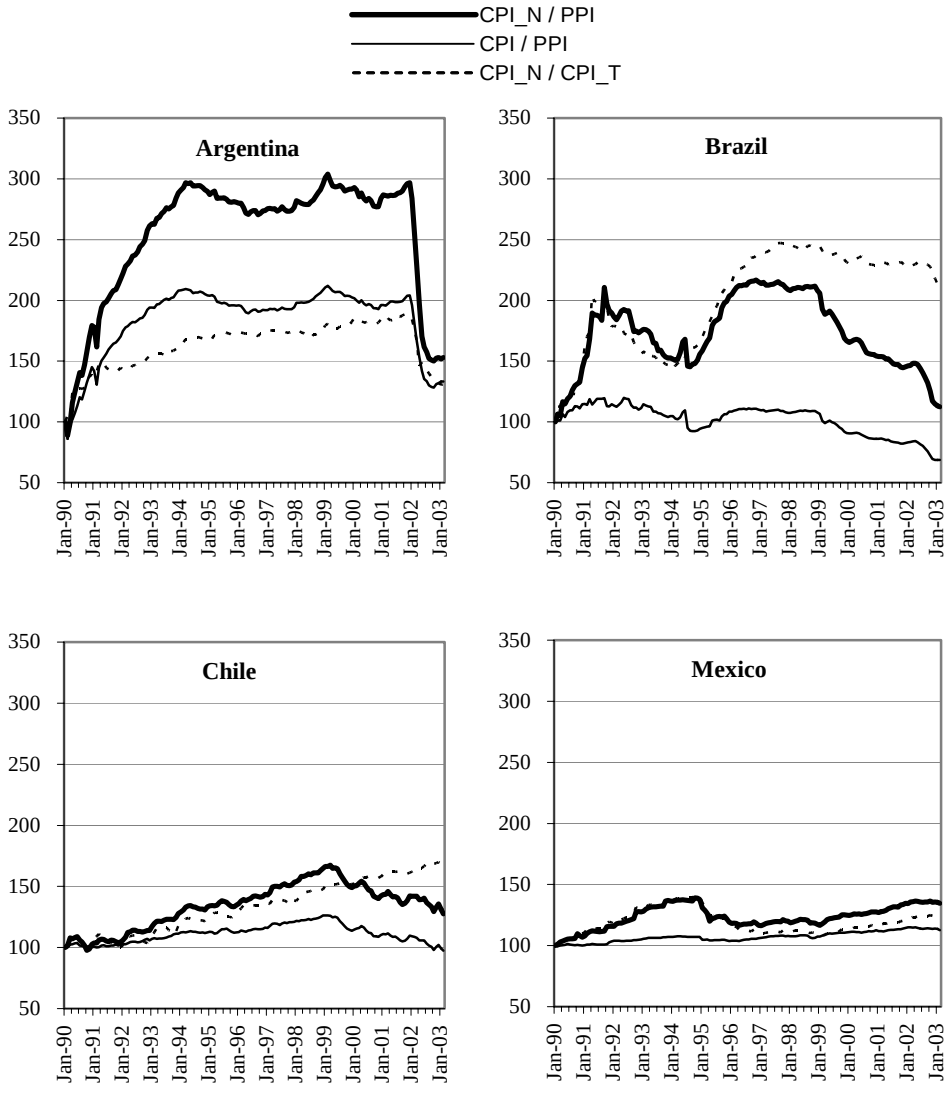
Most authors defined non-tradables as construction and services. Motonishi (2002) excluded finance and insurance and de Gregorio *et al*. (1994) transport from the non-tradable category as data for OECD countries show they are internationally traded.

Other authors use as a shortcut for tradables and non-tradables the items included in the wholesale (producer) and consumer price indices respectively. The former is a relatively good proxy for tradables as it includes essentially traded goods from agriculture, forestry, and fishing, mining, manufacturing and public utilities.[1] The only drawback is that it excludes traded services. At present several countries are extending the coverage of the PPI to services. The CPI is not as good as a proxy for non-tradables, as it includes both traded and nontraded items of final expenditure. Moreover, the CPI only covers implicitly the prices of intermediate (non-traded) services via their margins in mostly final expenditure prices of goods. The CPI is also affected by prices of imported goods and services and taxes and subsidies. Some authors excluded goods from the CPI to have a better proxy of non-tradables.

Few authors have based the tradables/non-tradables distinction on empirical data. One example is de Gregorio *et al.* (1994), who classified commodities as tradables if at least 10 per cent of domestic production was exported. Using this cut-off point for 14 OECD countries, all manufacturing branches were part of tradables, while all services except transport were part of non-tradables.

1. See draft of Producer Price Manual developed under the auspices of the IMF.

Figure 1.1. **Ratio of price indices of non-tradables to tradables**
January 1990 = 100



N.B. CPI_T = CPI index for tradables; CPI_N = CPI index for non-tradables.

Source: CPI and PPI indices for national statistical offices (INDEC, IBGE, INE and INEGI), see Annex 1.A2.

The 'overshooting' of relative prices seems to be associated with the introduction of fixed exchange rate regimes. *De facto* exchange rate regimes (in contrast to *de jure* regimes (IMF, 1999) are classified here using a score ranging from 2 (fully flexible) to 5 (totally fixed), (Levy-Yeyati and Sturzenegger, 2002).[4] Fixed regimes were introduced in the 1990s varying from a currency board in Argentina (1991-2001) to a crawling peg in Brazil (1990-98) and Mexico (1990-95) (Table 1.1). Although Chile officially also had a crawling peg from 1990 to 1998, in practice it was an almost flexible regime as the central parity was regularly adjusted to market conditions. All countries switched to mostly free floats between 1995 (Mexico) and 2002 (Argentina).

Table 1.1. **Exchange rate regimes in Argentina, Brazil, Chile and Mexico**
1990 – 2002

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Argentina	3	3	5	5	5	5	5	5	5	5	5	5	2
Brazil	3	4	4	4	5	5	4	4	5	2	2	2	2
Chile	2	4	2	2	2	2	2	2	2	2	2	2	2
Mexico	3	5	5	5	5	3	3	2	2	2	2	2	2

1 = inconclusive; 2 = float; 3 = dirty; 4 = dirty/crawling peg; 5 = fix.
Source: Levy-Yeyati and Sturzenegger (2002), with minor adjustments and data completed for 2002.

The price ratio of tradables to non-tradables determines in large part the allocation of resources between the two sectors. The rise of this price ratio in the course of economic development, due to the BS effect, increases the share of the non-tradable sector (public utilities, construction and services) in the economy. This equilibrium trend is accentuated by the growing share of non-tradables in final demand (Engel's law) as *per capita* income rises.

Table 1.2. **Contribution of tradables and non-tradables to employment and GDP growth**
Annual average growth rates, 1990-2002

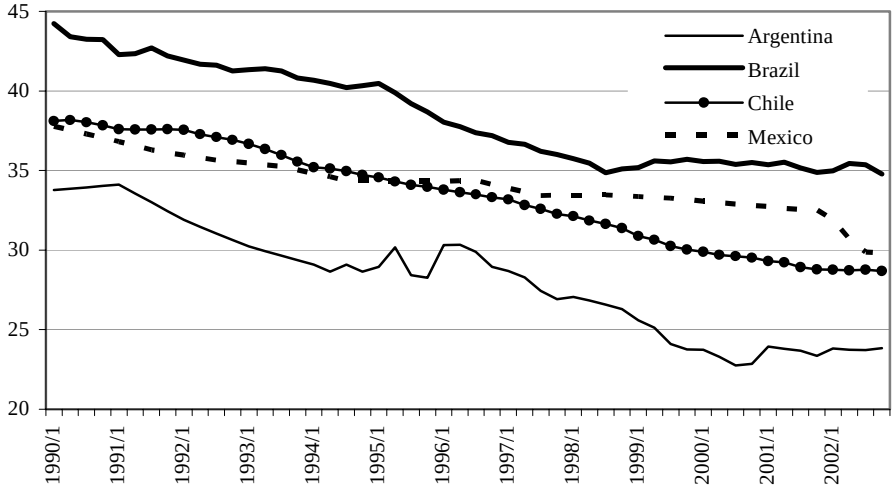
		Exchange rate regime	Employment			GDP		
			Total	Tradables	Non-tradables	Total	Tradables	Non-tradables
Argentina	1991-2001	Fixed	1.4	-2.3	3.1	2.6	1.6	3.1
	2002	Flexible	-9.2	-8.9	-9.3	-10.9	-7.9	-10.6
Brazil	1990-93	Flexible	0.7	-1.1	2.0	2.0	3.8	0.7
	1994-98	Fixed	0.2	-3.1	2.3	2.6	3.2	1.9
	1999-2002	Flexible	2.0	1.7	2.2	2.4	1.9	2.4
Chile	1990-98	Fixed	2.4	0.1	3.7	7.6	4.5	7.1
	1999-2002	Flexible	0.5	-1.5	1.3	3.1	3.4	2.5
Mexico	1990-94	Fixed	2.1	0.1	3.2	3.5	2.6	4.2
	1995-2002	Flexible	2.1	0.4	2.9	3.9	3.8	3.2

Note: regimes are classified as "fixed" (scores 4-5) and "flexible" (scores 2-3) according to scores in Table 1.1.
Source: National accounts, see Annex 1.A2.

However, in the short and medium run labour and investment incentives and in turn growth in each sector are also affected by the other factors outlined above, in particular the fixed trade regimes (Table 1.2 and Figure 1.2). For example, employment in the non-tradable sector increased most rapidly during periods of fixed exchange rate regimes: Argentina (entire decade of 1990s), Brazil (1994-98) and Mexico (1990-95). The change to more flexible regimes seems to have levelled off the growth of the share of non-tradables in employment, in particular for Brazil after 1998 and Mexico after 1995 (Figure 1.2). The 'misalignment' of relative prices had a smaller impact on the composition of GDP. During the 'fixed' regime periods in Argentina (1991-2001), Chile (1990-99) and Mexico (1990-95), the non-tradable share in GDP increased around one percentage point (Figure 1.3). During the periods with flexible regimes in Chile and in particular Mexico, the non-tradable share fell. The exchange rate regimes, via their impact on relative prices, also altered the composition of the tradable sector (Figure 1.4).

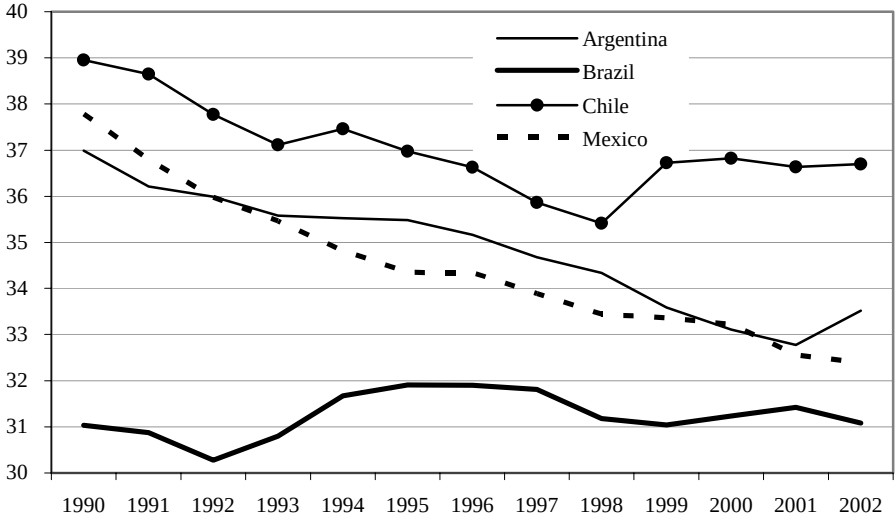
Although the share of agriculture and mining seems mostly unaffected by exchange rate regimes, the size of manufacturing was negatively (positively) affected by fixed (flexible) regimes.

Figure 1.2. **Share of tradable sector in employment, 1990-2002**
In per cent



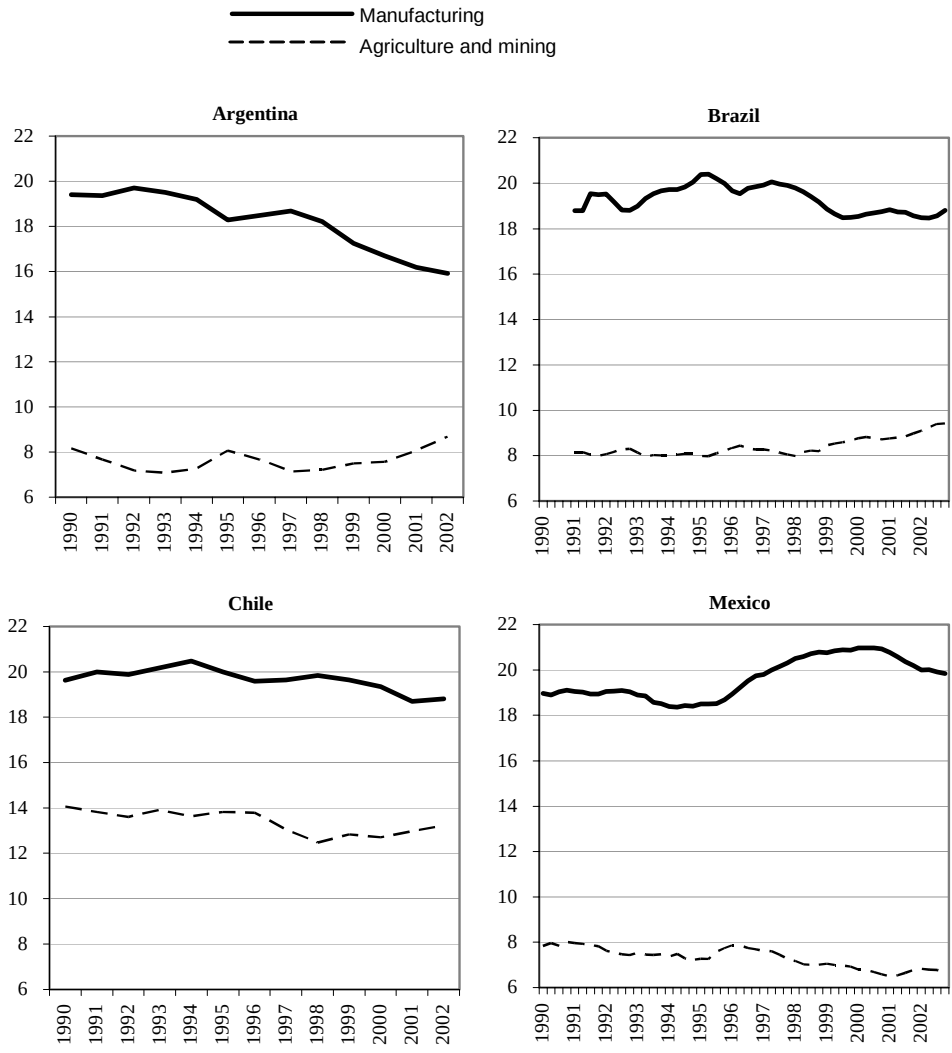
Source: National sources (Annex 1.A2).

Figure 1.3. **Share of tradable sector in real GDP, 1990-2002**
In per cent



Source: National sources (Annex 1.A2).

Figure 1.4. **Share of tradable sectors in real GDP, 1990-2002**



Source: National sources (Annex 1.A2).

Explaining relative prices: Balassa-Samuelson and extensions

The continuous rise of the real exchange rate (Pn/Pt) in the process of economic development is a much studied phenomenon in the economic literature, starting in particular with two seminal articles by Balassa and Samuelson in 1964 (Annex 1.A1). The BS model is a traditional two-country, two-commodity Ricardian trade model amended to include non-tradable goods. In the BS framework, productivity in the tradable sector, given factor price equalisation, determines the price of non-tradables. Economies with higher productivity levels in tradables will have higher wages and thus higher prices of non-tradables. The BS model can be summarised by the following equation (in log-terms):

$$p_n - p_t = p_n = (\frac{\theta_n}{\theta_t})a_t - a_n \qquad (1)$$

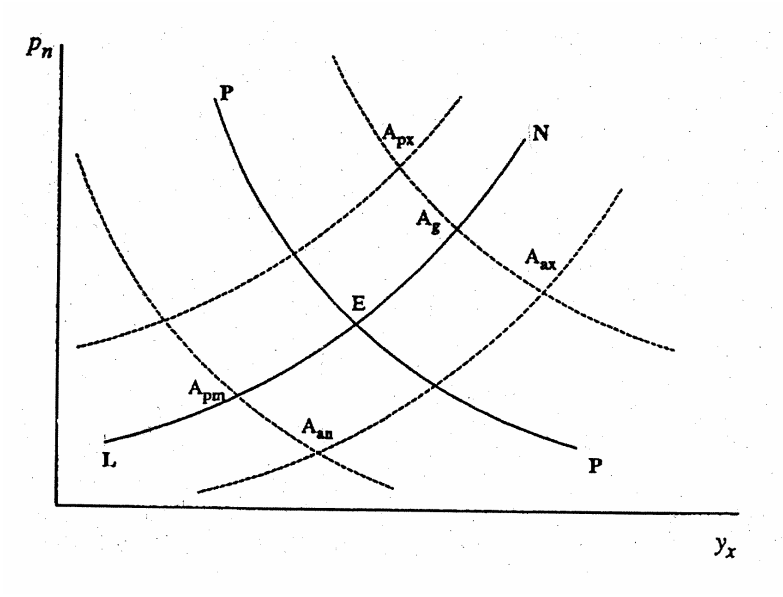
with p denoting prices, a multifactor productivity, θ capital intensity or capital share in value added, and the subscripts t and n the tradable and non-tradable sectors. In the standard BS model, P_n/P_t is determined only by the supply side. If both sectors have equal capital intensities ($\theta_t = \theta_n$), then P_n is determined by the productivity differential between the tradable and non-tradable sectors only. The relative price of the non-tradables even rises when productivity increases at the same rate in both sectors (referred to as *balanced productivity growth*) if the non-tradable sector is more labour intensive than the tradable sector ($\theta_n \rangle \theta_t$).

Demand factors also play a role in determining the relative price if not all of the three basic assumptions of the standard BS model are fulfilled: perfect domestic inter-sectoral mobility of production factors, perfect competition and perfect international capital mobility.

The BS model can be extended with demand variables, see Annex 1.A1 (based on Gregorio and Wolf, 1994). This model can be used to illustrate how the relative price of tradables to non-tradables affects the size of the tradable sector in the economy, (Figure 1.5). The allocation of resources between tradables and non-tradables is determined by relative prices (equation A.7) and illustrated by the *PP* curve. It is downward sloping for the following reason. As capital is assumed internationally immobile, the production of the exportable good is subject to decreasing returns to scale.

In this case wages depend not only on p_x but also on the scale of production of exportables. A fixed capital stock implies that the marginal productivity of labour falls with the level of production. In order to equalise marginal costs and the given world price, wages – and the price of non-tradables – decline with the quantity of produced exportables. An increase in a_x or p_x causes an increase in wages for a given level of production of exportables, which in turn raises the price of non-tradables, leading to an upward shift of the curve. In contrast, an increase in a_n reduces p_n for a given quantity of produced non-tradables and wages and causes a downward shift of the *PP* curve.

Figure 1.5. **Comparative statics between the goods sector and labour market**



Source: de Gregorio and Wolf (1994).

The equilibrium in the non-tradables and labour market (equation A.3) is illustrated by the NL (non-tradable and labour market equilibria) curve. The upward slope represents the need for a higher price of non-tradables to reduce the demand for non-tradables in order to shift labour to exportables (equation 8). This curve shifts downwards when:

a. a_x increases, as for a given level of y_x, p_n must fall to raise demand and shift the released labour to non-tradables;

b. a_n increases, which also requires p_n to fall in order to increase demand;

c. the price of the imported good (p_m) rises, assuming a low elasticity of substitution, which lowers disposable income; and

d. an increase in a_n requires a reduction in p_n to increase demand.

This curve shifts upwards when:

a. p_x increases, which raises income and hence the demand for non-tradables In order to clear, the market supply must rise. In the situation of capital immobility supply will rise thanks to a resources shift which is possible if p_n rises; and

b. government spending g increases, raising the demand for non-tradable goods. It requires an increase in p_n to shift labour from exportables to non-tradables.

To summarise, the price of non-tradables is affected by changes in productivities, prices of exports and imports and government spending:

$$P_n = F(a_x \quad a_n \quad p_x \quad P_m \quad g)$$
$$\qquad\quad ? \quad - \quad + \quad - \quad +$$

A rise in p_x increases p_n and the production of tradables (y_x). A rise in a_n decreases p_n but has an ambiguous effect on the production of tradables (y_x). In contrast, an increase in a_x has an ambiguous effect on p_n but increases y_x. When p_m increases and the income effect is dominant, p_m falls.

The impact of fixed exchange rate regimes

This chapter adds fixed exchange rate regimes to the above model. Fixed regimes affect the real exchange rate in at least two ways. Firstly, they put a downward pressure on the price of tradables. The model above assumes that the law of one price applies to the tradable sector:

$$p_t = p^*_t \, e.$$

This assumption is confirmed for the countries of our sample being price takers. Given the prices of a country's trading partners, international price equalisation occurs either through the nominal exchange rate or the domestic price of tradables. Under a flexible regime, the nominal exchange rate (e) ensures international price equalisation. However, with a fixed regime, the adjustment is through the domestic price of tradables (p_t). In the model, a fixed exchange rate regime puts a downward pressure on p_t, and real wages for a given level of exports, which in turn lowers the price of non-tradables; that is the PP curve shifts downwards.

Secondly, fixed regimes put an upward pressure on the price of non-tradables, in particular in countries with free entry and exit of portfolio capital. To maintain fixed regimes, countries are obliged to adopt high nominal interest rates which in turn attract large capital inflows. These often translate into an expansion of domestic credit, increasing domestic demand for tradables and non-tradables. To increase the supply of non-tradables, a rise of p_n is needed to shift labour from exportables to non-tradables. This is represented in Figure 1.5 by an upward shift of the LN curve. In the new equilibrium the size of the export sector has diminished.

The impact of international transfers of resources linked to capital inflows in emerging countries is much analysed (Edwards 1989; Elbadawi, 1994). Following various studies, summarised in Athukorala and Rajapatirana (2003), we focus on portfolio flows and ignore other types of flows such as foreign direct investment (FDI). This is mainly because the former have an impact on prices of non-tradables. FDI tends to concentrate in the traded sector. Moreover, it is less volatile than portfolio flows and therefore any possible lingering effect on the real exchange rate from surges of inflows is likely to be less important. Econometric results from Athukorala and Rajapatirana (2003), analysing the impact of capital inflows on the real exchange rate in Latin America and Asia from 1985 to 2000, also confirm the predominant impact of portfolio inflows relative to FDI.

Determinants of the real exchange rate in A-B-C and Mexico

The model

This section assesses the importance of the determinants of relative price of non-tradables to tradables outlined above: the labour productivity differential between both sectors (*BS*), government expenditure (*GE*), terms

of trade (*TOT*), and exchange rate regime dummy (*Du*)[5] and lagged portfolio inflows (*PI*).[6]

Stationarity tests (Augmented Dickey-Fuller, ADF, 1979) show that all series except portfolio inflows are non-stationary, *i.e.* their stochastic properties are not invariant with respect to time (Annex 1.A2). As a consequence we test the model in a co-integrated form. An univariate test is used, according to which an equation is estimated with the ordinary least squares (OLS) procedure. Subsequently the stationarity of the residual is tested using ADF. The Engle-Yoo statistics used to interpret the ADF values confirm co-integration between the variables for all countries at the 1 per cent threshold level for Argentina and Brazil and at the 5 per cent level for Chile and Mexico.

A log-linear specification of the model is used in order to interpret the coefficients as elasticities:

$$\ln(Pn\ /P_t) = \alpha_0 \ln(BS) + \alpha_1 \ln(GE) + \alpha_2 \ln(TOT) + \alpha_3 (PI_{t-1}) + \alpha_4 Du \tag{2}$$

As the variables are non-stationary, the possible endogeneity of the explanatory variables does not allow us to carry out standard significance tests. Instead the Stock and Watson (1993) method[7] is used according to which three leads and three lags of the explanatory variables in difference terms are added to the OLS regression. The same method was used by Allard-Prigent *et al.* (2000) and Duval (2001a, 2001b). Adding the leads and lags, the following equation is tested for Argentina, Brazil, Chile and Mexico separately using quarterly data for 1990-2002 (Table 1.3):

$$\begin{aligned}\ln(Pn/Pt) &= \alpha_0 \ln(BS) + \alpha_1 \ln(GE) + \alpha_2 \ln(TOT) + \alpha_3 PI_{t-1} + \alpha_4 Du \\ &+ \sum_{i=-3}^{+3} \Phi_i \Delta BS_{t-i} + \sum_{i=-3}^{+3} \Psi_i \Delta GE_{t-i} + \sum_{i=-3}^{+3} \Theta_i \Delta TOT_{t-i} + \sum_{i=-3}^{+3} \Omega_i \Delta PI_{t-i}\end{aligned} \tag{3}$$

where $\Delta X_t = X_t - X_{t-1}$.

Table 1.3. **Determinants of price of non-tradables to tradables, quarterly data**
1990 Q1 – 2002 Q4

	Argentina	Brazil	Chile	Mexico
Period	1990:1-2002:4	1994:1-2002:4	1990:1-2002:4	1990:1-2002:4
Explanatory variables				
Ln PROD (Balassa-	**0.72**	**0.74**	**0.36**	**0.74**
Samuelson)	(*7.60*)	(*4.11*)	(*3.30*)	(*6.56*)
Ln GOV (government	**NS**	**NS**	**NS**	**-0.04**
expenditure)	*NS*	*NS*	*NS*	(*-5.71*)
Ln TOT (terms of trade)	**NS**	**NS**	**1.97**	**0.41**
	NS	*NS*	(*10.36*)	(*3.85*)
Ln FP (exchange rate	**0.44**	**0.21**	**NS**	**0.16**
regime)	(*9.23*)	(*5.65*)	*NS*	(*7.48*)
Ln PI (portfolio	**5.19**	**8.98**	**NS**	**NS**
inflows)	(*3.81*)	(*7.85*)	*NS*	*NS*
Durbin-Watson	1.13	1.69	0.99	0.78
ADF statistic (lag)	-4.156 (0)	-2.596 (1)	-2.596 (4)	-2.100 (3)
10 per cent critical value	-1.61	-1.61	-1.61	-1.61
Number of observations	48	34	45	45

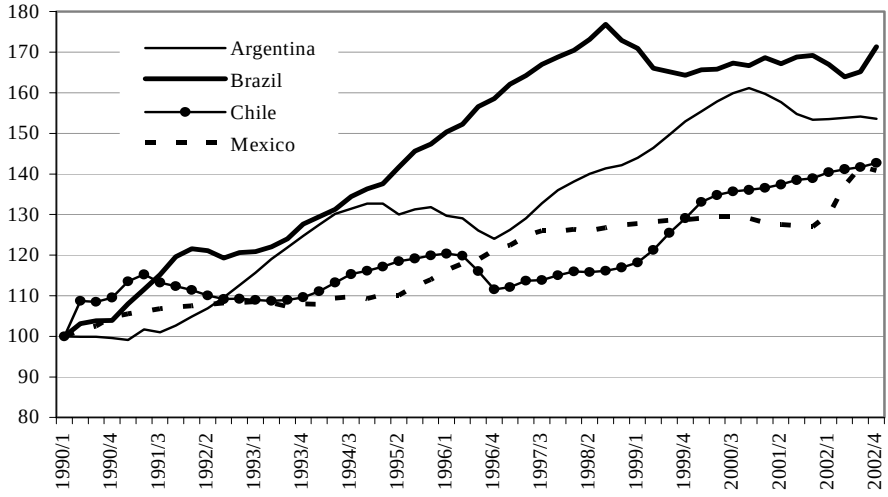
Note: values in parentheses are t-statistics.

The Balassa Samuelson Effect

In the long run the relative price of non-tradables to tradables is mainly driven by the differential in multi-factor productivity (MFP) growth between the non-tradable and tradable sector. Wages in the tradable sector are set by the productivity level, whereas wages in the non-tradable sector adapt to those in the tradable sector. As productivity growth in non-tradables is lower than tradables, the price of the former increases relative to the latter. As MFP could not be calculated for the four countries due to the absence of data on capital stocks by sector, we used labour productivity as a proxy (Figure 1.6). The increasing trends for all four countries confirm the more rapid productivity growth in the tradable compared to the non-tradable sector. Although a relatively steady trend was observed for the entire period, it seems that fixed regimes exacerbated this differential, as illustrated in Argentina and Brazil. This acceleration mainly originates from the productivity gains in the tradable sector

which were aimed at compensating the loss in price competitiveness due to the fixing of the exchange rate. In Brazil, the large depreciation following the switch to the flexible regime in 1999 caused productivity growth in tradables to stagnate and as a consequence the differential with productivity growth in non-tradables disappeared.

Figure 1.6. **Ratio of indices of labour productivity in tradables to non-tradables**
1990 Q1 = 100



Source: National sources (Annex 1.A2).

The econometric results confirm the BS effect for all countries. The coefficient has roughly the same value except for Chile. The low elasticity for Chile was also found by Delano and Valdes (1999).

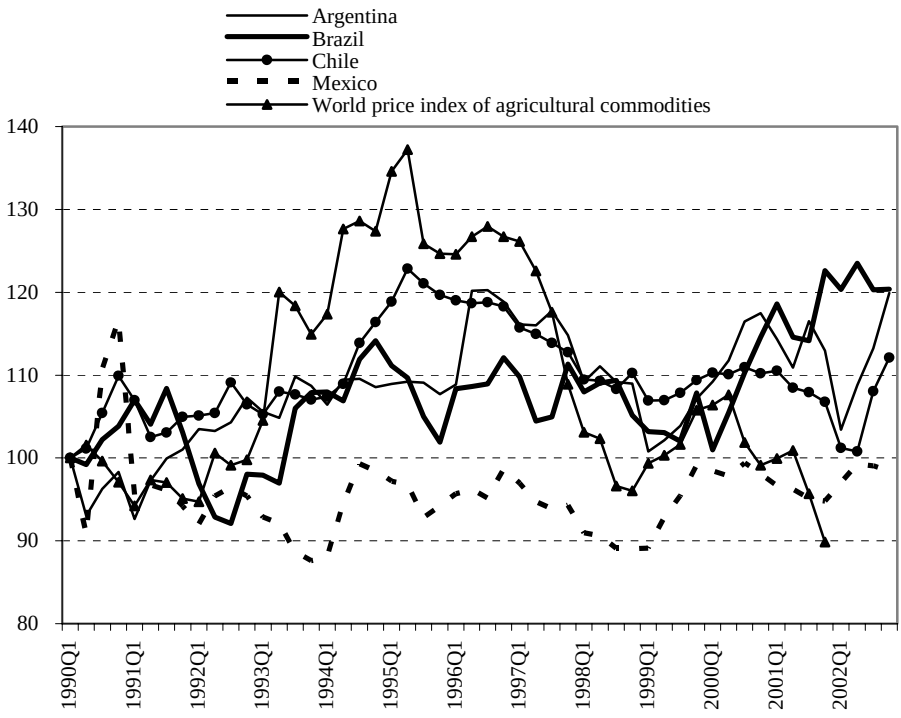
The terms of trade effect

In addition to the supply-side effect, three demand effects are distinguished of which the first is the terms of trade (*i.e.* ratio of export to import prices). Improved **terms of trade** are expected to have a positive impact on the relative price of non-tradables because they increase disposable income, which in turn raises final demand. With supply being

inflexible in non-tradables and the law of one price governing in tradables, the price of non-tradables increases relative to that of tradables.

Terms of trade show relatively large fluctuations for all countries except Mexico and Argentina (Figure 1.7). The flat trend for Argentina is surprising, as (agricultural) commodities account for a substantial share of its export, for which world prices showed relatively large fluctuations. The world price for agricultural commodities increased between 1991 and 1994, but fell afterwards. The terms of trade of Brazil, and to a lesser extent of Chile, paralleled this index. The small fluctuations in Mexico's terms of trade largely stem from the large share of differentiated goods in its exports, whose prices vary less than those of commodities. Terms of trade turn out to be a significant determinant of relative prices only in Chile and Mexico. In Chile, the terms of trade are the most important determinant of relative prices.

Figure 1.7. **Terms of trade**
Ratio of export price to import price, 1990 Q1 = 100

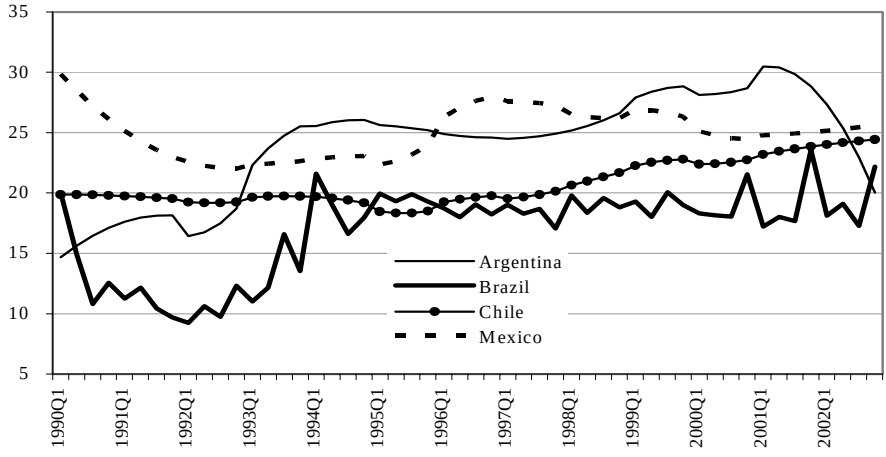


Source: National sources (Annex 1.A2).

Government expenditure

An increase in **government expenditure** as a share of GDP raises the price of non-tradables as the largest part of this spending falls on non-tradables whose supply is relatively inflexible. Government spending as a percentage of GDP increased in Argentina and Chile and fell in Mexico (Figure 1.8). This variable turns out significant in Brazil and Mexico, although it has an unexpected sign in the case of Mexico. A negative sign is also found in other studies, and is usually interpreted as an indication that most government spending is on tradables instead of non-tradables (Duval, 2001*b*).

Figure 1.8. **Government expenditure as a percentage of GDP at current prices**



Source: National sources (Annex 1.A2).

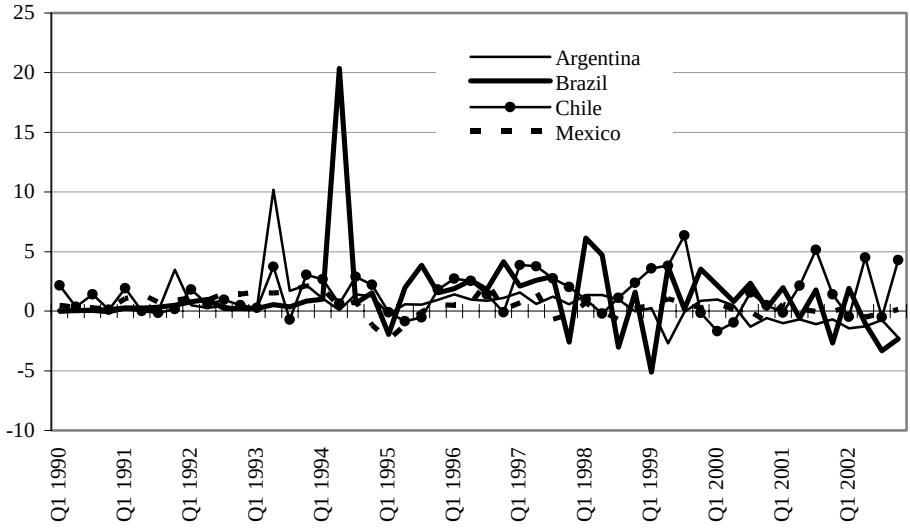
Exchange rate regime

The **exchange rate regime dummy** is highly significant in all countries except Chile, which confirms that in the other three countries the exchange rate regime had an impact on relative prices. In Chile, the bands around the crawling pegs were repeatedly broadened to adjust to market conditions between 1990 and 1998 and as such the country had a relatively flexible regime in practice. Chile experienced a smooth transfer form a crawling band to a fully flexible regime in 1999.

The demand effect of fixed exchange regimes is captured by **portfolio inflows**.[8] They are significant in Argentina and Brazil; inflows were highest

during the a large part of the fixed exchange rate regimes (in Argentina 1992-98 and Brazil 1994-97) (Figure 1.9). The Chilean case is very interesting because it was the only country with controls on short-term capital inflows. As a consequence it had a stable level of portfolio inflows which were unaffected by the move to a more flexible exchange rate regime in 1999. Elbadawi and Soto (1997)[9] also found that short-run capital inflows did not affect the real exchange rate in Chile.

Figure 1.9. **Net portfolio inflows as a percentage of GDP**



Source: International Monetary Fund, *International Financial Statistics*.

Box 1.2. **Capital controls in Chile**

In Chile, capital inflows were regulated depending on their character between 1991 and 1999. The least restrictions were on foreign direct investment as it was supposed to have positive externalities on the economy. The only requirement was a minimum stay of one year. In contrast, capital inflows for foreign indebtedness, in particular those of a short-term nature, were much more restricted, as a minimum (non remunerated) reserve requirement of 30 per cent was applied to them. Reserve requirement increased the cost of external financing and as such stemmed inflows.

Concluding remarks

This study deals with the determinants of the real exchange rate defined by the relative price of non-tradables to tradables in A-B-C and Mexico during the period 1990-2002. The literature predicts a long-run upward trend of this relative price linked to the Balassa-Samuelson effect, as well as short and medium-term fluctuations due to demand factors such as government expenditure and terms of trade. Another factor considered in this paper is fixed exchange rate regimes, which explain why relative prices followed a bell-shaped form during 1990-2002. All these countries experienced hyper- or double-digit inflation in the late-1980s and early-1990s. Fixing the exchange rate forced tradable good producers in these "small" countries to stem price increases as they are subject to the law of one price. As non-tradable producers face no international competition, the inflation of non-tradables decelerated at a slower pace. As a result, the relative price of non-tradables to tradables sharply increased. In addition, countries with fixed exchange rate regimes, except Chile, attracted large capital inflows. These significantly raised final demand, which in turn raised the price of non-tradables relative to tradables, mostly so in Argentina and Brazil. When fixed regimes come to an end, the currencies depreciated and capital fled out of these countries, reversing the relative price trends.

The econometric results confirm the impact of exchange rate regimes on relative prices in all countries except Chile. In Argentina and Brazil, fixed exchange regimes also affected relative prices indirectly via portfolio inflows, in the context of liberalised capital accounts, which increased final demand. The other variables 'explaining' relative price movements are Balassa-Samuelson (all countries), government expenditure (Brazil and Mexico) and terms of trade (Chile and Mexico).

The chapter also illustrates the effect of constrained exchange rates, via their impact on relative prices, on the allocation of resources. During the fixed regime periods, the share of the non-tradable sector increased disproportionally at the expense of the tradable sector. This reallocation is most accentuated in employment, but can also be seen in GDP.

In addition to relative prices, resource allocation can also be explained in terms of access to finance. Tornell and Westermann (2002) show a positive correlation between the ratio of non-tradables to tradables output and credit growth for a sample of 39 middle-income countries between 1980 and 1999. They explain the bell-shaped ratio of non-tradables to tradables output by asymmetries of financing opportunities across non-tradable and tradable sectors. Although the tradable sector has access to both domestic and foreign finance, the non-tradable sector depends almost completely on domestic bank credit. The authors show that banks over-expose themselves

to the non-tradable sector during lending booms, but disproportionally cut credit to this sector during a credit crunch. These trends mostly parallel the fixed and subsequent flexible regime periods and reinforce the factor reallocation underlined in this chapter.

Several (policy) conclusions can be drawn. Firstly, in setting macro-economic (exchange rate) policy, countries should be aware of the impact on the domestic price structure and the linked factor allocation across the tradable and non-tradable sectors. Secondly, countries should carefully consider the pros and cons of free entry of (short term) capital. The fixation of the exchange rate may cause large portfolio inflows which raise demand and the relative price of non-tradables to tradables. Thirdly, it seems important to increase competition in the non-tradable sector as a lack of it in countries such as Argentina contributed to the large increase in the price of non-tradables relative to tradables.

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Annex 1.A1.
Explaining relative prices: Balassa-Samuelson and extensions

The continuous rise of the real exchange rate (P_n/P_t) in the process of economic development is a much studied phenomenon in the economic literature, starting in particular with two seminal articles by Balassa and Samuelson in 1964. Later on their model was extended with other determinants of relative prices.

The Balassa-Samuelson model[10]

Balassa (1964) and Samuelson (1964) (BS) independently explained systematic trends in relative prices of non-tradables to tradables across countries. The BS model is a traditional two-country, two-commodity Ricardian trade model amended to include non-tradable goods. There are two commodities (tradable (t) and non-tradable (n)) and two production factors (Labour (L) and capital (K)). The price of tradables follows the law of one price equated – under perfect competition – with marginal costs. K and L are perfectly mobile across sectors domestically, but only K is perfectly mobile internationally. Hence a small open economy takes the world interest rate (r) as given. Wages (w) are determined by marginal costs and the world price of tradables. In the BS framework, productivity in the tradable sector, given factor price equalisation, determines the price of non-tradables. Economies with higher productivity levels in tradables will have higher wages and thus higher prices of non-tradables.

The BS model can be summarised by the following equations. The tradable and non-tradable sectors are characterised by Cobb-Douglas production functions:

$$Y_t = A_t L_t^{\theta_t} K_t^{1-\theta_t}$$

$$Y_n = A_n L_n^{\theta_n} K_n^{1-\theta_n} \qquad \text{(A.1)}$$

Under perfect competition, the following conditions for profit maximisation of firms hold. In the tradable sector:

$$\begin{aligned} w &= \theta_t A_t L_t^{\theta_t - 1} K_t^{1-\theta_t} = \theta_t A_t k_t^{1-\theta_t} \\ r &= (1-\theta_t) A_t L_t^{\theta_t} K_t^{-\theta_t} = (1-\theta_t) A_t k_t^{-\theta_t} \end{aligned} \tag{A.2}$$

and in the non-tradable sector:

$$\begin{aligned} w &= P_n \theta_n A_n L_n^{\theta_n - 1} K_n^{1-\theta_n} = P_n \theta_n A_n k_n^{1-\theta_n} \\ r &= P_n (1-\theta_n) A_n L_n^{\theta_n} K_n^{-\theta_n} = P_n (1-\theta_n) A_n k_n^{-\theta_n} \end{aligned} \tag{A.3}$$

with k being the capital-labour ratio and P being prices.

By log-differentiating the three previous equations, the BS effect can be generalised as follows:

$$p_n - p_t = p_n = (\frac{\theta_n}{\theta_t}) a_t - a_n \tag{A.4}$$

with the small letters denoting the logarithm of variables. In the standard BS model, P_n/P_t is determined only by the supply side. If both sectors have equal capital intensities ($\theta_t = \theta_n$), then P_n is determined by the productivity differential between the tradable and non-tradable sectors only. The relative price of the non-tradables even rises when productivity increases at the same rate in both sectors (referred to as *balanced productivity growth*) if the non-tradable sector is more labour intensive than the tradable sector ($\theta_n \rangle \theta_t$).

Extensions of the BS model

Demand factors also play a role in determining the relative price if not all of the three basic assumptions of the standard BS model are fulfilled: perfect domestic inter-sectoral mobility of production factors, perfect competition and perfect international capital mobility. With imperfect competition in the non-tradable sector, an increase in the demand for tradables and non-tradables will increase only the price of the latter, as for the former the "law of one price" holds. In contrast, in the non-tradable sector, monopolistic competition allows producers to increase their prices (Allard-Prigent *et al.*, 2000). In the case of imperfect international capital mobility, the supply of tradables relative to non-tradables is no longer infinitely elastic to relative prices.[11] In this context, the relative price also becomes dependent

on demand variables (Bergstrand, 1991; Froot and Rogoff, 1991, 1994; Rogoff, 1992; De Gregorio *et al.*, 1994).

Demand factors are partly related to economic development. Firstly, primary and manufactured goods are substituted for non-tradables with increases in *per capita* income, also referred to as Engel's law. An increase in the relative demand for non-tradables raises their relative price. Secondly, government spending as a percentage of GDP also tends to increase with economic development. As most government spending is on non-tradables, it increases their price. Other demand variables are terms of trade, trade barriers, and capital inflows.

The BS model can be extended with demand variables (Gregorio and Wolf, 1994).[12] Exports are produced but not consumed domestically. Hence, individuals consume a quantity of an importable good c_m available at the given world price p_m and the non-tradable good c_n at the price p_n. Consumers maximise their utility[13] subject to the budget constraint:

$$p_n c_n + p_m c_m = I \tag{A.5}$$

where *I* denotes after tax incomes. The demand function[14] for each good is deduced from the utility function and budget constraint. The model assumes that government spending is entirely on non-tradables. The government uses tax revenues, *r*, to finance spending on non-tradables (of volume *g*): $r = p_n g$. Then the after tax income is:

$$I = p_x y_x + p_n (y_n - g) \tag{A.6}$$

The equilibrium price of non-tradables[15] depends on the equilibria in the markets for tradables and labour. The price of non-tradables that ensures equilibrium (prices and marginal costs) in the tradable sector is:

$$p_n = \frac{p_x \alpha}{a_n} \left(\frac{y_x^{1-\alpha}}{a_x}\right)^{\frac{-1}{\alpha}} \tag{A.7}$$

The equilibrium in the labour market is given by $L = L_x + L_n$. Equilibrium in the non-tradable market implies: $c_n + g = a_n L_n$. The combination of these equilibrium conditions with the demand function yields the joint equilibrium in the markets for labour and non-tradables:

$$\bar{\phi}\,\frac{p_x}{p_n}\,y_x + (1-\bar{\phi})\left(\frac{y_x}{a_x}\right)^{1/\alpha} = (1-\bar{\phi})\left[a_n L - g\right], \text{ where}$$

$$\bar{\phi} = \phi^{\gamma}\,\frac{p_n^{1-\gamma}}{\phi^{\gamma}\,p_n^{1-\gamma} + (1-\phi)^{\gamma}\,p_m^{1-\gamma}} \qquad \text{(A.8)}$$

Annex 1.A2.
Data Sources

Price indices:

Argentina: monthly consumer price index of the metropolitan area of Buenos Aires (*Indice de Precios al Consumidor*, IPC): for 1990-95 by nine expenditure groups from INDEC and from 1996 onwards by 50 expenditure categories from FIDE and INDEC. Wholesale price index (*Indice de Precios Mayoristas*) from INDEC.

Brazil: consumer price index: from 1991 onwards *Índice de Preços ao Consumidor Amplo* (IPCA) from IBGE, *Banco de Dados Agregados – Sistema IBGE de Recuperação Automática* (SIDRA); linked to *Indice Nacional de Preços ao Consumidor* for 1990 from IPEA, IPEADATA - *Base de Dados Macroeconômicos*. Wholesale price index (Indice de preço por atacado-disponibilidade interna (IPA-DI) from IPEADATA.

Chile: consumer price index (*Indice de Precios al Consumidor*) broken down by 30 expenditure categories and producer price index (*Indice de Precios al por Mayor*) from INE.

Mexico: consumer price index (*Indice de Precios al Consumidor*) and producer price index (*indice de precios productor*) from Banco de México, *Información Financiera y Económica, Indicadores Económicos y Financieros.*

Value Added:

Argentina: quarterly value added at constant and current prices from Dirección Nacional de Cuentas Nacionales, Ministerio de Economia.

Chile: quarterly value added at current and constant prices (breakdown into 13 sectors) from Banco Central, *Base de Datos Economicos*. Quarterly employment from 2001 onwards from ECLAC

Brazil: quarterly value added at current and constant prices (breakdown into agriculture, industry and services only) from IBGE, *SIDRA*.

Mexico: quarterly value added at current and constant prices (breakdown into 9 sectors) from INEGI, *Banco de Información Económica* (BIE).

Employment:

Argentina: Ministry of the Economy, Dirección de Ocupación e Ingresos, Secretaría de Política Económica, on the basis of data from Sistema Integrado de Jubilaciones y Pensiones, provisto por AFIP.

Chile: Quarterly employment from INE, *Encuesta Nacional del Empleo*.

Brazil: IPEA, *Base de Dados Macroeconômicos*.

Mexico: same source as value added.

Net capital inflows: national sources and IMF, *International Financial Statistics*, Washington DC.

Government expenditure: Brazil: IBGE, *Contas Nacionais Trimestriais.* Other countries: IMF (various issues), *World Economic Outlook*, Washington DC.

Terms of trade: Chile, Central bank, *Base de Datos Económicos.*

Table 1.A2.1. **The results of ADF root test**

	Test stat	lags	10 % critical value	Degree of Integration
		Argentina		
PN	-3.12	1	-2.6	0
TOT	-1.91	0	-2.6	1
GOVEXP	-1.90	4	-2.6	1
PROD	-2.24	4	-2.6	1
PI	-5.20	0	-2.6	0
D (GOVEXP)	-2.65	3	-2.6	**0**
D(PROD)	-3.08	3	-2.6	**0**
D(TOT)	-6.10	1	-2.6	**0**
		Brazil		
PN	-1.18	2	-2.6	1
TOT	-1.76	0	-2.6	1
GOVEXP	-1.35	1	-2.6	1
PROD	-1.83	1	-2.6	1
PI	-7.24	0	-2.6	0
D (PN)	-4.25	1	-2.6	**0**
D (TOT)	-7.38	0	-2.6	**0**
D (GOVEXP)	-11.32	0	-2.6	**0**
D (PROD)	-4.01	0	-2.6	**0**
		Chile		
PN	-2.37	4	-2.6	1
TOT	-1.77	2	-2.6	1
GOVEXP	1.33	4	-2.6	1
PROD	0.27	4	-2.6	1
PI	-6.14	0	-2.6	0
D (PN)	-6.18	1	-2.6	**0**
D (TOT)	-5.46	1	-2.6	**0**
D (GOVEXP)	-4.28	3	-2.6	**0**
D (PROD)	-3.39	3	-2.6	**0**
		Mexico		
PN	-2.95	4	-2.6	0
TOT	-5.23	3	-2.6	0
GOVEXP	-1.64	4	-2.6	1
PROD	-0.54	1	-2.6	1
PI	-3.16	3	-2.6	0
D (PROD)	-4.01	0	-2.6	**0**
D (GOVEXP)	-2.73	4	-2.6	**0**

Notes

1. The common definition of real exchange rate is (in logarithms) $q = e + p - p^*$, with e, p and p^* being the exchange rate, and the domestic and foreign *total economy* price levels respectively. This equation can be decomposed in two parts: $q = q_e + \alpha\,[(p_t - p_n) - (p_t^* - p_n^*)]$ with α being the share of the non-tradable sector in GDP. $q_e = e + p_t - p_t^*$ is the real exchange rate in the tradable sector, and $[(p_t - p_n) - (p_t^* - p_n^*)]$ the difference between the tradable and non-tradable price differentials of two countries. Assuming the law of one price in the tradable sector, a constant and similar share of non-tradables in aggregate price indices, and a 'given' foreign price differential between tradables and non-tradables, the real exchange rate becomes $q \bullet p_t - p_n$.

2. Note that this result also depends on the wage equalisation across sectors and the fact that productivity increases in the tradable sector are typically higher in the less developed countries.

3. In the paper, the real exchange rate and relative price of non-tradables to tradables are used interchangeably, having the same meaning.

4. In contrast to the "official" exchange rate regime classification, Levy-Yeyati *et al*. (2002) propose a *de facto* classification that reflects the actual regimes in place. They record regimes according to the behaviour of three variables: changes in the nominal exchange rate, the volatility of these changes, and the volatility of international reserves. These are the key variables of the textbook definition of exchange rate regimes. Fixed exchange rate regimes are associated with substantial changes in international reserves aimed at reducing the volatility in the nominal exchange rate. Alternatively, flexible regimes are characterised by substantial volatility in nominal rates with relatively stable reserves.

5. The exchange rate dummy is 0 for flexible regimes (score 2-3, see Table 1) and 1 for fixed regimes (score 4-5).

6. Following Edwards (1989).

7. The Stock and Watson method is a robust single equation approach that corrects for regressor endogeneity by the inclusion of leads and lags of first differences of the regressors.

8. At the end of the 1980s, Latin American countries opened their capital account as part of a larger liberalisation programme. The financial liberalisation involved the removal of interest-rate ceilings, the privatisation of the financial system and the elimination of exchange risk. This led to a major increase in international lending. The pegged exchange rate and high nominal domestic interest rates were the main factors behind the increase in short-term capital inflows, *i.e.* portfolio inflows (Mishkin, 2001).

9. They tested the long-run impact of capital flows on the Chilean RER in the period 1960-92. With co-integration and an error-correction model they confirm that short-term capital flows and portfolio investment have no influence on the equilibrium real exchange rate (ERER). Instead the ERER turns out to be determined by the long-term capital flows and direct foreign investment.

10. The presentation here of BS is based on Froot and Rogoff (1994). For other presentations, see Balassa (1964), Samuelson (1964), Asea and Corden (1994), Halspern and Wisplosz (2001), and Duval (2001b).

11. An increase in the demand for non-tradables raises their price and shifts production from tradables to non-tradables. Since the production of tradables is supposed to be more capital intensive, their relative price decrease causes the rental price of capital to fall. With perfect capital mobility, capital will flow out of the country and the domestic capital stock falls. This reduces the production of tradable goods, *i.e.* an increase in the relative production of non-tradable goods. With higher relative supply, the non-tradable sector will reduce the relative price of its products. This is turn will increase the rental rate of capital and restore equilibrium. In this framework, the relative supply of the non-tradable sector is infinitely elastic to its price (Duval 2001).

12. Another explanation of the rise in the relative price of non-tradables during economic development is given by Kravis and Lipsey (1983) and Bhagwati (1984). They assume that capital accumulation allows the tradable sector (mostly manufacturing) to adopt more capital-intensive techniques. This increases the price of labour relative to capital, which in turn raises the relative price of non-tradables due to wage equalisation across sectors. This result holds only when capital is *not* perfectly mobile internationally, which implies that the rental rate of capital is endogenous. The domestic rental rate of capital does not adjust to international markets but varies as a result of capital accumulation.

13. The CES utility function is as follows: $U = \left\{ \phi c_n^{\frac{\gamma-1}{\gamma}} + (1-\phi) c_m^{\frac{\gamma-1}{\gamma}} \right\}^{\frac{\gamma}{\gamma-1}}$.

14.
$$c_n = \phi^{\gamma} \frac{I}{p} \left(\frac{p_n}{p} \right)^{-\gamma}$$
$$c_m = (1-\phi)^{\gamma} \frac{I}{p} \left(\frac{p_m}{p} \right)^{-\gamma}$$

15. Here the relative price of non-tradables (p_n / p_t) is reduced to p_n because p_t equals the exogenous world price.

2. How Market Imperfections and Trade Barriers Shape Specialisation: *South America vs. OECD*

by Joaquim Oliveira Martins and Tristan Price*

ABSTRACT

In this chapter four types of market structure clusters (based on an OECD benchmark) are set out to assess different entry barriers, both endogenous and policy-induced that may affect the ability of enterprises in emerging countries to penetrate international markets. This framework is then applied to compare the trade specialisation of Argentina, Brazil and Chile (A-B-C) with that of three OECD countries, (Ireland, Korea and Mexico).

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Introduction

The pros and cons of being specialised in primary goods (agriculture, raw-materials) have been the subject of a long-lasting policy debate in South American countries, in particular Argentina, Brazil and Chile (hereafter, A-B-C). The message from traditional trade theory in this respect is rather clear. Under the assumptions of internationally perfect competition and product homogeneity, the forces of comparative advantage driving specialisation provide the best possible resource allocation. Hence there is no reason for policy makers to be concerned with the structure of specialisation.[1] However, once one moves away from this 'first-best' setting, to encompass product differentiation and imperfectly competitive markets, the outcome is less clear. A substantive literature on strategic trade policy has developed providing a rationale for policies to influence market outcomes and impact the distribution of income across countries. While this literature is not conclusive, the question policy makers are interested in is whether some patterns of specialisation are more favourable than others for the growth of the tradable sector, which is a key element of sustained economic development.

Theoretical insights on the effect of specialisation on growth fall broadly into two traditions. The first is rooted in Adam Smith's idea that specialisation increases productivity (through 'learning by doing'). The choice of the type of specialisation is, to some extent, irrelevant (Rivera-Batiz and Romer, 1991). The second follows David Ricardo in that different products offer different rates of productivity growth, and hence the choice of specialisation does matter (Grossman and Helpman, 1991). Empirical assessments have not unambiguously established the sense of the relationship between specialisation and growth. For example, Sachs and Warner (1995, 1997) concluded that economies intensively exporting natural resources in the early 1970s tended subsequently to have low rates of growth. Conversely, Dalum *et al.* (1999) find that specialisation in certain products had a relatively higher impact on growth, though this effect diminished over time. Busson and Villa (1994) suggest that greater intra-industry trade, and exports more closely matching the structure of world trade, positively affect growth. There is also an increasing body of evidence showing that it is not so much what you produce, but how you produce it that matters (World Bank, 2001). By combining the use of information and communication technologies (ICT) with human capital and knowledge, an economy can raise productivity growth even if it is specialised in traditional sectors. Policy makers should then strive to diffuse ICT and promote its use as one way to foster overall productivity growth (OECD, 2001).

Against this background, this chapter takes a somewhat different view based upon an analytical framework that shows how different market imperfections interplay with trade to shape countries' international specialisation (as measured by comparative advantages). The chapter also draws a systematic comparison between A-B-C and three OECD countries, Ireland, Korea and Mexico (hereafter IKM), which all have experienced over recent decades a significant change in their trade specialisation. The analytical framework and cross-country comparisons are intended to help guide the policy debate concerning the expansion and diversification of the tradable sector in South America.

The premise is that in the real world markets are imperfectly competitive, albeit to different degrees. This is an overarching feature of recent trade and growth theory models. In this context, the ability to generate export revenues will depend, among other things, on the type of competition and market barriers with which industries are confronted. In markets where competition is by price or quantities, low cost production can be blunted by policy-induced barriers (*e.g.* tariffs); this is typically the case for agricultural products. In markets characterised by competition through product differentiation (either quality or variety), there may be endogenous barriers related to the market power of incumbent firms.

Along these lines, the chapter starts with a discussion of the determinants of market structure. A taxonomy of four different market structure clusters is then established and applied to classify 36 manufacturing sectors for a selection of OECD countries. This establishes a benchmark that is used to assess different market barriers, both endogenous to the competition process and exogenously induced by trade policies, affecting the ability of firms to enter an international market. From this perspective, we investigate the pattern of specialisation and export performance in Argentina, Brazil and Chile, compared with those of Ireland, Korea and Mexico. The chapter finishes by drawing some conclusions for policy.

How market imperfections shape competition

Market imperfections lead firms to compete in ways other than by changing their prices. But given the many dimensions of competition in modern economies, an exhaustive classification of all types of market imperfections seems beyond reach. Nevertheless, certain similarities can be identified. Accordingly, the next section establishes a simplified taxonomy of market structures.

A taxonomy of market structure clusters

The industrial organisation literature has advanced three main explanations for the observed patterns of market structures. First, there is the traditional explanation of concentration by returns to scale. This is the basis for the original structure-conduct-performance paradigm. Market structure is mainly related to exogenous technological conditions (see survey by Panzar, 1989). While this explanation remains valid for some industries, it has become increasingly evident that many patterns of concentration cannot be explained only (or mainly) by the degree of returns to scale. Secondly, the contestable market approach developed by Baumol, Panzar and Willig (1982) enlarged the technological explanations of market structure by introducing the notion of 'economies of scope', related to the existence of multi-product firms. It also stressed the role of sunk costs, rather than economies of scale, as being a major determinant of entry barriers and hence market structure. However, empirical research suggests that the notion of contestability can only be applied to certain extreme cases of 'hit and run' entry with no sunk costs (see Stiglitz, 1987).

The third explanation, dating back to Chamberlain (1933), links market structure to product differentiation. The literature has made the distinction between two main types of product differentiation: *horizontal* and *vertical* (Eaton and Lipsey, 1989). When there is no implicit product ranking by consumers, the taste for variety is valued *per se*, so products are differentiated horizontally. In this case, Dixit and Stiglitz (1977) provided the analytical framework for monopolistic competition equilibrium with a large number of firms, horizontal differentiation and returns to scale at the firm level. Under vertical differentiation all consumers rank products in the same way, thus products can unambiguously be differentiated by quality. Gabszewicz and Thisse (1979) and Shaked and Sutton (1982, 1983) showed that vertical differentiation strategies, and hence market structures, are related to some form of endogenous sunk costs. For example, firms can increase the level of sunk costs by making strategic investments in research and development (R&D) or advertising (see Encaoua, 1989; and Beath and Katsoulacos, 1991).

These three explanations are not mutually exclusive. In real world industries, degrees of economies of scale or scope, sunk costs and product differentiation are combined. But depending on their relative importance, one aspect will tend to dominate the others, thus providing a limited number of market structure prototypes, as suggested by Sutton (1991, 1998). Along these lines, it is possible to work out a framework that reflects the main types of market structures described in the literature.

The nature of equilibrium depends on the market structure. Where products are relatively homogeneous and set-up costs are low, a large number of firms fiercely compete on prices, which are close to marginal cost. Alternatively, in the presence of high fixed costs, firms tend to be larger and have market power. But if products are still homogeneous and prices are similar, quantity competition develops, providing a strong incentive to increase concentration or to develop collusion amongst producers. Where products are differentiated horizontally, the equilibrium configuration comes close to Chamberlain's monopolistic competition. In this case product differentiation sustains demand for new products, leading to a large number of producers. Each firm has market power, but free entry of new firms counteracts the development of excess profits or monopoly rents.

The case where products are differentiated vertically is less straightforward, although some robust conclusions do emerge from the literature. An initial observation is that when products can be ranked by quality they are also ranked by prices: at a given price, consumers buy the highest available quality. Hence, when a new product enters the market at a given price and quality, the lower-quality varieties must compete by lowering their prices. At the lowest quality level, this form of competition will drive firms out of business. Trying to resist the fatal downward pressure on prices, firms respond by striving to improve quality.

There are two main channels through which firms engage in this quality race: R&D and advertising. Firms may undertake intensive R&D to generate product innovations. They may also try to improve perceptions of their product quality by advertising. But R&D or advertising can also be used as a strategic instrument to deter potential entrants with little effect on innovation or performance. In either case, incumbent firms have an incentive to increase sunk costs endogenously, creating a barrier to entry for new firms. These 'natural oligopolies' are characterised by market *segmentation*, where the number of viable firms does not increase in line with market size. In other words, there is a lower bound to concentration and over time large firms dominate the market. This contrasts with *fragmentation* that is typically found under monopolistic competition, where firms are small and industry grows through the creation of new firms rather than expansion of output in existing firms. In this case, concentration tends to decrease together with market size. A stylised presentation of these four market structures is provided in Table 2.1.

Table 2.1. **A taxonomy of market structure clusters**

	Low sunk costs	High sunk costs
Low R&D intensity	**Quasi-perfect competition** Fragmented markets with low product differentiation	**Oligopoly with low product differentiation** Segmented markets with exogenous sunk costs
High R&D intensity	**Monopolistic competition** Fragmented industries with horizontal product differentiation	**'Natural' oligopolies** Segmented markets with vertical differentiation and endogenous sunk costs

As well as summarising different types of market structure, this taxonomy will be used below to investigate the effect of policies on competition. Indeed, market power may not only reflect the characteristics of particular industries, but also policies that interfere with competition. For example, it is difficult to retain a high degree of market power in the domestic market for tradable goods without some degree of border protection: international competition would generally contest market power arising from a strong position in the domestic market.

How to classify industries into market structure clusters

The taxonomy of market structures outlined above[2] can be used to classify industries. The approach relies on two main industry indicators: the level of set-up costs, and the degree of R&D intensity. Following Sutton (1991), set-up costs in an industry can be taken as the capital costs of constructing a single plant of 'minimum efficient scale' (K_M). Given that this data is not available systematically, the assumption made is that the minimum efficient scale corresponds to the output of the median firm. Moreover, the capital-output ratio of the median firm it is assumed to be the same as for the industry as a whole:

$$\frac{K_M}{Q_M} = \frac{K}{Q} \tag{1}$$

Where Q_M stands for the value of output of the median firm, Q for total value of industry output and K for industry capital. Using (1), the ratio of set-up costs relative to market size (*SCR*) in a given industry is:

$$SCR = \frac{K_M}{Q} = \frac{K \cdot Q_M}{Q^2} \tag{2}$$

These set-up costs are assumed to be proportionate to sunk costs, in a way that does not vary across industries. Therefore, the *SCR* can be interpreted as indicating how high are the barriers to entry, which in turn explains tendencies towards fragmentation or segmentation observed across industries.

The second indicator used to classify industries by market structure is *R&D* intensity (*R&D* outlays/Gross output). The previous section suggested that firms could achieve product differentiation either through expenditure on *R&D* or on advertising. This paper focuses mainly on *R&D* intensity for two reasons. Firstly, data on advertising by industry and country is not sufficiently available (some evidence on advertising intensity in the United Kingdom is discussed below). More importantly, expenditure on *R&D* is believed to have spillovers for economic developments that are absent in differentiation purely based on advertising. The measure of *R&D* intensity is computed as the ratio of industry *R&D* expenditure to industry output (*R&D/Q*). Both the *SCR* and the *R&D* intensity indicators were normalised by their value across all industries. This normalisation is needed to facilitate comparison across countries (see Data Annex).

The two indicators were used to classify 36 manufacturing sectors of the OECD STAN Database into the four market structure groupings. Comparable date on size distribution of enterprise by sectors was only available for the G-5 countries that are used as a benchmark. The results are presented in Table 2.2. Industries were first ranked industries by the SCR indicator. Comparisons with qualitative information on market structures are also provided in the table. The two sources of information are remarkably coherent and hence the qualitative information was used to establish the threshold distinguishing Fragmented from Segmented structures. Following this first step, within each group, industries were ranked according to *R&D* intensity. The threshold used to split low from high *R&D* industries was the average *R&D* intensity for total manufacturing. An observable quantum leap in the value of the indicator at this point suggests that this is a reasonable approach.[3]

Table 2.2. **Market structure indicators and clusters for the G-5 countries**

OECD STAN		A Qualitative information	B Sunk Costs indicator[1]	C R&D Intensity[1]
	Low Sunk costs, low-R&D (FL)			
3220	Wearing apparel	F	2	16
3810	Metal products	F	2	35
3112	Food products	F/S	3	15
3420	Printing and publishing	F	4	17
3320	Furniture	F	5	8
3560	Plastic products	F	5	57
3210	Textiles	F	5	11
3310	Wood products	F	6	7
3690	Non-metal products	F	7	39
3410	Paper products and pulp	F	14	12
3230	Leather products	F	15	13
3240	Footwear	F	19	14
	High sunk costs , low R&D (SL)			
3130	Beverages	F/S	41	29
3720	Non-ferrous metals	S	126	54
3610	Pottery and china	F/S	133	50
3620	Glass products	S	139	43
3550	Rubber products	S	154	66
3710	Iron and steel	S	157	40
3841	Shipbuilding and repair	S	169	69
3530	Petroleum refineries	S	858	36
3140	Tobacco products	S	921	30
	Low sunk costs, high R&D (FH)			
3829	Non-electrical machinery and equipment	F	3	105
3900	Other manufacturing	F	4	111
3850	Professional goods	F	19	276
	High sunk costs, high R&D (SH)			
3839	Electrical machinery and equipment	S	32	154
3510	Industrial chemicals	S	81	131
3522	Drugs and medicines	S	88	612
3529	Chemical products	F/S	90	141
3843	Motor vehicles	S	96	136
3832	Radio, TV and communications equipment	F/S	96	589
3540	Petroleum and coal products	S	114	123
3849	Other transport equipment	F/S	164	111
3844	Motorcycles and bicycles	S	182	116
3845	Aircraft	S	192	604
3825	Office and computing machinery	F/S	390	488
3842	Railway equipment	S	512	117

1. Average indicators computed for the G-5 countries (France, Germany, Japan, United Kingdom and United States), and normalised (total manufacturing=100).
A: Based on descriptive information from the EU, *Panorama of EU industries*; F = fragmented, S = segmented, F/S = sectors with a mixture of both large firms and a significant group of small firms.
B: Estimate of minimum efficient scale multiplied by capital intensity (Sutton, 1991).
C: R&D outlays per gross output.

Sources: OECD, STAN Database, van Ark and Monnikhof (1966) and authors' calculations.

The analysis is validated by the fact that the ranking of these market structure indicators is highly correlated across countries (see Table 2.3).[4] In relative terms, the industries that face large entry costs or have a high R&D intensity in one country also display a similar relative position in other countries. In other words, the forces that drive industries to a particular market structure seem to be universal. Since this strong result is likely to be the consequence of international trade and competition, the analysis for OECD countries can reasonably offer a benchmark for other countries open to international competition.

Table 2.3. **Stability of market structure indicators across countries**
Spearman rank correlation[1]

Sunk cost indicator	France	Germany	Japan	United Kingdom	United States
France	..	..	..	..	..
Germany	0.67	..	..	..	..
Japan	0.55	0.34	..	..	..
United Kingdom	0.52	0.73	0.52	..	..
United States	0.59	0.70	0.59	0.72	..
R&D indicator					
France	..	..	..	..	..
Germany	0.87	..	..	..	..
Japan	0.86	0.78	..	..	..
United Kingdom	0.84	0.67	0.70	..	..
United States	0.87	0.79	0.74	0.81	..

1. Two-tailed critical value at 1% level = 0.432. From Newbold (1991).
Source: Authors' calculations.

All else being equal, one would expect countries with relatively smaller stocks of physical and human capital to be less able to compete in the high-R&D clusters. Likewise, countries that have access to relatively large supplies of low-skilled labour and standard technologies should be more competitive in the low-R&D clusters. Similarly, these countries should find it easier to enter into fragmented rather than segmented industries.

In addition to the endogenous entry barriers described above, there are other features of competition that affect the ability of firms to enter a market. These relate notably to the existence of production networks and large advertising expenditures incurred by firms seeking to differentiate themselves. If the degree of intra-firm trade is a proxy for the presence of international production networks, then Table 2.4 shows that these networks are concentrated in high R&D sectors. Therefore, for a firm successfully to enter the market in a high R&D cluster it has to become part of an

international production network. This can occur through joint ventures, sub-contracting and, most importantly, foreign direct investment (FDI). Advertising serves a dual purpose; it seeks both to inform consumers about product differences that arise from research and development, and to persuade consumers that what could be seen as essentially homogenous products are in fact differentiated. The food sector provides a good illustration. Hence, high advertising intensity can be found not only in high R&D sectors, but also in sectors where mainly price competition prevails (Table 2.5). In both cases, these endogenous barriers make it difficult for a firm in an emerging market to penetrate external markets.

Table 2.4. **Production networks: intensity of intra-firm trade,[1] 1998**
Percentage of total trade

SIC 3	Manufacturing industries	Share of intra-firm trade	*Memorandum item: share of Sectoral trade in total trade*
S34	Motor vehicles	76.4	*12.1*
S24_23	Drugs and medicines	69.0	*1.6*
S32	Radio, TV and communication equipment	38.8	*9.3*
S24	Chemical products	34.0	*7.9*
S30	Office, accounting and computing machinery	31.3	*7.7*
S25	Rubber and plastic products	25.0	*2.1*
S29_30	Non-electrical machinery and equipment	22.0	*17.0*
S33	Medical, precision, opt. instruments	18.6	*4.0*
S28	Fabricated metal products	17.1	*2.0*
S26	Non-metallic mineral products	16.4	*1.1*
S15_16	Food, beverages and tobacco	15.1	*3.9*
S31	Electrical machinery and apparatus n.e.c.	14.5	*4.3*
S21	Paper and products	12.8	*1.8*
S27	Basic metals	11.5	*3.8*
S20	Wood and wood products, except furniture	9.8	*1.2*
S22	Printing, publishing and recorded media	5.3	*0.8*
S10_14	Mining and quarrying	4.3	*3.5*
S35	Other transport equipment	2.6	*5.9*
S17_19	Textiles, wearing apparel, leather, footwear	2.5	*6.5*
S01_05	Agriculture, hunting and forestry, fishing	1.8	*3.0*
S23	Refined petroleum and coal products	n.a.	*1.4*
S36	Furniture, manufacturing n.e.c.	n.a.	*4.2*
S37	Recycling	n.a.	*n.a.*
S40_99	Other non manufacturing	n.a.	*0.0*
S01_99	Total Business Enterprise	40.1	*100.0*

1. Inward and outward intra-firm trade for US companies.
Source: OECD.

Table 2.5. **Advertising intensity by sector, United Kingdom, 2000**

	Intensity	Volume
Drugs and medicines	641	2.3
Chemical products nec	584	12.1
Plastic products	414	3.4
Radio, TV and communications equipment	319	6.2
Professional goods	296	1.0
Paper products and pulp	294	2.2
Printing and publishing	258	6.0
Motor vehicles	218	17.9
Furniture	188	3.0
Food products	127	15.1
Machinery and equipment nec	118	0.3
Textiles	111	1.1
Electrical machinery nec	107	1.2
Office and computing machinery	102	0.0
Motorcycles and bicycles	94	0.2
Beverages	84	11.0
Metal products	69	0.1
Footwear	53	0.7
Other manufacturing	36	0.5
Other transport equipment	29	0.3
Tobacco products	25	0.9
Wearing apparel	20	1.4
Petroleum and coal products	5	0.2

Note: Intensity = advertising/sales ratio, with 100 being the average for total manufacturing.
Volume = share of advertising expenditure in total costs (per cent).
Source: *Advertising Statistics Yearbook 2001*.

In principle, this framework can also encompass primary sectors (agriculture and raw materials), but owing to the lack of sufficiently detailed data it was not possible to compute the same indicators as for manufacturing. A qualitative judgement was followed instead. As the supply of agricultural products by and large characterised by a large number of producers offering relatively homogeneous goods, the agricultural sector was classified in the Fragmented, low-R&D cluster. This is a crude approximation, as some segments of the agricultural sector can be relatively

concentrated. Conversely, the supply of raw materials typically requires high initial investments and is carried out by a few large firms. These industries are therefore classified in the Segmented, low-R&D cluster. Given these simplifying assumptions, the investigation of trade specialisation in the following section shows results for primary products separately.

A final point concerns the availability of skilled labour. Even in the absence of barriers, countries may be unable to specialise in sectors requiring high numbers of skilled workers. Table 2.6 confirms that high-R&D sectors employ a higher proportion of skilled workers. High skills are likely to be a particular feature of the Fragmented, high-R&D cluster, since small firms depend on innovation and development for the creation of product niches to stay in the market. This requires an environment supporting and sustaining entrepreneurship, and encouraging labour training.

Table 2.6. **Intensity of skilled labour by sector, 1998**
Percentage share of skilled employees in the labour force

Office machinery, computers	53
Coke, petroleum products	38
Radio, television and communication equipment	35
Chemicals	33
Medical and optical instruments	33
Publishing, printing	29
Other transport equipment	27
Electrical machinery n.e.c.	21
Machinery and equipment n.e.c.	19
Tobacco	17
Motor vehicles	14
Basic metals	14
Rubber and plastics products	14
Other non-metallic mineral products	13
Food products and beverages	12
Pulp, paper and paper products	11
Metal products, except machinery and equipment	11
Textiles	10
Wood, except furniture	8
Wearing apparel, dyeing of fur	6
Dressing of leather, luggage	4

Note: The data is based on the OECD/DEELSA classification of employees across nine skill levels. The share of skilled workers is defined as the share top-3 skill categories in total employment. The average skilled workers for total manufacturing is 20.1.
Source: OECD.

Interaction between policy-induced barriers and market structures

In addition to endogenous entry barriers, policy-induced or exogenous barriers also shape competition in international markets. Notably, agricultural and agro-food markets are strongly distorted by the existence of high trade barriers (see Table 2.A1.3 in the Data Annex). These barriers are often higher for processed, hence more differentiated, products than for commodities.[5] During implementation of the Uruguay Round, tariff reductions on primary products have exceeded reductions on processed food products. Concerning the manufacturing sector, it is noticeable that both tariffs and non-tariff barriers (NTBs) are concentrated in the Low-R&D clusters (see Table 2.7). But they act in different ways depending on whether markets are fragmented or segmented. Tariffs are noticeably higher in the Fragmented, low-R&D markets, where competition is mainly by price.

The effect of tariffs is reinforced by the presence of pervasive NTBs that also affect the segmented cluster, dominated by large firms, where competition is typically by quantity in order to benefit from economies of scale or scope. Indeed, when goods are relatively homogeneous and prices are determined at the world level, NTBs can be very effective in protecting domestic producers. In the importing country, they reinforce domestic producers' market power by supporting the volume of production, while producers in the exporting country are in a position to benefit by exploiting their quotas or voluntary export restraints (VERs). In the specific case of anti-dumping, firms typically need to be large in order for lobbying governments to undertake actions on their behalf and products have to be comparable.

Table 2.7. **Summary of manufacturing tariffs[1] and non-tariffs[2] by market structure cluster**

	Low sunk costs (dominance of small firms)	High sunk costs (dominance of large firms)
Low R&D	Tariff: 10 Non-tariff: 38; 36; 29	Tariff: 8 Non-tariff: 28; 19; 9
High R&D	Tariff: 3 Non-tariff: 3; 4; 1	Tariff: 4 Non-tariff: 5; 4; 3

1. Average applied tariff rate 1996, weighted by import values in USD, for the EU, Japan and the United States.
2. Proportion of tariff lines subject to non-tariff barriers, weighted by number of tariff lines, for the EU, Japan and the United States; respectively for 1988, 1993 and 1996.

Source: UNCTAD and OECD.

The evolving structure of trade specialisation: a comparative approach

Measuring revealed comparative advantage

The Ricardian principle of comparative advantage is a genuinely general equilibrium concept, which holds across all types of market structure, whether markets are perfect or imperfect, distorted or not. In this paper an index of revealed comparative advantage (*RCA*) is used to explore the pattern of specialisation in Argentina, Brazil and Chile in comparison with that of Ireland, Korea and Mexico. This indicator follows Neven (1995), and is computed as the difference between a sector's share in total exports and its share in total imports, as follows:

$$RCA_i = \left(\frac{X_i}{\sum_n X_i} - \frac{M_i}{\sum_n M_i} \right) \cdot 100, \text{ and } \sum_n RCA_i = 0. \qquad (3)$$

Where X and M stand respectively for exports and imports, i for the sector of activity, and n for the number of sectors. The maximum and minimum values of the index are 100 and -100, attained in the case where there is complete trade specialisation and only two goods. In practice, for developed countries, the value of the index rarely exceeds 10. Note that the RCA is based on both exports and imports under the theoretical condition of balanced trade. In this it differs from the more usual Balassa indicator, which takes only exports into account. Looking exclusively at one side of trade flows is not desirable, given the increasing importance of intra-industry trade at the sectoral level. Indeed, it is straightforward to derive an index of intra-industry trade (IIT) from the RCAs, as follows:

$$IIT = \left(100 - \frac{1}{2} \sum_n \left| RCA_i \right| \right) \qquad (4)$$

Noteworthy is that the IIT index is equivalent to the usual Grubel-Lloyd index of intra-industry trade corrected for any aggregate trade imbalance (Aquino, 1978).

Patterns of specialisation by market structure clusters

The following analysis uses a harmonised data set for international trade, divided into 72 product categories, produced by the French institute CEPII (see the description of the data in Annex 2.A1). As an introduction to the patterns of specialisation in the A-B-C and IKM groups, Table 2.8 sets out the top-10 *RCA*s for 1970 and 2000.[6] A striking difference emerges between the two groups. In Argentina, Brazil and Chile the top *RCA*s remained concentrated in primary goods, though the value of the *RCA*s fell, indicating greater diversification of trade. The only notable exception is the iron and steel sector in Brazil.

Table 2.8. **Composition of RCAs[1] in 1970 and 2000, by country**

	Argentina	1970			2000
JA	Cereals	29.19	IB	Crude oil	10.16
KC	Meat	17.35	JA	Cereals	9.84
KD	Preserved meat/fish	7.37	KG	Animal food	9.12
KG	Animal food	6.74	KB	Fats	7.01
JC	Non-edible agricultural products	6.23	JB	Other edible agricultural products	6.32
KB	Fats	5.09	KC	Meat	4.93
JB	Other edible agricultural products	3.26	IH	Refined petroleum products	3.68
DE	Leather	1.73	IC	Natural gas	1.87
KF	Sugar	0.97	DE	Leather	1.77
KA	Cereal products	0.47	CB	Tubes	1.03
HB	Non ferrous ores	0.13	KH	Beverages	0.91
DC	Knitwear	0.01	HB	Non ferrous ores	0.80
II	Electricity	0.01	KF	Sugar	0.72
NA	Jewellery, works of art	0.01	KA	Cereal products	0.65
FP	Domestic electrical appliances	0.01	JC	Non-edible agricultural products	0.38
NB	Non-monetary gold	0.00	FU	Commercial vehicles	0.35
EB	Furniture	0.00	CA	Iron Steel	0.34
GI	Rubber articles (incl. tyres)	-0.01	KD	Preserved meat/fish	0.12
IG	Coke	-0.02	KI	Manufactured tobaccos	0.06
KI	Manufactured tobaccos	-0.05	NB	Non-monetary gold	0.03
	Brazil	1970			2000
JB	Other edible agricultural products	38.30	JB	Other edible agricultural products	8.13
JC	Non-edible agricultural products	10.95	HA	Iron ores	6.84
HA	Iron ores	9.74	CA	Iron Steel	5.24
KF	Sugar	6.08	DE	Leather	3.67
KC	Meat	3.00	KG	Animal food	3.13
KG	Animal food	2.88	EC	Paper	3.05
KE	Preserved fruits	1.68	KF	Sugar	2.89
HB	Non ferrous ores	1.59	KH	Beverages	2.44
EA	Wood articles	0.94	KC	Meat	2.29
DE	Leather	0.82	NV	N.e.s. products	1.69
NA	Jewellery, works of art	0.75	EA	Wood articles	1.12
KB	Fats	0.64	JC	Non-edible agricultural products	1.00
KH	Beverages	0.36	CC	Non ferrous metals	0.89
NV	N.e.s. products	0.09	NB	Non-monetary gold	0.69
KI	Manufactured tobaccos	0.04	KE	Preserved fruits	0.65
DD	Carpets	0.04	KD	Preserved meat/fish	0.65
EB	Furniture	0.03	EB	Furniture	0.58
DC	Knitwear	0.02	HC	Unprocessed minerals n.e.s.	0.54
FH	Arms	0.02	BB	Ceramics	0.36
NB	Non-monetary gold	0.00	DD	Carpets	0.35

Table 2.8. **Composition of RCAs[1] in 1970 and 2000, by country *(continued)***

	Chile	1970			2000
CC	Non ferrous metals	67.25	CC	Non ferrous metals	27.94
HA	Iron ores	9.72	HB	Non ferrous ores	13.94
HB	Non ferrous ores	6.37	JB	Other edible agricultural products	8.16
EC	Paper	2.02	KC	Meat	6.54
KG	Animal food	1.15	EC	Paper	4.62
HC	Unprocessed minerals n.e.s.	0.97	JC	Non-edible agricultural products	4.24
KD	Preserved meat/fish	0.47	KH	Beverages	3.34
KH	Beverages	0.12	KE	Preserved fruits	1.34
NA	Jewellery, works of art	0.01	HA	Iron ores	1.10
NB	Non-monetary gold	0.00	KD	Preserved meat/fish	1.02
II	Electricity	0.00	KG	Animal food	0.84
KI	Manufactured tobaccos	-0.01	EA	Wood articles	0.80
EB	Furniture	-0.02	NV	N.e.s. products	0.72
BA	Cement	-0.02	GA	Basic inorganic chemicals	0.70
KA	Cereal products	-0.04	NB	Non-monetary gold	0.47
DC	Knitwear	-0.04	GC	Basic organic chemicals	0.39
FH	Arms	-0.05	HC	Unprocessed minerals n.e.s.	0.28
EA	Wood articles	-0.07	ED	Printing	0.12
FP	Domestic electrical appliances	-0.12	KA	Cereal products	0.03
IG	Coke	-0.14	IG	Coke	0.00
	Mexico	1970			2000
JB	Other edible agricultural products	20.23	IB	Crude oil	9.40
KC	Meat	7.71	FT	Cars and cycles	8.83
JC	Non-edible agricultural products	7.69	FM	Consumer electronics	3.88
KF	Sugar	6.33	FO	Computer equipment	3.62
CC	Non ferrous metals	3.80	FU	Commercial vehicles	2.65
HC	Unprocessed minerals n.e.s.	3.51	FN	Telecommunications equipment	2.34
IB	Crude oil	2.41	DB	Clothing	2.18
HB	Non ferrous ores	1.65	DC	Knitwear	1.39
KE	Preserved fruits	1.56	EB	Furniture	1.37
NV	N.e.s. products	1.20	JB	Other edible agricultural products	1.02
DE	Leather	0.98	KH	Beverages	0.85
EA	Wood articles	0.84	FQ	Electrical equipment	0.79
GA	Basic inorganic chemicals	0.65	FI	Precision instruments	0.49
DA	Yarns fabrics	0.57	FP	Domestic electrical appliances	0.44
EE	Miscellaneous manuf. articles	0.53	BA	Cement	0.11
KH	Beverages	0.37	DD	Carpets	0.08
KD	Preserved meat/fish	0.33	BC	Glass	0.04
NA	Jewellery, works of art	0.29	HC	Unprocessed minerals n.e.s.	0.02
ED	Printing	0.24	GG	Plastics	0.01
EB	Furniture	0.20	NA	Jewellery, works of art	0.01

Table 2.8. **Composition of RCAs[1] in 1970 and 2000, by country *(continued)***

	Ireland	1970			2000
KC	Meat	15.53	GC	Basic organic chemicals	17.80
JB	Other edible agricultural products	7.32	FO	Computer equipment	5.88
KB	Fats	6.32	GF	Pharmaceuticals	4.10
NV	N.e.s. products	3.50	EE	Miscellaneous manuf. articles	3.87
KD	Preserved meat/fish	3.30	GE	Toiletries	2.28
HB	Non ferrous ores	3.25	KC	Meat	1.58
KF	Sugar	2.52	KE	Preserved fruits	1.18
KH	Beverages	2.00	KB	Fats	0.94
DB	Clothing	1.41	HB	Non ferrous ores	0.22
DE	Leather	1.35	FI	Precision instruments	0.12
FI	Precision instruments	1.16	KD	Preserved meat/fish	0.07
HC	Unprocessed minerals n.e.s.	1.13	HC	Unprocessed minerals n.e.s.	0.03
DC	Knitwear	0.98	GG	Plastics	0.02
DD	Carpets	0.64	IG	Coke	0.00
GF	Pharmaceuticals	0.55	II	Electricity	-0.01
FL	Electronic components	0.37	KI	Manufactured tobaccos	-0.02
GI	Rubber articles (incl. tyres)	0.29	FH	Arms	-0.02
FP	Domestic electrical appliances	0.29	NB	Non-monetary gold	-0.03
KA	Cereal products	0.28	HA	Iron ores	-0.03
BC	Glass	0.24	FJ	Clockmaking	-0.06
	Korea	**1970**			**2000**
EE	Miscellaneous manuf. articles	12.52	FT	Cars and cycles	7.52
DB	Clothing	11.59	FO	Computer equipment	6.21
DC	Knitwear	11.08	DA	Yarns fabrics	4.55
EA	Wood articles	10.97	FV	Ships	4.13
DA	Yarns fabrics	5.17	FN	Telecommunications equipment	3.66
KC	Meat	4.23	GH	Plastic articles	2.60
JB	Other edible agricultural products	2.94	FL	Electronic components	2.41
DE	Leather	2.79	IH	Refined petroleum products	2.40
HB	Non ferrous ores	2.66	FM	Consumer electronics	1.75
FL	Electronic components	1.76	DC	Knitwear	1.02
DD	Carpets	1.03	FP	Domestic electrical appliances	0.96
KD	Preserved meat/fish	0.79	DE	Leather	0.94
FM	Consumer electronics	0.49	GI	Rubber articles (incl. tyres)	0.76
BA	Cement	0.48	DD	Carpets	0.69
IA	Coals	0.46	FU	Commercial vehicles	0.66
GB	Fertilizers	0.42	DB	Clothing	0.63
KE	Preserved fruits	0.33	GG	Plastics	0.51
NA	Jewellery, works of art	0.31	FF	Construction equipment	0.48
GI	Rubber articles (incl. tyres)	0.24	FB	Miscellaneous hardware	0.45
HC	Unprocessed minerals n.e.s.	0.14	NB	Non-monetary gold	0.39

1. RCA: Revealed comparative advantage indicator (Xi/Σ(Xi)-Mi/Σ (Mi)).
Source: CEPII, CHELEM database.

In the IKM group, there were marked changes in the structure of revealed comparative advantages. From a structure of specialisation characterised by primary products, Ireland and Mexico have evolved towards a specialisation based on manufactured products. Within the manufacturing sector, industries such as motor vehicles, consumer electronics, computer equipment, chemicals and pharmaceuticals have emerged. Not having sizeable endowments of natural resources, Korea has been consistently specialised in the manufacturing sector. Nonetheless, there has been an important change away from labour-intensive towards capital and R&D intensive industries.

The evolution of specialisation according to market structure clusters deserves a separate consideration. For each country, Figure 2.1 first displays the *RCA* for agriculture, raw materials and manufacturing. It then decomposes the *RCA* for manufacturing into the four clusters described above. Unsurprisingly, the A-B-C group has consistently specialised in the clusters characterised by low R&D intensity, where competition in world markets is mainly defined by prices or quantities, with relatively homogenous goods, and trade barriers in OECD countries were the highest (Table 2.7). For the manufacturing sector, the highest *RCA* is concentrated in the Segmented, low-R&D cluster.

Figure 2.1. **Structure of trade specialisation by market structure clusters**[1]

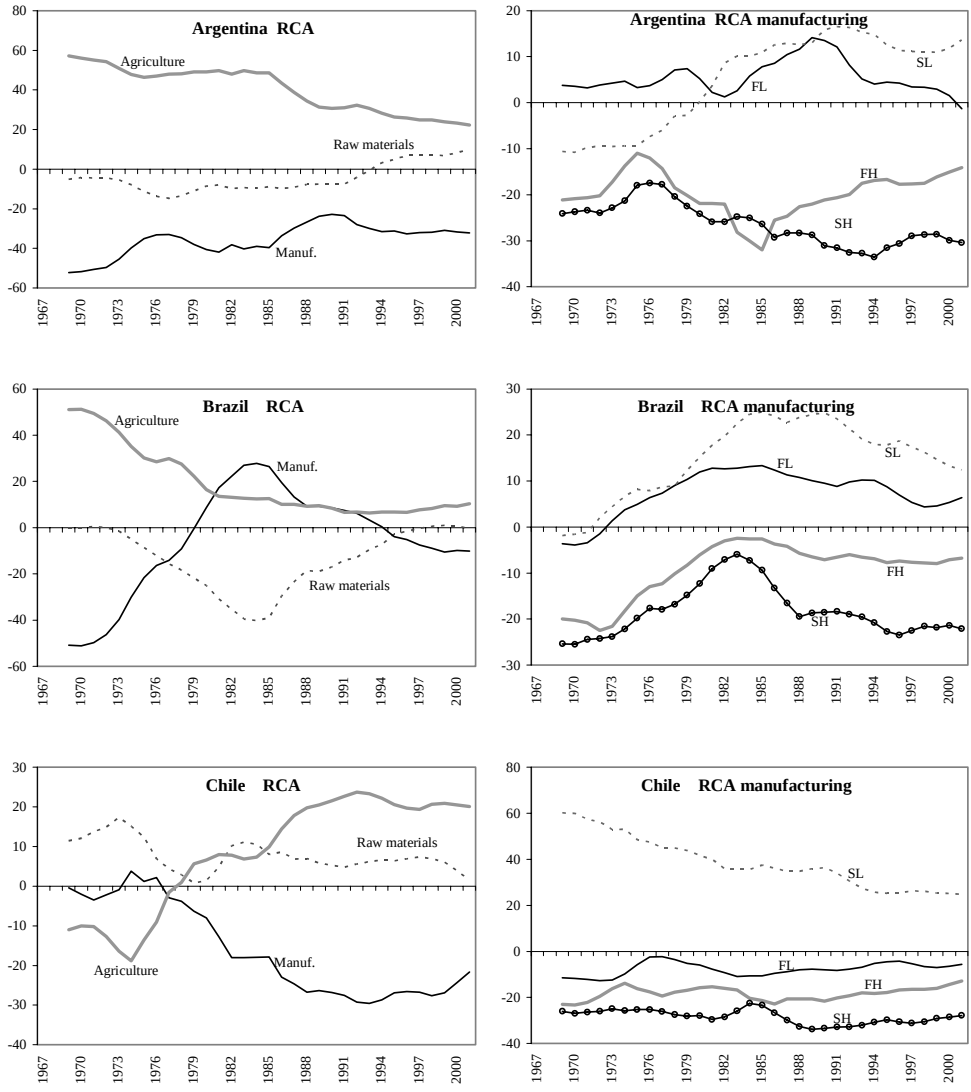
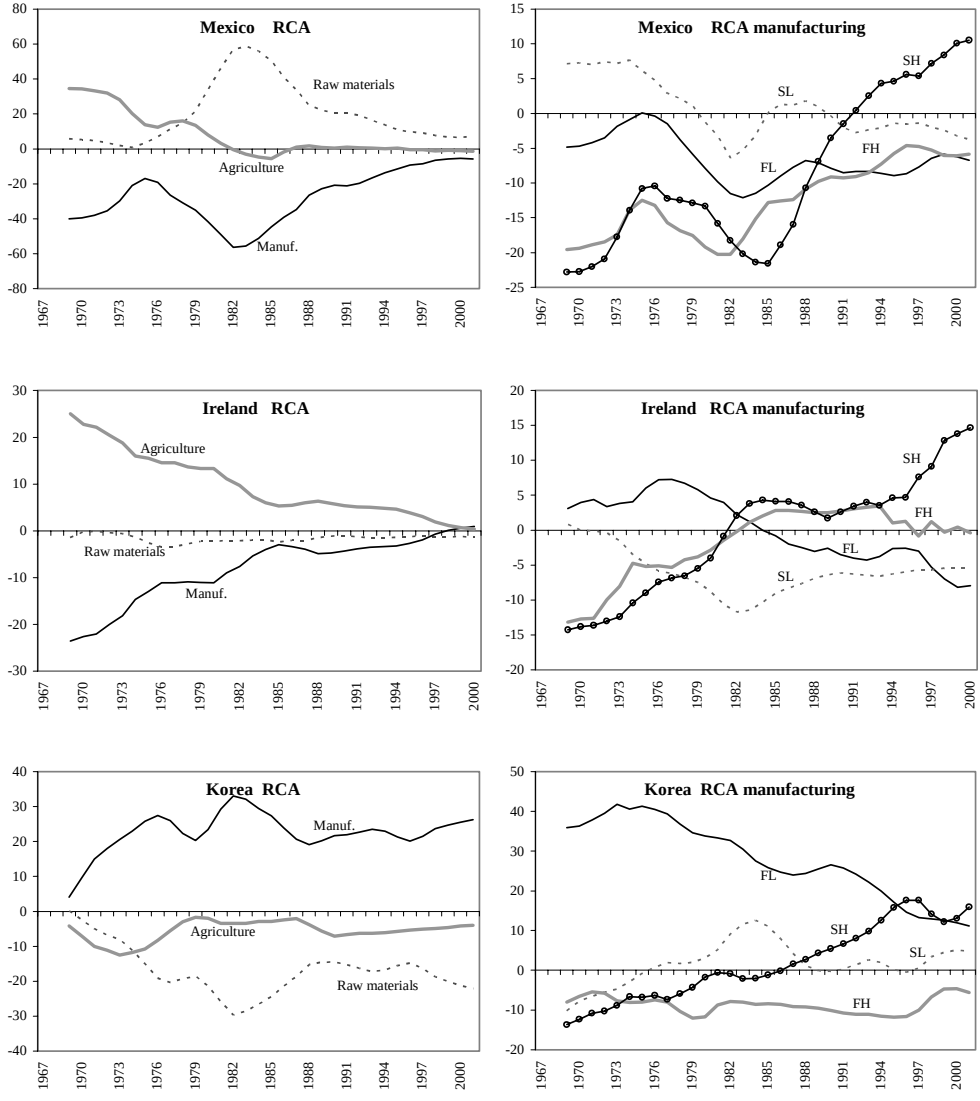


Figure 2.1. **Structure of trade specialisation by market structure clusters**[1] ***(continued)***



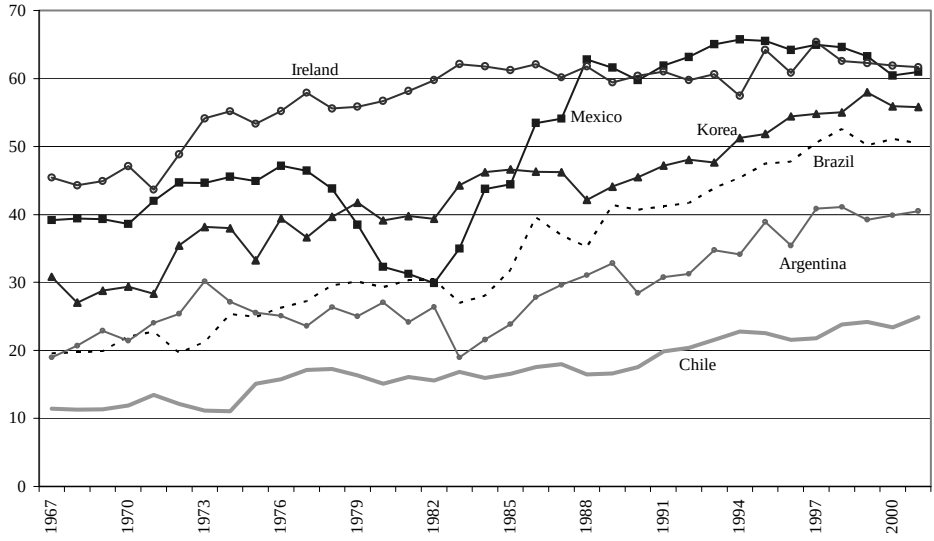
1. Revealed comparative advantage indicator (Xi/sum(Xi) -Mi/sum(Mi)).
Note: FH: Fragmented, High R&D; FL: Fragmented, Low R&D; SH: Segmented, High R&D; SL: Segmented, Low R&D.
Source: CEPII, CHELEM data base (see Data Annex).

The dynamics of specialisation in Brazil deserves to be singled out. A strong trend increase during the 1970s in the *RCA*s for the segmented, low R&D cluster was subsequently reversed. The initial increase was largely driven by state-led industrialisation in support of domestic heavy industries. But the debt crisis of 1982 severely reduced the ability of Brazil to draw on foreign capital to finance its rapid industrialisation. Earlier increases in the *RCA*s for the high-R&D clusters were also reversed. Following the trade liberalisation policies of the early 1990s, the forces of comparative advantage being at work, the structure of trade in Brazil had reverted to specialisation in primary products by the end of the decade.

In IKM an opposite development took place. The R&D-intensive clusters, particularly the industries dominated by large firms, replaced traditional specialisation. This allowed IKM to evolve towards patterns of specialisation closer to those in more advanced OECD countries.

Finally, these specialisation patterns need to be seen against the background of growing intra-industry trade, as measured by means of the *IIT* indicator (Figure 2.2). Intra-industry trade has lessened dependence on homogenous products, with one-way trade that was typical at the beginning of the period under review. Such developments occurred in all six countries, but in the IKM group the intensity of intra-industry trade has consistently been much higher than in A-B-C. Chile shows the lowest intensity of intra-industry trade, being exceptionally dependent on a single homogenous good (copper).

Figure 2.2. **Evolution of intra-industry trade by country**



Source: CEPII, CHELEM database.

Adaptation to international demand and export performance

Generating export revenues depends on both the dynamics of demand and the ability of a country to gain market shares in world trade. To evaluate the adaptation of a country's export structure to international demand, the share in world trade of those goods corresponding to the top–20 *RCA*s for each country in 1970 and 2001 (Figure 2.3) was computed. An increased share shows that a given product basket better matches evolving international demand.

Figure 2.3. **Evolution of world export markets based on country RCAs**[1]

1970=100

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).

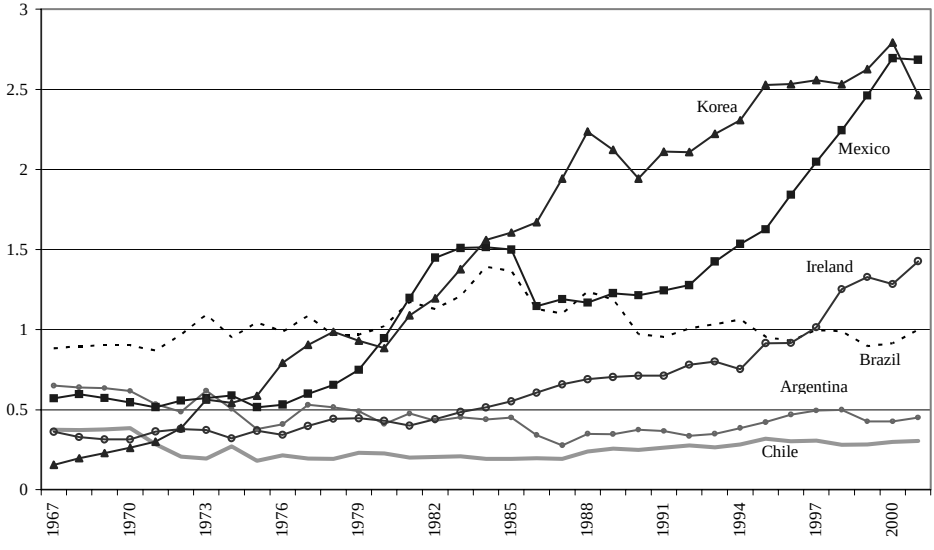
Note: Average share in world trade of products corresponding to the top-20 comparative advantages in 1970 and 2000 for each country. This average was weighted by the structure of exports of each country , for the 2 chosen years.

Source: CEPII, CHELEM database.

There is again a revealing contrast between the A-B-C and the IKM groups. For Argentina, Brazil and Chile, both the *RCA* baskets in 1970 and in 2000 show a declining trend. This means that the products corresponding to the main revealed comparative advantages of A-B-C are losing importance in terms of world trade. In Ireland, Korea and Mexico, the same pattern applies for the *RCA* baskets of 1970, but the 2000 *RCA* baskets follow a different path. For Ireland and Korea, they display a rising share in world trade. For Mexico, the 2001 *RCA* basket increased its share in world trade and then stabilised. These trends imply, *ceteris paribus*, that changing trade specialisation in IKM has provided more opportunities to generate export revenues compared to the situation characterised by their comparative advantages in the early 1970s.

In order to verify this point, Figure 2.4 displays the exports shares of each country in world trade. From 1970 to 2001, market shares for A-B-C stagnated whereas those of IKM have increased significantly. Within the A-B-C group, Chile has actually been rather successful in increasing its market share for agricultural goods.[7] However, this was not sufficient to compensate for the effects of the overall decline of this type of product in world trade.

Figure 2.4. **Export performance**
In percentage of world exports



Source: CEPII, CHELEM database.

Summary and insights for policy

The evolution of specialisation across industries interacts with the nature of competition. A taxonomy developed in this chapter allows us to aggregate sectors by different types of competition coherent with their microeconomic fundamentals. This taxonomy singles out a number of barriers that are either endogenous to the competition process or that result from trade policies. The existence of these barriers can make it difficult for firms to enter international markets.

When comparing the specialisation and market performance of Argentina, Brazil and Chile, with that of Ireland, Korea and Mexico, a striking contrast emerges. Apart from an increased share of intra-industry trade during the last decades, there was no significant change in specialisation within the A-B-C group, whereas in IKM the migration towards more differentiated products, *R&D*-intensive products, was noticeable.

Market integration effects, through joint trade and investment flows, are key in explaining IKM's evolution. Mexico's evolving specialisation is clearly related to the creation of NAFTA and associated market integration within North America. Ireland also fully benefited from the large European market. Korea has been for a long time exposed to competition in international markets and foreign investments.

In this regard, an important observation is that there is a mutually reinforcing effect between trade and capital flows through increased intra-industry trade (the so-called Complementarity Theorem). Noticeably, the production of highly differentiated products by large firms tends to be strongly integrated in production networks and global supply chains, which make them more responsive to demand and facilitate market access. It is difficult for an individual producer to penetrate these networked industries. This is often only possible through foreign investments or other forms of partnership. In innovative markets dominated by smaller firms, the conditions for entrepreneurial development, labour training and agglomeration effects are important determinants of competitiveness.

Market structures matter for economic development. World exports of highly differentiated products have grown faster than traditional exports. In addition, industries with high product differentiation typically have strong externalities in terms of external returns to scale, technological diffusion and labour skills (Sutton, 2001). In emerging markets, specialisation in homogeneous product industries can generate high growth rates but these gains decelerate as industries converge to the international production frontier. For products characterised by strong product or process innovation,

or external economies, the production frontier is pushed continuously outward. A-B-C have not benefited from the spillovers of market integration, while being penalised by the pervasive trade barriers against products in which they naturally have strong comparative advantages.

This conclusion requires, however, some *caveats*. Firstly, under strong regional integration, business cycles in the leading countries are transmitted rather quickly, and in some cases amplified, to the periphery (as often the peripheral country has the role of residual producer). In some sense, volatility from reliance on a single product could be replaced by fluctuations in the main partner country, as illustrated by the recent experience of Mexico. This suggests that *regional* integration, in order to benefit from network externalities in production and access to markets, and *multilateral* integration, to dampen the effects of shocks from specific countries, are both needed.

Secondly, the fact that emerging markets are exporting high-technology products needs to be gauged against their domestic *R&D* intensity. Indeed, the well-known phenomenon of Mexican *maquilladoras* illustrates how domestic enterprises can export a rather low value-added content embodied in high value-added products. In this case, the location of a given high-tech industry can remain very sensitive to pure price competition. The relatively low intensity of *R&D* in Mexico compared with those of Ireland and Korea (Table 2.9) thus raises some questions concerning the sustainability of the observed change in the structure of Mexican specialisation.

Finally, the above discussion should not overshadow the need for structural reforms, investing over the long run in education, and formulating policies to encourage entrepreneurship. Inevitably, these policies take time to materialise and will only progressively influence patterns of trade. In the meantime, lower barriers to trade and greater market integration seem to be the best way forward.

Table 2.9. **R&D Intensity for selected industries and country**

	1995	1997	1999	2000
Mexico				
Grand Total	0.04	0.04	0.07	..
Agriculture, hunting, forestry and fishing	0.00	0.00	0.00	..
Mining and quarrying	0.03	0.12	0.31	..
Total Manufacturing	0.07	0.07	0.15	..
Chemicals and chemical products	0.23	0.48	0.24	..
Chemicals excluding pharmaceuticals	0.24	0.57	0.22	..
Pharmaceuticals	0.21	0.21	0.28	..
Machinery and equipment	0.15	0.04	0.16	..
Office, Accounting and computing machinery	0.41	0.00	0.06	..
Electrical machinery and apparatus, NEC	0.19	0.07	0.15	..
Radio, television and communication equipment	0.00	0.00	0.02	..
Medical, precision and optical instruments	..	..	..	..
Motor vehicles, trailers and semi-trailers	0.05	0.03	0.12	..
Other transport equipment	..	0.00	0.02	..
Aircraft and spacecraft	..	..	..	..
Korea				
Grand Total	0.83	0.87	0.76	0.83
Agriculture, hunting, forestry and fishing	0.05	0.04	0.05	0.06
Mining and quarrying	0.26	0.15	0.23	0.26
Total Manufacturing	1.48	1.60	1.31	1.43
Chemicals and chemical products	1.51	1.40	1.09	1.06
Chemicals excluding pharmaceuticals	1.64	1.52	0.95	1.07
Pharmaceuticals	1.10	1.08	1.55	1.06
Machinery and equipment	4.82	5.52	4.26	4.31
Office, Accounting and computing machinery	2.17	1.28	2.02	2.06
Electrical machinery and apparatus, NEC	1.22	1.14	2.03	1.62
Radio, television and communication equipment	4.52	5.72	4.87	4.67
Medical, precision and optical instruments	1.20	1.57	0.97	1.69
Motor vehicles, trailers and semi-trailers	3.85	4.62	2.28	2.63
Other transport equipment	1.96	1.67	0.46	1.62
Aircraft and spacecraft	18.64	11.22	..	..
Ireland				
Grand Total	..	..	..	..
Agriculture, hunting, forestry and fishing	..	..	..	..
Mining and quarrying	0.00	..	..	..
Total Manufacturing	0.99	0.96	0.79	..
Chemicals and chemical products	1.39	0.91	0.57	..
Chemicals excluding pharmaceuticals	0.38	0.23	0.16	..
Pharmaceuticals	4.59	3.74	2.12	..
Machinery and equipment	1.66	1.86	1.55	..
Office, Accounting and computing machinery	0.33	0.35	0.28	..
Electrical machinery and apparatus, NEC	1.77	1.83	2.10	..
Radio, television and communication equipment	7.69	6.15	4.61	..
Medical, precision and optical instruments	1.90	1.70	1.61	..
Motor vehicles, trailers and semi-trailers	1.94	2.54	1.93	..
Other transport equipment	1.06	0.87	0.65	..
Aircraft and spacecraft	..	..	..	..

Source: OECD, STAN database.

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Annex 2.A1.
Data Annex

The data on trade flows are drawn from the CHELEM database produced by the French institute CEPII. A mapping of the industrial sectors found in CHELEM onto the market structure clusters found in Table 2.1 is given in Table 2.A1.1. A rough classification of agricultural and raw materials sectors into market structure clusters is given in Table 2.A1.2.

Table 2.A1.1. **Market structure clusters and trade barriers for manufacturing**

	Fragmented	Tariff[1]	NTB[2]	Segmented	Tariff[1]	NTB[2]
Low R&D	CB Tubes (3810)	4.9	21.6	BA Cement (3690)	1.9	2.1
	DA Yarns, fabrics (3210)	8.7	70.8	BB Ceramics (3610)	5.3	2.5
	DB Clothing (3220)	12.8	52.0	BC Glass (3620)	6.1	1.5
	DC Knitwear (3220)	13.8	42.3	CA Iron and steel (3710)	3.5	8.6
	DD Carpets (3210)	9.1	55.2	CC Non ferrous metals (3720)	3.3	6.7
	DE Leather (3230)	10.3	9.2	FV Ships (3841)	1.3	0.0
	EA Wood articles (3310)	4.9	0.0	GI Rubber articles (incl. tyres) (3550)	3.8	14.9
	EB Furniture (3320)	2.6	0.7	IH Refined petroleum products (3530)	3.7	0.0
	EC Paper (3410)	4.2	0.4			
	ED Printing (3420)	1.3	1.1	KA Cereal products (311/312)	23.5	7.2
	FA Metallic structures (3810)	3.8	0.0	KF Sugar and chocolate (311/312)	25.4	9.1
	FB Miscellaneous hardware (3810)	4.0	5.0	KI Manufactured tobaccos (3140)	49.5	0.0
	GG Plastics (3560)	2.9	3.8	KG Animal food (311/312)	21.4	4.4
	GH Plastic articles (3560)	7.7	2.1	KH Beverages (3130)	16.3	23.9
	KB Fats (milk and dairy products) (311/312)	48.5	2.8			
	KD Preserved meat/fish (311/312)	17.3	15.5			
	KE Preserved fruits (311/312)	17.1	12.9			

Table 2.A1.1. **Market structure clusters and trade barriers for manufacturing *(continued)***

	Fragmented	Tariff[1]	NTB[2]	Segmented	Tariff[1]	NTB[2]
High R&D	EE Misc. manuf. articles (3900)	2.6	0.7	FL Electronic components (3839)	2.7	6.9
	FC Motors, engines, pumps etc. (3829)	2.6	0.3	FM Consumer electronics (3832)	6.9	30.0
	FD Agricultural machinery and equipment (3829)	2.0	2.8	FN Telecommunications equipment (3832)	4.0	13.0
	FE Machine tools (3829)	3.0	0.9	FO Computer equipment (3825)	1.5	0.0
	FF Construction machinery and equipment (3829)	2.0	2.1	FP Domestic electrical appliances (3839)	3.1	1.9
	FG Specialised machines (3829)	2.2	0.7	FQ Electrical equipment (3839)	2.7	5.8
	FH Arms (3829)	3.7	0.0	FR Electrical apparatus (3839)	3.7	2.2
	FI Precision instruments (3850)	2.6	1.1	FS Vehicles components (3849)	3.9	9.6
	FJ Clock-making (3850)	4.1	0.6	FT Cars and cycles (3844)	6.8	0.0
	FK Optics (3850)	4.1	0.0	FU Commercial vehicles (3843)	13.7	1.2
	NA Jewelry, works of art (3900)	3.0	0.0	FW Aeronautics (3845)	1.6	0.0
	NB Non-monetary gold (3900)	0.8	0.0	GA Basic inorganic chemicals (3510)	3.9	3.1
	NV N.e.s. products (3900)			GB Fertilizers (3510)	4.6	4.2
				GC Basic organic chemicals (3510)	6.7	1.1
				GD Paints (3529)	6.0	0.2
				GE Toiletries (3529)	4.6	0.7
				GF Pharmaceuticals (3522)	0.1	1.8

N.B. The product breakdown corresponds to the CHELEM database; numbers in parenthesis correspond to the ISIC rev2 categories.
1. Applied tariff rate, weighted by import values in USD, for the EU, Japan and United States in 1996.
2. Frequency of action under non-tariff barriers, weighted by number of tariff lines, in 1996.
Source: UNCTAD and OECD.

Table 2.A1.2. **Market structure clusters and trade barriers for agriculture and raw materials**

	Fragmented	Tariff[1]	NTB[2]	Segmented	Tariff[1]	NTB[2]
Low R&D	JA Cereals	58.93	11.86	HA Iron ores	0.00	0.00
	JB Other edible agricultural products	10.75	6.48	HB Non ferrous ores	0.36	1.48
	JC Non-edible agricultural products	2.11	2.14	HC Unprocessed minerals n.e.s.	0.43	1.86
	KC Meat and fish	27.16	14.57	IA Coals	0.00	8.57
				IB Crude oil	0.18	0.00
				IC Natural gas	0.53	0.00
				IG Coke	0.10	0.00
				II Electricity	0.00	0.00
High R&D						

N.B. The product breakdown corresponds to the CHELEM database.
1. Applied tariff rate, weighted by import values in USD, for the EU, Japan and United States in 1996.
2. Frequency of action under non-tariff barriers, weighted by number of tariff lines, in 1996.
Source: UNCTAD and OECD.

Table 2.A1.3. **Tariffs and non-tariffs by market structure cluster**[5]

	Total	Agriculture	Raw materials	Manufacturing	FH	FL	SH	SL
Tariff 1996								
Weighted applied tariff[1]	6.15	16.08	0.24	5.87	2.60	9.74	4.31	8.32
Average applied tariff[2]	5.52	7.44	0.36	5.48	2.41	8.00	3.90	6.05
Applied tariff dispersion[3]	9.18	18.89	1.07	7.53	2.43	7.62	4.98	12.14
Weighted bound tariff[1]	4.64	11.86	0.19	4.46	1.67	7.32	3.57	5.77
Average bound tariff[2]	4.01	5.55	0.21	3.97	1.62	5.97	3.01	3.79
Bound tariff dispersion[3]	7.08	14.04	0.75	5.95	2.14	6.30	4.11	9.00
NTB[4]								
1988	21.38	17.39	1.75	22.32	3.21	37.77	5.21	27.77
1993	18.94	14.22	1.75	19.92	3.48	35.53	4.31	18.92
1996	13.86	7.69	1.75	14.88	0.76	29.31	3.41	8.81

N.B. See Table 2.1 and 2.A1.1 for a definition of market structure clusters.
1. Tariff rate, weighted by USD import values, for the EU, Japan and United States.
2. Simple average tariff rate for the EU, Japan and United States.
3. Standard deviation of tariff rates.
4. Frequency of action under non-tariff barriers, weighted by number of tariff lines.
5. FH: Fragmented, high R&D; FL: fragmented, low R&D; SH: segmented, high R&D; SL: segmented, low R&D.
Source: UNCTAD and OECD.

Table 2.A1.4. **Structure of specialisation over time: Argentina**

		RCA[1]					Export share				RCA[1]					Import share	
Code	Title	1970	1980	1990	1995	2001		Cumu-lative	Code	Title	1970	1980	1990	1995	2001		cumu-lative
KG	Animal food	6.7	5.7	9.7	7.1	9.9	10.1	10.1	FN	Telecommunications equipment	-2.4	-3.6	-2.0	-4.3	-4.4	4.5	4.5
JA	Cereals	29.2	21.0	9.2	7.3	9.8	9.9	19.9	GC	Basic organic chemicals	-3.9	-1.1	-7.6	-2.9	-4.3	5.8	10.2
JB	Other edible agricultural prod.	3.3	12.4	11.1	8.5	8.6	10.1	30.0	FC	Engines	-4.5	-4.7	-6.5	-4.0	-4.0	5.5	15.7
IB	Crude oil	-1.4	-4.6	1.0	7.4	8.6	9.8	39.8	FS	Vehicles components	-3.5	-2.0	-2.5	-1.8	-4.0	5.4	21.1
KB	Fats	5.1	6.1	8.3	10.0	5.6	5.9	45.7	FO	Computer equipment	-1.0	-1.5	-2.6	-3.0	-3.6	3.6	24.7
IH	Refined petroleum products	-1.1	2.3	4.0	-0.1	4.2	5.5	51.3	FR	Electrical apparatus	-2.8	-2.2	-2.6	-3.5	-2.7	3.5	28.1
KC	Meat	17.3	10.2	8.3	7.0	3.7	4.4	55.7	FB	Miscellaneous hardware	-2.7	-1.9	-1.6	-2.4	-2.7	3.5	31.6
IC	Natural gas	-0.4	-2.7	-4.3	-0.1	2.6	2.6	58.3	FG	Specialised machines	-5.0	-4.2	-4.1	-3.9	-2.7	3.0	34.6
DE	Leather	1.7	4.8	4.9	3.9	1.6	3.0	61.3	GF	Pharmaceuticals	-0.9	-0.6	-2.4	-1.3	-2.6	3.9	38.5
CB	Tubes	-0.4	-0.6	1.7	1.0	1.0	1.8	63.1	GH	Plastic articles	-1.1	-2.6	-2.3	-3.0	-2.5	4.8	43.4
KH	Beverages	-0.2	0.2	1.2	1.1	0.9	1.2	64.3	EC	Paper	-4.5	-2.2	-0.1	-2.5	-2.4	3.5	46.8
HB	Non ferrous ores	0.1	0.2	-0.2	-0.2	0.6	1.2	65.4	EE	Miscellaneous manuf. articles	-1.3	-2.0	-1.9	-2.1	-2.1	2.5	49.3
FU	Commercial vehicles	-1.8	-2.0	0.1	0.1	0.6	2.4	67.8	FI	Precision instruments	-1.8	-1.9	-2.2	-2.0	-1.7	2.1	51.4
KA	Cereal products	0.5	0.2	3.1	2.5	0.5	0.7	68.5	FF	Construction equipment	-3.1	-3.1	-1.7	-2.3	-1.4	1.6	53.0
JC	Non-edible agricultural prod.	6.2	4.1	2.8	2.6	0.4	1.2	69.8	DA	Yarns fabrics	-1.2	-1.0	-0.2	-0.4	-1.3	2.1	55.0
KF	Sugar	1.0	2.8	0.8	0.2	0.4	1.0	70.8	FP	Domestic electrical appliances	0.0	-0.5	-0.3	-0.9	-1.2	1.2	56.3
EB	Furniture	0.0	-0.1	0.1	-0.3	0.2	0.9	71.7	GB	Fertilizers	-0.5	-0.6	-1.5	-1.8	-1.1	1.7	58.0
CA	Iron and Steel	-11.0	-2.4	1.2	-0.3	0.1	1.6	73.3	FM	Consumer electronics	-0.3	-3.2	-1.8	-0.9	-1.1	1.1	59.1
NV	N.e.s. products	-0.3	-2.3	-3.7	-1.3	0.1	1.7	75.0	GE	Toiletries	-0.7	-0.1	-1.2	-0.7	-1.0	2.2	61.3
NB	Non-monetary gold	0.0	0.0	0.0	0.6	0.0	0.1	75.0	GD	Paints	-0.5	-0.3	-1.8	-0.7	-1.0	1.6	62.9

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).
Source: CEPII, CHELEM database and OECD.

Table 2.A1.5. Structure of specialisation over time: Brazil

		RCA[1]					Export share				RCA[1]					Import share	
Code	Title	1970	1980	1990	1995	2001		Cumu-lative	Code	Title	1970	1980	1990	1995	2001		Cumu-lative
JB	Other edible agricultural prod	38.3	17.3	8.4	7.0	8.6	9.7	9.7	IB	Crude oil	-8.4	-38.8	-20.0	-4.9	-4.4	5.8	5.8
HA	Iron ores	9.7	9.5	9.1	7.2	6.4	6.4	16.0	FO	Computer equipment	-1.6	0.0	-1.4	-2.6	-3.0	3.5	9.3
CA	Iron and Steel	-0.8	2.2	9.4	8.0	4.0	4.8	20.8	FR	Electrical apparatus	-2.8	-1.0	-1.4	-1.1	-3.0	4.2	13.4
KF	Sugar	6.1	8.6	2.4	3.6	4.0	4.1	25.0	FG	Specialised machines	-6.0	-1.2	-4.2	-4.4	-2.9	3.6	17.0
KG	Animal food	2.9	7.1	6.0	4.5	3.8	4.0	29.0	GC	Basic organic chemicals	-3.9	-1.9	-3.6	-2.7	-2.8	4.7	21.7
DE	Leather	0.8	2.7	4.6	3.7	3.7	4.3	33.2	FN	Telecommunications equipment	-2.1	-0.8	-2.3	-3.2	-2.7	5.0	26.7
KC	Meat	3.0	1.4	0.4	1.5	3.4	3.7	37.0	IH	Refined petroleum products	-2.0	-0.3	0.8	-3.5	-2.5	4.8	31.5
EC	Paper	-1.6	1.8	2.1	3.2	2.5	3.8	40.8	GF	Pharmaceuticals	-1.0	-0.5	-1.4	-1.3	-2.4	2.9	34.5
NV	N.e.s. products	0.1	1.3	0.4	0.3	1.8	3.1	43.9	GB	Fertilizers	-2.5	-2.9	-1.5	-1.0	-2.3	2.6	37.1
KH	Beverages	0.4	1.7	4.2	2.0	1.8	2.0	45.9	FI	Precision instruments	-2.2	-1.1	-2.3	-1.7	-2.2	2.7	39.7
JC	Non-edible agricultural prod.	11.0	1.8	0.1	0.6	1.6	2.2	48.2	GH	Plastic articles	-1.8	-0.5	-0.1	-1.4	-1.9	3.4	43.1
EA	Wood articles	0.9	0.7	0.8	1.2	1.2	1.3	49.4	FW	Aeronautics	-4.5	-2.4	-4.4	-1.7	-1.9	6.4	49.5
KD	Preserved meat/fish	-0.2	0.8	0.3	0.3	1.0	1.2	50.6	FL	Electronic components	-0.3	-0.4	-1.3	-1.4	-1.9	2.1	51.6
EB	Furniture	0.0	0.1	0.1	0.5	0.6	0.9	51.5	IC	Natural gas	-0.5	-0.1	-1.0	-0.7	-1.5	1.5	53.1
KE	Preserved fruits	1.7	2.1	0.5	0.4	0.6	1.0	52.5	JA	Cereals	-1.7	-5.6	-1.6	-1.8	-1.3	2.1	55.2
HC	Unprocessed minerals n.e.s.	-0.5	-0.3	0.2	0.4	0.6	0.8	53.3	FQ	Electrical equipment	-0.8	-0.7	-0.2	0.1	-1.3	2.0	57.2
FT	Cars and cycles	-0.2	1.2	0.6	-6.5	0.5	3.6	56.9	FC	Engines	-3.5	-1.1	0.9	0.9	-1.2	4.6	61.8
NB	Non-monetary gold	0.0	0.0	0.0	0.5	0.4	0.5	57.4	FF	Construction equipment	-2.9	-0.3	0.0	-0.2	-1.0	1.8	63.6
DD	Carpets	0.0	0.5	0.5	0.3	0.3	0.5	57.9	FE	Machine tools	-1.8	-1.2	-1.3	-1.4	-1.0	1.3	64.8
CC	Non ferrous metals	-4.9	-3.0	1.8	3.4	0.3	2.2	60.1	IA	Coals	-1.1	-1.2	-2.4	-1.1	-1.0	1.0	65.8

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).
Source: CEPII, CHELEM database and OECD.

Table 2.A1.6. **Structure of the Chilean specialisation**

		RCA[1]						Export share	
Code	Title	1970	1980	1990	1995	2000	2001		Cumu-lative
CC	Non ferrous metals	67.25	42.57	35.11	26.09	27.94	24.60	25.4	25.4
HB	Non ferrous ores	6.37	13.46	9.12	13.83	13.94	11.87	12.1	37.5
JB	Other edible agricultural prod.	-3.12	5.63	13.78	9.34	8.16	9.82	10.5	48.0
KC	Meat	-0.76	1.25	4.59	4.68	6.54	7.27	8.4	56.4
JC	Non-edible agricultural prod.	-1.44	5.92	6.08	5.84	4.24	4.80	5.3	61.7
EC	Paper	2.02	4.73	3.00	5.78	4.62	4.20	6.6	68.3
KH	Beverages	0.12	0.09	0.54	1.43	3.34	3.71	4.0	72.3
KE	Preserved fruits	-0.30	-0.32	0.84	2.21	1.34	1.48	2.0	74.3
NV	N.e.s. products	-0.82	-0.27	-0.10	-0.71	0.72	1.15	2.8	77.1
EA	Wood articles	-0.07	0.06	0.19	0.43	0.80	1.13	1.6	78.7
KD	Preserved meat/fish	0.47	0.46	1.26	0.82	1.02	1.08	1.2	79.9
HA	Iron ores	9.72	5.17	2.25	1.18	1.10	1.02	1.0	80.9
GA	Basic inorganic chemicals	-0.60	0.01	-0.03	0.32	0.70	0.75	1.9	82.8
HC	Unprocessed minerals n.e.s.	0.97	0.91	0.42	0.30	0.28	0.58	0.8	83.6
KG	Animal food	1.15	4.36	4.84	3.79	0.84	0.57	1.7	85.3
GC	Basic organic chemicals	-2.08	-1.43	-1.00	-0.46	0.39	0.52	2.2	87.5
NB	Non-monetary gold	0.00	0.00	0.00	0.76	0.47	0.34	0.3	87.9
FV	Ships	-2.61	-0.54	-0.36	-0.10	-0.06	0.10	0.1	88.0
KA	Cereal products	-0.04	0.21	0.38	0.26	0.03	0.07	0.3	88.3
KI	Manufactured tobaccos	-0.01	-0.27	-0.22	-0.22	-0.01	0.03	0.1	88.4

		RCA[1]						Import share	
Code	Title	1970	1980	1990	1995	2000	2001		Cumu-lative
IB	Crude oil	-2.80	-14.03	-6.78	-6.46	-11.39	-10.75	10.8	10.8
FW	Aeronautics	-1.96	-1.55	-3.42	-2.15	-3.75	-5.25	5.5	16.3
FT	Cars and cycles	-1.71	-6.45	-4.04	-6.66	-4.49	-3.50	3.8	20.1
GH	Plastic articles	-1.49	-1.25	-3.20	-3.48	-3.23	-3.39	4.2	24.4
FG	Specialised machines	-6.59	-3.05	-5.29	-3.88	-2.71	-3.16	3.3	27.6
FU	Commercial vehicles	-5.44	-5.87	-4.07	-6.15	-3.88	-3.01	3.4	31.0
FN	Telecommunications equipment	-2.20	-1.49	-2.86	-1.98	-3.54	-3.01	3.1	34.1
FC	Engines	-5.29	-2.70	-6.06	-2.57	-2.32	-2.79	3.0	37.1
FO	Computer equipment	-1.19	-1.30	-1.68	-2.20	-3.17	-2.75	2.8	39.9
FF	Construction equipment	-4.06	-2.95	-5.12	-3.86	-2.73	-2.59	2.7	42.6
IC	Natural gas	-0.18	0.05	-0.21	-0.37	-2.05	-2.58	2.8	45.5
FB	Miscellaneous hardware	-3.04	-1.99	-3.53	-2.49	-2.08	-2.26	2.9	48.4
FR	Electrical apparatus	-3.32	-1.75	-3.04	-2.23	-2.04	-2.15	2.4	50.8
EE	Miscellaneous manuf. articles	-0.86	-1.84	-1.94	-2.14	-2.14	-1.94	2.1	52.9
GE	Toiletries	-1.31	-1.09	-1.24	-1.30	-1.54	-1.69	2.2	55.1
CA	Iron and Steel	-2.11	-0.80	-1.65	-2.06	-1.39	-1.68	1.9	57.0
DA	Yarns fabrics	-1.28	-2.41	-2.63	-2.53	-1.84	-1.62	2.2	59.2
GF	Pharmaceuticals	-1.40	-0.60	-0.75	-0.97	-1.23	-1.51	1.8	60.9
FI	Precision instruments	-2.09	-1.10	-1.77	-1.31	-1.25	-1.49	1.5	62.5
DE	Leather	-0.14	-0.68	0.00	-1.24	-1.37	-1.40	1.6	64.1

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).
Source: CEPII, CHELEM database and OECD.

Table 2.A1.7. **Structure of specialisation over time: Mexico**

		RCA[1]					Export share				RCA[1]					Import share	
code	title	1970	1980	1990	1995	2001		cumu-lative	code	title	1970	1980	1990	1995	2001		cumu-lative
IB	Crude oil	2.4	47.1	20.9	9.0	7.9	1.9	1.9	GH	Plastic articles	-1.5	-2.0	-2.6	-3.6	-4.5	5.6	5.6
FT	Cars and cycles	-1.9	-0.3	5.1	8.8	6.9	6.6	8.5	FL	Electronic components	0.0	-0.1	-1.0	-4.4	-4.4	5.7	11.3
FO	Computer equipment	-0.8	-1.0	-0.1	0.5	4.1	7.3	15.8	FS	Vehicles components	-5.3	-6.0	-5.3	-4.8	-3.3	6.7	18.0
FU	Commercial vehicles	-2.7	-1.8	0.0	2.5	3.9	7.5	23.4	FG	Specialised machines	-7.0	-5.2	-3.6	-3.2	-2.4	2.7	20.7
FM	Consumer electronics	-0.2	-1.1	2.7	4.2	3.9	34.3	57.7	DA	Yarns fabrics	0.6	-0.3	-0.9	-0.7	-2.1	2.8	23.5
FN	Telecommunications equipment	-1.2	2.3	-2.0	-0.1	2.3	28.9	86.6	IH	Refined petroleum products	-0.6	0.5	-0.9	-1.1	-1.9	2.5	26.0
DB	Clothing	0.0	0.2	0.5	0.7	2.1	6.4	92.9	FB	Miscellaneous hardware	-2.1	-2.2	-2.2	-2.7	-1.7	4.6	30.6
EB	Furniture	0.2	0.1	0.5	0.8	1.4	26.8	119.7	EC	Paper	-3.2	-2.2	-2.1	-2.7	-1.7	2.2	32.8
DC	Knitwear	0.1	0.1	0.0	0.5	1.4	5.3	125.0	GC	Basic organic chemicals	-3.8	-3.1	-1.1	-1.3	-1.7	2.3	35.1
KH	Beverages	0.4	0.2	0.7	0.7	0.9	33.5	158.5	JA	Cereals	-1.4	-5.6	-2.4	-1.5	-1.3	1.3	36.5
JB	Other edible agricultural prod.	20.2	3.3	4.1	3.0	0.9	43.0	201.5	CA	Iron and Steel	-0.8	-5.0	-1.6	-0.1	-1.2	1.8	38.2
FR	Electrical apparatus	-2.3	-0.5	1.6	-0.1	0.7	0.6	202.1	FC	Engines	-4.7	-5.4	-0.5	-0.1	-1.0	4.7	42.9
FI	Precision instruments	-1.8	-1.2	-1.2	0.2	0.7	3.7	205.9	FE	Machine tools	-2.6	-2.7	-1.2	-1.0	-0.9	1.0	43.9
FP	Domestic electrical appliances	-0.2	-0.3	0.1	0.4	0.7	33.3	239.2	JC	Non-edible agricultural prod.	7.7	0.6	-0.7	-0.6	-0.9	1.1	45.0
FQ	Electrical equipment	-1.0	-0.3	0.1	0.2	0.5	15.5	254.7	GI	Rubber articles (incl. tyres)	-0.3	-0.6	-0.6	-0.7	-0.8	1.1	46.1
NV	N.e.s. products	1.2	0.3	-0.7	-0.3	0.3	56.7	311.4	KB	Fats	-1.8	-1.6	-2.1	-1.3	-0.8	0.8	46.9
DD	Carpets	-0.1	0.1	0.1	0.3	0.1	76.0	387.3	KC	Meat	7.7	1.9	0.1	0.1	-0.7	1.2	48.1
BA	Cement	0.1	0.0	0.3	0.2	0.1	95.9	483.3	FW	Aeronautics	-2.7	-2.6	-1.3	-0.2	-0.7	0.7	48.8
GG	Plastics	-0.3	-0.3	0.0	0.2	0.0	14.0	497.3	GE	Toiletries	-0.4	-0.8	-0.6	-0.6	-0.6	1.2	50.0
BC	Glass	-0.1	0.0	0.3	0.2	0.0	28.4	525.7	IC	Natural gas	-0.8	2.6	0.1	-0.3	-0.6	0.7	50.7

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).
Source: CEPII, CHELEM database and OECD.

Table 2.A1.7. **Structure of specialisation over time: Mexico (*continued*)**

		RCA[1]					Export share				RCA[1]					Import share	
Code	Title	1970	1980	1990	1995	2001		Cumu-lative	Code	Title	1970	1980	1990	1995	2001		Cumu-lative
IB	Crude oil	2.4	47.1	20.9	9.0	7.9	1.9	1.9	GH	Plastic articles	-1.5	-2.0	-2.6	-3.6	-4.5	5.6	5.6
FT	Cars and cycles	-1.9	-0.3	5.1	8.8	6.9	6.6	8.5	FL	Electronic components	0.0	-0.1	-1.0	-4.4	-4.4	5.7	11.3
FO	Computer equipment	-0.8	-1.0	-0.1	0.5	4.1	7.3	15.8	FS	Vehicles components	-5.3	-6.0	-5.3	-4.8	-3.3	6.7	18.0
FU	Commercial vehicles	-2.7	-1.8	0.0	2.5	3.9	7.5	23.4	FG	Specialised machines	-7.0	-5.2	-3.6	-3.2	-2.4	2.7	20.7
FM	Consumer electronics	-0.2	-1.1	2.7	4.2	3.9	34.3	57.7	DA	Yarns fabrics	0.6	-0.3	-0.9	-0.7	-2.1	2.8	23.5
FN	Telecommunications equipment	-1.2	2.3	-2.0	-0.1	2.3	28.9	86.6	IH	Refined petroleum products	-0.6	0.5	-0.9	-1.1	-1.9	2.5	26.0
DB	Clothing	0.0	0.2	0.5	0.7	2.1	6.4	92.9	FB	Miscellaneous hardware	-2.1	-2.2	-2.2	-2.7	-1.7	4.6	30.6
EB	Furniture	0.2	0.1	0.5	0.8	1.4	26.8	119.7	EC	Paper	-3.2	-2.2	-2.1	-2.7	-1.7	2.2	32.8
DC	Knitwear	0.1	0.1	0.0	0.5	1.4	5.3	125.0	GC	Basic organic chemicals	-3.8	-3.1	-1.1	-1.3	-1.7	2.3	35.1
KH	Beverages	0.4	0.2	0.7	0.7	0.9	33.5	158.5	JA	Cereals	-1.4	-5.6	-2.4	-1.5	-1.3	1.3	36.5
JB	Other edible agricultural prod.	20.2	3.3	4.1	3.0	0.9	43.0	201.5	CA	Iron and Steel	-0.8	-5.0	-1.6	-0.1	-1.2	1.8	38.2
FR	Electrical apparatus	-2.3	-0.5	1.6	-0.1	0.7	0.6	202.1	FC	Engines	-4.7	-5.4	-0.5	-0.1	-1.0	4.7	42.9
FI	Precision instruments	-1.8	-1.2	-1.2	0.2	0.7	3.7	205.9	FE	Machine tools	-2.6	-2.7	-1.2	-1.0	-0.9	1.0	43.9
FP	Domestic electrical appliances	-0.2	-0.3	0.1	0.4	0.7	33.3	239.2	JC	Non-edible agricultural prod.	7.7	0.6	-0.7	-0.6	-0.9	1.1	45.0
FQ	Electrical equipment	-1.0	-0.3	0.1	0.2	0.5	15.5	254.7	GI	Rubber articles (incl. tyres)	-0.3	-0.6	-0.6	-0.7	-0.8	1.1	46.1
NV	N.e.s. products	1.2	0.3	-0.7	-0.3	0.3	56.7	311.4	KB	Fats	-1.8	-1.6	-2.1	-1.3	-0.8	0.8	46.9
DD	Carpets	-0.1	0.1	0.1	0.3	0.1	76.0	387.3	KC	Meat	7.7	1.9	0.1	0.1	-0.7	1.2	48.1
BA	Cement	0.1	0.0	0.3	0.2	0.1	95.9	483.3	FW	Aeronautics	-2.7	-2.6	-1.3	-0.2	-0.7	0.7	48.8
GG	Plastics	-0.3	-0.3	0.0	0.2	0.0	14.0	497.3	GE	Toiletries	-0.4	-0.8	-0.6	-0.6	-0.6	1.2	50.0
BC	Glass	-0.1	0.0	0.3	0.2	0.0	28.4	525.7	IC	Natural gas	-0.8	2.6	0.1	-0.3	-0.6	0.7	50.7

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).
Source: CEPII, CHELEM database and OECD.

Table 2.A1.8. **Structure of specialisation over time: Ireland**

		RCA[1]					Export share				RCA[1]					Import share	
Code	Title	1970	1980	1990	1995	2001		Cumu-lative	Code	Title	1970	1980	1990	1995	2001		Cumu-lative
GC	Basic organic chemicals	-0.51	5.05	4.67	6.52	16.16	19.6	19.6	FL	Electronic components	0.37	0.79	-1.20	-1.73	-4.17	9.4	9.4
GF	Pharmaceuticals	0.55	0.29	1.53	2.54	7.36	10.5	30.0	FT	Cars and cycles	-3.60	-3.08	-3.31	-2.94	-3.55	4.0	13.3
FO	Computer equipment	-0.90	2.61	10.23	4.92	5.94	25.5	55.5	FW	Aeronautics	-0.91	-0.19	-1.49	-0.86	-2.08	2.5	15.9
GE	Toiletries	-0.55	-0.20	0.51	0.34	2.55	4.1	59.7	GH	Plastic articles	-1.97	-1.36	-2.48	-2.84	-1.90	2.6	18.5
EE	Miscellaneous manuf. articles	-0.41	0.11	3.55	5.15	2.37	5.4	65.1	IH	Refined petroleum products	-2.27	-8.75	-2.96	-1.39	-1.58	1.8	20.3
KE	Preserved fruits	0.00	1.87	3.92	5.21	1.18	1.9	67.0	FR	Electrical apparatus	-2.10	-0.97	-1.00	-1.78	-1.52	3.8	24.2
KC	Meat	15.53	13.35	5.46	3.90	1.17	1.7	68.7	EC	Paper	-2.15	-2.05	-2.73	-2.55	-1.38	1.6	25.7
KB	Fats	6.32	6.62	3.02	2.92	0.67	1.3	70.0	FB	Miscellaneous hardware	-2.12	-1.01	-1.08	-1.16	-1.30	1.8	27.6
FI	Precision instruments	1.16	1.42	1.06	0.29	0.55	2.1	72.1	FN	Telecommunications equipment	-0.61	-0.32	-0.07	0.65	-1.29	5.4	32.9
HB	Non ferrous ores	3.25	1.22	0.67	0.26	0.16	0.4	72.5	IB	Crude oil	-2.83	-3.95	-1.47	-0.92	-1.18	1.2	34.1
FK	Optics	-0.23	-0.10	0.25	0.00	0.09	0.5	73.1	DC	Knitwear	0.98	-0.52	-0.72	-0.55	-1.05	1.2	35.3
NV	N.e.s. products	3.50	2.78	2.33	1.93	0.08	3.9	77.0	DB	Clothing	1.41	-0.77	-1.40	-1.10	-1.04	1.3	36.6
KD	Preserved meat/fish	3.30	1.25	0.12	0.08	0.04	0.4	77.4	FG	Specialised machines	-3.56	-1.76	-1.69	-1.32	-0.96	1.2	37.8
GG	Plastics	-0.48	0.41	0.29	0.13	0.00	0.1	77.5	JB	Other edible agricultural prod.	7.32	1.49	-0.21	-0.61	-0.95	1.3	39.1
HA	Iron ores	0.04	0.05	-0.12	-0.08	0.00	0.0	77.5	FU	Commercial vehicles	-1.61	-1.26	-1.78	-1.14	-0.94	1.1	40.2
II	Electricity	0.00	0.00	0.00	0.00	0.00	0.0	77.5	CC	Non ferrous metals	-1.17	-1.03	-1.31	-1.30	-0.76	0.9	41.1
KI	Manufactured tobaccos	0.19	0.04	0.03	0.10	0.00	0.1	77.6	DE	Leather	1.35	-0.55	-1.14	-0.87	-0.71	0.8	41.9
IG	Coke	0.04	0.01	-0.01	0.00	0.00	0.0	77.6	CA	Iron and Steel	-2.19	-1.49	-0.86	-0.89	-0.64	0.7	42.6
NB	Non-monetary gold	0.00	0.00	0.00	-0.03	-0.01	0.0	77.6	IC	Natural gas	-0.05	-0.37	-0.08	-0.06	-0.63	0.7	43.3
HC	Unprocessed minerals n.e.s.	1.13	0.54	0.36	0.12	-0.03	0.2	77.8	EB	Furniture	-0.16	-0.38	-0.32	-0.23	-0.55	0.7	44.0

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).
Source: CEPII, CHELEM database and OECD.

Table 2.A1.9. **Structure of specialisation over time: Korea**

		RCA[1]					Export share				RCA[1]					Import share	
Code	Title	1970	1980	1990	1995	2001		Cumu-lative	Code	Title	1970	1980	1990	1995	2001		Cumu-lative
FT	Cars and cycles	-0.99	0.52	3.66	6.56	8.69	8.9	8.9	IB	Crude oil	-5.99	-23.95	-9.18	-8.19	-15.45	15.5	15.5
FN	Telecommunications equipment	-0.81	-0.41	1.58	1.45	5.85	8.4	17.4	IC	Natural gas	0.00	-0.06	-1.21	-1.62	-3.73	3.8	19.3
FV	Ships	-1.77	1.93	3.18	2.95	5.38	5.7	23.0	NV	N.e.s. products	-0.86	-0.87	-1.81	-1.71	-2.15	2.2	21.4
FO	Computer equipment	-0.29	-0.26	1.74	2.39	4.68	8.4	31.5	FI	Precision instruments	-0.98	-0.63	-2.05	-2.51	-1.74	2.2	23.7
DA	Yarns fabrics	5.17	4.60	5.31	6.15	4.45	6.6	38.0	JC	Non-edible agricultural prod.	-4.32	-1.96	-4.87	-3.20	-1.73	1.9	25.6
GH	Plastic articles	-1.56	0.12	0.12	2.38	2.78	4.5	42.5	IA	Coals	0.46	-1.69	-1.79	-1.49	-1.68	1.7	27.3
FM	Consumer electronics	0.49	4.28	6.40	3.29	1.69	2.2	44.8	CC	Non ferrous metals	-0.35	-0.88	-2.03	-2.61	-1.50	2.7	29.9
IH	Refined petroleum products	0.12	-1.97	-2.47	-1.24	1.50	5.0	49.7	HA	Iron ores	-2.20	-1.70	-1.43	-1.23	-1.27	1.3	31.2
FP	Domestic electrical appliances	-0.10	0.10	0.99	1.34	1.13	1.4	51.1	HB	Non ferrous ores	2.66	-0.85	-1.31	-0.99	-1.14	1.2	32.4
DC	Knitwear	11.08	4.55	3.99	1.57	0.88	1.3	52.4	FG	Specialised machines	-5.83	-2.17	-4.48	-4.07	-1.14	2.5	35.0
GI	Rubber articles (incl. tyres)	0.24	2.73	1.29	1.01	0.88	1.1	53.6	KC	Meat	4.23	3.34	0.70	-0.07	-1.07	1.7	36.6
DE	Leather	2.79	6.15	11.21	2.25	0.73	1.6	55.2	GE	Toiletries	-0.72	-0.93	-0.94	-0.98	-1.01	1.4	38.0
FU	Commercial vehicles	-2.56	1.20	0.78	1.09	0.72	1.0	56.1	JA	Cereals	-12.21	-4.48	-1.75	-1.18	-0.95	1.0	39.0
DD	Carpets	1.03	3.27	1.01	0.60	0.71	0.8	57.0	FK	Optics	0.00	0.18	-0.12	-0.54	-0.91	1.6	40.6
FF	Construction equipment	-1.37	-0.59	-0.68	0.10	0.55	0.9	57.9	FR	Electrical apparatus	-1.40	-0.21	-0.72	2.25	-0.89	3.6	44.2
FB	Miscellaneous hardware	-0.69	2.17	0.13	0.23	0.52	2.3	60.2	FW	Aeronautics	-0.57	-1.07	-1.59	-1.81	-0.89	1.3	45.6
GG	Plastics	-1.76	-0.39	-0.06	0.57	0.46	0.8	61.0	GA	Basic inorganic chemicals	-0.59	-0.42	-0.71	-0.73	-0.69	1.0	46.6
CA	Iron and Steel	-2.26	3.11	0.34	-0.87	0.46	3.3	64.3	GD	Paints	-0.64	-0.58	-0.96	-0.78	-0.55	1.2	47.8
DB	Clothing	11.59	8.58	4.88	1.07	0.40	1.1	65.4	FE	Machine tools	-1.23	-1.45	-1.88	-1.55	-0.54	1.0	48.8
CB	Tubes	-0.61	1.69	0.47	0.24	0.38	0.7	66.1	GF	Pharmaceuticals	-0.59	-0.15	-0.22	-0.28	-0.51	0.7	49.5

1. RCA: Revealed comparative advantage indicator (Xi/Sum(Xi)-Mi/Sum(Mi)).
Source: CEPII, CHELEM database and OECD.

Notes

1. Moreover, concerns about national competitiveness have also raised criticisms within the economics' profession. In the context of the debate about 'strategic trade policy', an influential paper by Krugman (1994) argued that international competitiveness is typically a partial equilibrium concept and can lead to ill-designed policy recommendations. State intervention to promote sectoral competitiveness or "picking-the-winner" is typically not very effective. Moreover, while absolute comparisons of products and prices make sense at the enterprise level they cannot embrace market forces that influence countries to specialise or not in certain types of products. For that, the Ricardian concept of comparative advantage should apply.

2. Previous studies have used a similar taxonomy to analyse the interaction between trade and wages in the OECD countries (Oliveira Martins, 1994) and to interpret the level and cyclicality of mark-ups (Oliveira Martins *et al.*, 1996).

3. The classification of industries could also have been carried out using a statistical clustering procedure. Nonetheless, this approach is very sensitive to the extreme values of the SCR indicator for some industries. Moreover, a statistical clustering also comprises a certain degree of judgemental criteria for defining the threshold for distance across the different clusters.

4. Noteworthy, these rank correlations are rather stable over time and therefore do not depend much on the specific year chosen for the comparison.

5. This is usually referred to as tariff escalation.

6. A more complete structure of revealed comparative advantages by country, together with export and import shares, is given in the Annex.

7. Due to lack of space, this analysis is not provided here but could be provided by the authors upon request.

3. The Dynamics of Foreign Direct Investment and A-B-C Competitiveness

by Andrea Goldstein*

ABSTRACT

Argentina, Brazil and Chile (A-B-C) have attracted substantial amounts of FDI, but this, in contrast to Mexico, has had a limited impact on trade specialisation. In A-B-C most foreign investments were directed to primary good sectors and non-tradable infrastructure services. There was a surge in FDI inflows in the second half of the 1990s, mainly related to privatisations. There has been relatively few technology-sharing by local firms, although some supply linkages have been created, as documented by case studies both in the non-tradable (*e.g.* retail trade) and tradable (*e.g.* mining) sectors. Similarly, FDI has contributed somewhat to institutional strengthening. This chapter proposes specific framework conditions to be improved to attract more FDI and discusses how to achieve more synergies between multinationals and local firms.

* OECD Development Centre. Without implication, he thanks Kiichiro Fukasaku, Matías Kulfas, Nanno Mulder, Joaquim Oliveira Martins, Paulo Bastos Tigre, and seminar participants at ECLAC (Buenos Aires) and IPEA (Rio de Janeiro) for comments and suggestions on earlier drafts. The views expressed do not necessarily reflect those of the OECD, or the OECD Development Centre.

Foreign direct investment and competitiveness

Foreign direct investment (FDI) flows are one of the defining features of globalisation. Between 1991 and 1995, the average annual growth rate of FDI was 21 per cent compared to 9 per cent for exports of goods and non-factor services. Between 1996 and 1999, the difference increased with FDI growing at an average rate of 41 per cent and exports growing at 2 per cent (WTO, 2001). Not only is FDI becoming more important for developing countries in relation to GDP, it is also overshadowing other capital flows such as official development assistance (ODA) or export credits. While ODA has decreased in absolute terms over the 1992-99 period, FDI flows nearly quadrupled. Although portfolio flows are also playing an increasingly larger role in the total financial flows towards developing countries (approximately 10 per cent in 1999), in light of recent Asian experiences, FDI seems a more reliable form of finance (Soto, 2000).[1] It should not be overlooked, however, that despite their rapid rise in recent years, equity portfolio flows still comprise a much smaller fraction of the total inflows than do portfolio debt instruments (such as bonds, certificates of deposit, and commercial paper). Between them Argentina, Brazil and Chile (A-B-C) account for the bulk of South America's FDI flows.[2]

In deciding to engage in production activity overseas, foreign investors take into account a variety of factors and this is in turn reflected in the mode of entry they choose (Box 3.1). Assessing the contribution of FDI to growth and development, however, necessitates more than the analysis of aggregate evidence. Grasping the opportunities that may open up thanks to globalisation is a complex process that requires paying attention to multiple macroeconomic, microeconomic, and mesoeconomic factors. More fundamentally, it is well known that the responses of business agents to identical threats and opportunities are heterogeneous and highly idiosyncratic. For these reasons this paper documents the evolution of FDI in the 1990s from multiple angles (aggregate, industry, and firm) to assess its contribution and to highlight the most contentious issues.

Box 3.1. **What drives foreign direct investment?**

The literature on FDI identifies four different reasons why firms invest across national borders (Odenthal, 2001):

- *Market-seeking* investments, to access new markets that are attractive due to their size, growth or a combination of both.

- *Efficiency-seeking* investments that aim at taking advantage of cost-efficient production conditions at a certain location. Important factors that are taken into consideration are the cost and productivity levels of the local workforce, the cost and quality of infrastructure services (transport, telecommunication), and the administrative costs of doing business (resources needed in terms of finance and time to deal with government institutions). This motive is predominant in sectors where products are produced for regional if not global markets and competition is mostly based on price (such as in textiles and garments, electronic or electrical equipment, etc) and not on quality differentiation.

- *Natural-resource seeking* investment to exploit endowments of natural resources. Naturally, the production and extraction of these resources is bound to the precise location of the resources. However, given that most resources can be found in a relatively large number of locations, companies may usually choose on the basis of differences in production cost and conditions in different locations.

- *Strategic-asset seeking* investment, oriented towards man-made assets, as embodied in a highly-qualified and -specialised workforce, brand names and images, shares in particular markets, etc. Increasingly, such FDI takes the form of cross-border mergers and acquisitions, whereby a foreign firm takes over the entire or part of a domestic company that is in possession of such assets.

In reality, these motives are seldom isolated from one another. In most cases, FDI is motivated by a combination of two or more of these factors. Other analytical questions concern the identity of buyers (*Who?*), the choice of the target region (*Where?*), the timing of the expansion (*When?*), and the market entry strategy (*How?*).

A recipient economy can greatly benefit from FDI, particularly in the developing world. The conventional approach to examining the relationship between FDI and growth relies on a variant of the so-called 'resource-gap' model, in which the lack of financial resources prevents the attainment of optimal growth rates. Benefits at the aggregate level include income and employment generation as well as higher tax revenues – if foreign-owned firms make greater profits and/or export more to increase their own profitability. Additional benefits may accrue to the economy at large in the variety of industries, in the composition of exports, possibly reducing the vulnerability to terms-of-trade shocks, and if affiliates of multinational

corporations (MNCs) compete more forcefully among themselves than domestic-capital firms.[3] By deploying tangible and intangible assets MNCs sometimes also increase competitiveness – *i.e.* resource base, capacity to produce, reach and expand markets for their products, and ability to restructure the economies through state-of-the-art technology, research and development (R&D) capacity, and organisational and managerial practices – in host countries. Technology transfer and diffusion work via four interrelated channels: vertical linkages with suppliers or purchasers in the host countries; horizontal linkages with competing or complementary companies in the same industry; migration of skilled labour; and the internationalisation of R&D. As the share of firms that engage in some form of cross-border activity – including intra-firm trade – increases, FDI are also gaining in importance as a conduit to access markets.

The chapter is organised as follows. Part I provides some background information on the role of foreign capital in A-B-C industrialisation in the 20th century and analyses main trends in FDI since the structural reform process started in the late 1980s and early 1990s (depending on the case). In line with the approach used in this chapter, FDI figures are separated into non-tradable and tradable – and these in turn are classified according to the industry taxonomy (Oliveira-Martins and Price, 2004). Part II examines the effects on competitiveness at the macroeconomic level, while Part III explores the success of FDI in generating positive spillovers for host economies, focusing on three separate industries – car-making, mining, and retail distribution – where some firm-level case studies are also included as boxes. Part IV concludes by summarising the contribution of FDI in raising the competitiveness of the business sector in A-B-C countries and explores what are the main policy issues that arise at the domestic, regional, and multilateral levels.

Part I. Main trends

FDI in A-B-C: A long-term perspective

Unlike China or Eastern Europe, the A-B-C countries are familiar territory for many multinationals, which have been operating there for up to a century. Foreign capital played a leading role in these economies' insertion into the world economy in the late 19th and early 20th centuries, providing the investment both to augment the productive capacity of primary commodities such as coffee, (frozen) meat, and wheat, and to build the necessary infrastructure to ensure their shipment to Europe. Foreign entry usually took the form of fully-owned subsidiaries (Sourrouille *et al.*, 1984, p. 16 in the case of Argentina), although in the case of late-comers such as Italy, which could count on a sizeable community in the region, different forms of joint-ventures were successfully adopted.

The 1930s Depression and then World War II witnessed a sharp reduction in FDI inflows into the region, and in the immediate post-war period nationalistic governments erected new barriers to foreign capital to nurture an indigenous industry. The steady growth of the state-owned enterprise sector found its origin in nationalisations of German interests during the War (creation of Argentina's *Dirección Nacional de Industrias del Estado* in 1945) and of the utilities in the second half of the 1940s. This strategy came to an end in the 1950s as the continuation of import-substitution industrialisation behind high trade and non-tariff barriers was combined with an increasing reliance on MNCs. Exemplary in this sense was the 1953 law in Argentina (No. 14.222) that included measures on duty reductions, tax holidays, preferential credits, and profits remittance. The import-substitution industrialisation (ISI) policies implemented by presidents Frondizi in Argentina (1958-62) and Kubitschek in Brazil further emphasised capital-intensive manufacture of consumer durables. Manufacturing growth rates accelerated considerably and remained very high until the early-to-mid 1970s. In sectors such as motor-mechanical, electrical, pharmaceutical, and chemical goods, foreign investors quite obviously came to dominate the scene. By the 1970s, foreign-controlled firms in Brazil accounted for a quarter of manufacturing output, a third of the output, more than a third of the sector's exports, and 55 per cent of the

largest industrial companies' turnover (Willmore, 1986, p. 490 citing various sources). Census statistics for Argentina in 1973 show similar values – foreign-owned firms accounted for more than 30 per cent of manufacturing output, with a clear positive correlation with the degree of market concentration, and for 45 per cent of the 300 largest companies' turnover (Azpiazu and Kosacoff, 1985).[4]

From around 1975 until the end of the 1980s the A-B-C countries all recorded much lower FDI inflows than in the past despite following different policies. In particular, Argentina and Chile abruptly liberalised the economy in a context of appreciating real exchange rates, before entering into severe recession in the early 1980s. Chile subsequently adopted a more realistic package of market reforms, that included measures of liberalisation, and institutional strengthening, while in Argentina and Brazil social demands unleashed upon their return to democracy made it difficult to redress macroeconomic imbalances and embrace privatisation. What proved generally common across countries was the retrenchment of large foreign investors, especially in Argentina and Chile where long-established MNCs such as Citroën, Fiat, General Motors, Renault, either divested completely or downsized their plants to simple commercial and trading subsidiaries. This phenomenon was part and parcel of the de-industrialisation process experienced in these two countries as a result of the adoption of conservative economic policies. In Argentina, industrial production shrank by 20 per cent in 1975-82, industry's share of GDP fell from 28 per cent to 22 per cent, and 400,000 manufacturing jobs (a third of the subtotal) were lost (Sourrouille *et al.*, 1984, p. 141).

Main reforms in FDI policies

During the 1990s, regulations on foreign capital flows were relaxed around the world, with Latin America leading the removal of capital flow regulations. After decades of hyperinflation and slow growth, the three major South American economies now have very few regulations or limits on foreign investment in most sectors, and provide national treatment to foreign investors. The progressive removal of tariff and non-tariff barriers to intra-area trade in Mercosur, as well as between Chile and Mercosur, Canada, Mexico, EU and the United States also widened the size and scope of the regional market.

In Chile, across-the-board FDI liberalisation started in the 1970s, allowing full foreign ownership in virtually all sectors, absolute freedom to repatriate earnings, and national treatment for foreign investors, including in tax. The formal route for foreign direct investment (FDI) was regulated by Decree Law 600 of 1974. An alternative, less formal route for bringing

foreign capital into Chile is Chapter 14 of the Central Bank's Compendium of Foreign Exchange Regulations. However, DL 600 offers a series of unique advantages. Under this mechanism, the investor signs a legally binding investment contract with the Chilean State, which the Government cannot unilaterally modify even if it subsequently adopts new legislation.[5] There are few limited exceptions to non-discriminatory treatment.[6]

Brazil began major FDI liberalisation in 1988 by entitling foreign investors to repatriate their investments and/or profits abroad at any time. In September 1993, Decree No. 1853 modified both Foreign Investment Law and Technology Transfer Law, allowing foreigners to organise their companies, fully own them, and make use of local credit with the same rights, obligations and conditions as local firms. The 1995 constitutional amendments eliminated the distinction between foreign and national capital and opened formerly closed sectors, such as petroleum exploration and extraction, mining and banking, to private investors. Foreign capital, however, remains excluded from airports and air services, broadcasting, shipping, and fisheries, and face restrictions in financial services and health care. In January 1996, the government freed remittances for foreign investments registered with the central bank; abolished withholding taxes; and opened the insurance sector to authorised foreign investors. New or expanded foreign investment in the banking sector remains technically forbidden. However, since 1995, the government has approved foreign bank entry or expansion, case by case, according to the national interest, obligations under international agreements or reciprocity. Professional services is another area that has remained closed – at least until mid-2002 when one of the largest international law firms (Clifford Chance) was finally registered by the São Paulo section of the Brazilian Bar Association (OAB). Finally, a *Medida Provisória* was issued in October 2002 to regulate the 30 per cent participation by foreign capital in Brazilian media, provided for by a recent constitutional amendment passed by Congress. The regulation places some limits on participation by investment funds, and applies the 1967 legislation for radio and TV. The responsibility over editorial and programming decisions is reserved for Brazilian citizens.

In Argentina, the 1993 decree on foreign investment repealed procedural requirements that had served to limit foreign participation under pre-existing law. Prior approval for FDI is not needed unless special laws apply, such as in defence, and registration is required for statistical purposes only (some intra-company transfers of technology do require registration for tax purposes). Repatriation of all funds is now immediate and unconditional, whereas previously investors could not repatriate invested capital for a 3-year period (ten years if made through a debt-equity conversion). Foreign investors receive national treatment and are eligible for incentive

programmes and state procurement. A few sectors (shipbuilding, fishing, and nuclear power generation) remain closed to foreign investors. Argentina has also found itself at loggerheads with foreign investors in the area of patents legislation.[7]

To reduce sovereign risk for investors, each A-B-C country also has bilateral investment promotion and protection treaties with many European, American, and Pacific countries.[8] Such treaties allow arbitration of disputes by the International Center for the Settlement of Investment Disputes (ICSID) or any other arbitration institution mutually agreed by the parties. Six foreign firms have invoked the treaty's provisions in on-going disputes with Argentine national or provincial authorities.[9]

FDI in the 1990s

Different indicators provide evidence of the explosion of FDI in A-B-C countries in the second half of the 1990s (Table 3.1). First, the average combined annual inflows rose almost seven-fold from USD 5.4 billion in 1989-94 to USD 35.9 billion in 1995-2001. The most dramatic increase was in Brazil, that has gone from USD 1.5 billion to USD 21.1 billion per year; the increases in Chile and Argentina, however, were also far from negligible, of four and three times respectively. Second, the A-B-C region's participation in global FDI activity increased substantially, from 2.70 per cent of the world's total in the first sub-period to 5.1 per cent in the second. The same near-doubling also shows in the data for FDI to developing countries, from 9.1 per cent to 18.4 per cent. Third, the analysis of multi-year averages obviously masks year-by-year developments.[10]

Table 3.1. **Net FDI inflows to A-B-C and other regions**
Million USD

Host country/region	1989-94 (annual average)	1995	1996	1997	1998	1999	2000	2001
Argentina	2 694	5 609	6 949	9 162	7 281	24 147	11 152	3 181
Brazil	1 498	5 475	10 792	18 993	28 856	28 578	32 779	22 457
Chile	1 220	2 956	4 633	5 219	4 638	9 221	3 674	5 508
Sub-total A-B-C	5 412	14 040	22 078	33 124	40 399	64 730	48 373	30 419
Total South America	7 647	19 546	32 232	48 166	51 886	70 880	56 837	40 111
Total Latin America	17 506	32 311	52 856	74 299	82 203	109 311	95 405	85 373
Total developing countries	59 578	113 338	152 685	191 022	187 611	225 140	237 894	204 801
World total	200 145	331 068	386 140	478 082	694 457	1 088 263	1 491 934	735 146

Source: UNCTAD (various years), *World Investment Report*.

In terms of FDI inward stock, the sub-region represented 5.23 per cent of the world's total in 1998, from a low of 2.92 per cent in 1995, although by 2000 it had decreased to slightly above 5 per cent (Table 3.2). A very similar dynamic emerges from data on the A-B-C's share of FDI stock in developing countries. A comparison between 1980 and 2000 clearly shows that in stock terms the increasing importance of A-B-C for foreign investors is largely accounted for by Chile, which has seen its weight pass from 0.14 per cent to 0.71 per cent. In *per capita* terms, while in 1980 each Argentinean had more than double the FDI than Chileans (USD 190 *vs.* USD 79, with Brazilians mid-way at USD 144), twenty years later the ranking has changed. In 2000 Chile's *per capita* FDI stock stood at USD 2 822, compared to USD 1 983 for Argentina and USD 1 160 for Brazil. In the second half of the 1990s, inward FDI flows have also represented a substantial percentage of gross fixed capital formation, especially in Chile but in Argentina and Brazil as well, generally at higher levels than in other developing countries or in the world at large (Table 3.3).

Table 3.2. **FDI inward stock in A-B-C and other regions**
Million USD

Host country/region	1980	1985	1990	1995	1998	1999	2000	2001
Argentina	5 344	6 563	9 085	27 991	47 114	62 289	73 088	76 269
Brazil	17 480	25 664	37 143	42 530	132 734	164 105	196 884	219 342
Chile	886	2 321	10 067	15 547	30 038	39 258	42 933	48 441
Sub-total A-B-C	23 710	34 548	56 295	86 068	209 886	265 652	312 905	344 052
Total South America	29 253	42 136	66 699	111 666	268 593	330 174	377 008	417 580
Total Latin America	49 960	79 673	116 678	201 426	404 621	520 282	613 094	692 978
Total developing countries	240 837	347 237	487 694	849 915	1 240 976	1 740 377	2 002 173	2 181 249
World total	615 805	893 567	1 888 672	2 911 725	4 015 258	5 196 046	6 258 263	6 845 723

Source: UNCTAD (various years), *World Investment Report.*

Table 3.3. **Inward FDI flows as a percentage of gross fixed capital formation in A-B-C and other regions**

Host country/region	1984-94 (annual average)	1995	1996	1997	1998	1999	2000
Argentina	8.6	12.1	14.1	16.1	11.5	47.2	24.2
Brazil	1.7	3.8	7.2	11.9	18.6	28.2	28.4
Chile	13.7	19.0	23.2	23.2	22.4	59.9	23.1
Total South America	4.5	7.4	11.8	15.9	17.4	32.9	25.4
Total Latin America	6.2	9.6	12.6	16.6	17.1	25.9	20.7
Total developing countries	5.2	7.7	9.1	11.1	11.4	13.4	13.4
World total	4.1	5.3	5.9	7.4	11.0	16.5	22.0

Source: UNCTAD (various years), *World Investment Report*.

The year 2002 has been characterised by a marked slowdown in global investment flows and the A-B-C region has been far from immune from such trends. Very little FDI activity has been registered in Argentina, where the only major operations have been the purchase of the largest brewery (Quilmes) and the largest domestic-owned oil company (Pecom) by Brazilian investors (Ambev and Petrobrás, respectively). In Brazil, Central Bank data show that in May 2002 the 12-month FDI accumulation was USD 21 942 million – versus a peak of USD 31 583 million as of May 2001, a decline of 30.5 per cent. The accumulated FDI in the first five months was USD 8.1 billion, *vs.* USD 8.8 billion in the same period in 2001.

In 2001-02, the interactions between developments in world financial markets and events in the region have been of two kinds. On the one hand, the economic crisis in Argentina has hit hard results and stock prices of corporations exposed in this country. For Spanish MNCs in particular the country accounts for a sizeable share of profits – at least 10 per cent at Endesa and 15 per cent at Telefonica – and two-fifths of revenues at Repsol-YPF. The banks are exposed to over USD2 billion-worth of government debt apiece. On top of that, the devaluation of the *peso* led to a rise in bad debts, since over two-thirds of the loans to Argentine companies and individuals, most of whom receive income in pesos, are denominated in dollars. The banks had put aside over USD 1 billion in provisions over the previous years to cushion against bad times. Companies that have already withdrawn from Argentina or that announced their intention to do so include the German autoparts makers, Kautex, the US grain trader, Tradigrain, and the Spanish meat-processing and packaging firm, Campofrio. Total investment in foreign affiliates declined by 30 per cent in 2001, reaching its lowest level since 1996 (the previous trough in the economic cycle) (UNCTAD, 2002).

On the other hand, the Enron and WorldCom fraud scandals shook Latin American markets as these companies had sizeable investments in the region. WorldCom/MCI purchased Embratel in July 1998 and encountered difficulties in rolling over debts of BRL 1.3 billion that fell due in 2003. WorldCom/MCI intended to sell Avantel in Mexico, but it could not sell Embratel until July 2003, although Anatel was considering possible intervention. A number of North American and European telecommunications companies also held talks with Brazilian investors to sell their holdings.[11] Enron announced the sale of its 12 foreign assets including three in Brazil – Elektro power distribution in São Paulo, its share in the Brazil Bolivia gas pipeline project, and the gas turbine electricity generation unit in Cuiabá (Mato Grosso).

By sector

The sectoral composition of FDI flows is an important determinant of national competitiveness – *i.e.* the ability of a country to generate an increasing stream of export earnings. A first approximation is provided by the respective role of tradable and non-tradable goods – although with the important caveat that FDI can indirectly improve competitiveness by improving the quality and efficiency of supplying those non-tradable services that are needed to manufacture export goods. This, however, is largely a function of the regulatory regime, an issue that escapes the scope of this paper.

The profile of FDI in A-B-C and Mexico in the 1990s is presented in Table 3.4 and a number of contrasting features are almost self-evident. First, oil and mining represents a large share of FDI flows to Argentina (a third) and Chile (one fourth) while barely appearing in Brazil and Mexico. The contrast between Argentina, on the one hand, and Brazil and Mexico, on the other, is mainly explained by the privatisation of YPF, the Argentine oil company. However, as it will be shown below, foreign companies have not been deterred from investing in Chile by the unchanged public-sector nature of Codelco, the copper producer. Second, the weight of services in the FDI portfolio is much higher in Brazil and Chile than elsewhere. In the former, this is due to the post-1995 privatisation wave in banking, electricity, and telecommunications; in the latter, to the acquisition by Italian and Spanish companies of already private utilities companies. In Argentina, of course, privatisation took place on an equally large scale, and indeed earlier than in Brazil, but assets there fetched lower prices. The third, and possibly most telling contrast, concerns the manufacturing sector. Following the creation of the North American Free Trade Agreement (NAFTA), the Mexican economy has become increasingly integrated with the US market and its industry has correspondingly benefited from substantial FDI. While the apparently much greater potential of Mexico as a manufacturing platform shows up in all sectors, it is particularly evident in electronics. On the other hand, in food, beverages, and tobacco FDI flows are usually intended to serve the domestic market and predominantly take the form of acquisitions of existing assets (see below).

Table 3.4. **Sectoral distribution of FDI in A-B-C and Mexico in 1992-2002**

	Argentina (1992-2000)	Brazil (1996-Apr 2002)	Chile (1996-2000)	Mexico (1994-98)
Primary sector	**33**	**3**	**25**	**1**
Agriculture			1	1
Oil, mining	33		24	
Industry	**31**	**21**	**11**	**62**
Food, beverages, tobacco	7	4	4	16
Chemicals, paper	7	4	6	9
Non-electrical chemical equipment				4
Electronic equipment		1		13
Motor vehicles	4	5		9
Other manufacturing	13	8	1	11
Services	**36**	**76**	**64**	**37**
Commerce	4	8		12
Electricity, gas, water	12	12	27	
Transport and communications	9	22	7	7
Banking and finance	11	14	20	9
Other services		20	10	9

Sources: ECLAC (2000), ECLAC (2001), Kulfas *et al.* (2001), SOBEET (2002), *Carta*, No. 23.

Focusing on industrial FDI in A-B-C countries, the car sector has attracted most flows – and is covered separately below. The sub-region has also been one of the main destinations for FDI in capital and scale-intensive industrial commodities like steel, paper and pulp, aluminium, and petrochemicals (Box 3.2). New technologies, on the other hand, account for a very minor share of total FDI inflows. In the mid-1990s, Brazil and Chile unsuccessfully competed with Costa Rica for the location of Intel's first manufacturing facilities in Latin America.[12] In 1994, Compaq opened a factory near Campinas to supply the whole of South America with PCs and small servers. It now exports 60 per cent of its production. Although for the moment local components account for only 30 per cent of the value of Compaq's Brazilian PCs, that share may rise as an incipient cluster of high-technology businesses around Campinas develops. On the other hand, in 2002 Dell postponed a planned expansion of its computer assembly plant in southern Brazil because of the slump in the electronics industry and weak economic growth.

Box 3.2. **Foreign investment in the Argentine petrochemicals industry**

Under state ownership and/or regulation, the Argentine petrochemicals industry grew fast in the 1980s and increased its participation in manufacturing output and fixed capital formation. The process, however, suffered from some typical government failures – disregard for market signals, lack of vision, capture by lobbies – and failed to generate spillovers, both inside individual firms and across the supply chain. In the 1990s, in a context of privatisation and deregulation, firms adopted defensive strategies, integrated vertically, reduced R&D expenses, and tried to collude.

Between 1998 and 2002 output capacity in the Argentine petrochemicals industry rose dramatically from 3 to 7 million t/y thanks to USD 2.5 billion investments. A major contributor during the period was the USD 720 million green-field investment by Dow Chemicals and Repsol-YPF to build a polyethylene plant in Bahia Blanca. The plant is one of the three largest in the world and a high share of its output is exported. Together with Petrobras, the same two companies also invested USD 440 million in the Mega project, an ethane, propane, butane and gasoline producing plant that supplies Dow's and other petrochemical facilities in the Bahia Blanca region. Repsol-YPF also embarked in Profertil, a joint project with Perez Companc and Agrium to build one of the world's biggest fertilizer plants. Other recently completed FDI projects include a PET plant by Eastman Chemical built at a cost of USD 110 million, and a USD 120 million expansion of its sodium hydroxide, chlorine and PVC plant by Solvay Indupa, controlled by Belgium's Solvay. Finally, Perez Companc is the sole investor in the USD 450 million PASA project, scheduled to be completed by 2002. The PASA plant will produce ethylene, BTX, benzene, PET and other products.

Source: The Economist Intelligence Unit.

Thanks to the availability of skilled labour and a very competitive telecoms infrastructure (in terms of both prices and quality) Chile has registered a number of recent successes in attracting high-tech FDI. In 2001, for instance, Motorola set up a software development centre for mobile Internet solutions in Valparaiso, which will require investments of USD 12 million over four years. A number of service companies, such as Delta Airlines, have decided to locate their back-office and call centre for Latin America in Chile. This operation was reinforced in late 2001 when, facing the slowdown of global aviation in the wake of the 11 September events, Delta closed its call centre in Mexico.[13] Skyteam's partner Air France also opened a similar centre in Chile. Also in 2001 BSCH, the Spanish bank, inaugurated its systems back-office for the region in Santiago. America Latina Tecnologia (Altec) is a fully-owned subsidiary which will develop and maintain the computerised systems for the BSCH group's

17 banks in 12 Latin American countries. Altec required an initial investment of USD 5 million, and another USD 10 million is expected to follow.

By country of origin

In each of the A-B-C countries, the United States and Spain together account for at least 40 per cent of FDI flows (Table 3.5). Obviously, the world's largest economy has a long-running tradition of Latin American investment, while Spanish big business only started investing abroad on a large scale in the 1980s. Suffice it to remark here that their experiences are both different and similar. Different *in primis* because US MNCs have mostly invested in manufacturing while Spanish corporations have been particularly interested in banking and public utilities and have entered throughout privatisation. Unsurprisingly, because of the different features of FDI in Mexico, the United States account for more than two thirds of FDI in that country since the birth of NAFTA, while Spain is a smaller player (3.7 per cent of the total), although still the third largest after Japan. The similarity has to do with the history of outward FDI activities in these countries. The market-seeking strategy that characterises Spanish MNCs nowadays bears a distinct resemblance to the behaviour of American companies in the 1920s (Wilkins, 1974).

Table 3.5. **FDI in A-B-C and Mexico by source country, 1990-2002**

	Argentina (1992-2000)	Brazil (1996-Apr 2002)	Chile (1990-2001)	Mexico (1994-Mar 2002)
Australia			6	
Canada			15	
France	7	8	2	-2
Germany	2	2	1	3
Italy	4	2	3	0
Japan			4	3
Spain	40	19	16	4
The Netherlands	4	10	2	9
United States	25	23	31	67
United Kingdom	2	2	6	3
OECD				
Argentina	..		1	
Brazil		..		
Chile	4			
South Africa			4	
Non-OECD				
Other countries	12	34		13
Total	100	100	100	100

Sources: ECLAC (2000), ECLAC (2001), Kulfas *et al.* (2001), Laplane *et al.*, (2001).

Focusing now on each of the three A-B-C countries, the different importance of individual source countries is mainly a reflection of the sectoral characteristics of FDI. Chile, for instance, represents a large share of the Latin American FDI of two OECD countries, Australia and Canada, in which the mining sector plays a leading role. For the same reason, South Africa also has an unusually heavy weight in Chile. On the other hand, Dutch and French industrial, retail distribution, and insurance companies have concentrated their ventures in Argentina and Brazil. Finally, it should be mentioned that since the second half of the 1990s intra-A-B-C FDI flows have gathered momentum. In particular, then domestic-owned Chilean utilities invested in the Argentine electricity sector; a number of Trans-Andean gas pipelines were built and operated by Argentine-led consortia; and food and beverages companies from Argentina and Brazil – notably Arcor, the world's largest candies producer, and Ambev, the world's fifth largest brewery – have concluded some very important deals in each other's markets.

A mirror form for analysing the geographical dimension of FDI is by studying the importance of host countries as a destination of FDI outflows for selected OECD Members (Table 3.6). As far as the G7 countries are concerned, in 1990 the sub-region accounted for 7.9 per cent of Italy's outflows, for 4.4 per cent of the United States' ones, and for much lower percentages in the other instances. In the mid-1990s, these values were higher for all countries except Italy (and were basically unchanged in the case of Japan). The year 1999 marks a relative deterioration, as higher absolute values of FDI to the A-B-C countries were insufficient to match the phenomenal increase in intra-OECD FDI flows. As Table 3.6 is based on OECD statistics, it does not include Spain, which did not report such data. It does however include Portugal, a country for which Brazil was by far the single most important FDI target in 1999.

Table 3.6. **The importance of A-B-C countries as FDI destinations for selected OECD countries (USD million)**

	1990	1995	1999
United States			
In Argentina	2 531	7 660	14 187
In Brazil	14 384	25 002	35 003
In Chile	1 896	6 216	9 886
In A-B-C as % world total	4.4	5.6	5.2
Japan			
In Argentina	431	787	
In Brazil	6 560	8 849	610 400
In Chile	311	430	
In A-B-C as % world total	2.4	2.2	2.0
Germany			
In Argentina	1 427	1 908	3 608
In Brazil	5 313	11 017	13 381
In Chile	174	11 981	690
In A-B-C as % world total	3.1	6.7	3.0
France			
In Argentina	1 967	7 169	15 525
In Brazil	6 898	18 682	43 091
In Chile	1 936	1 625	764
In A-B-C as % world total	1.9	3.0	4.6
United Kingdom			
In Argentina	172	455	1 130
In Brazil	1 250	2 323	2 376
In Chile	207	666	964
In A-B-C as % world total	1.4	1.8	1.1
Italy			
In Argentina	1 426	2 300	3 965
In Brazil	3 598	3 798	8 026
In Chile	0	0	0
In A-B-C as % world total	7.9	4.0	3.8
Canada			
In Argentina	123	1 335	2 465
In Brazil	1 698	2 458	3 067
In Chile	285	2 673	4 625
In A-B-C as % world total	2.1	4.0	4.0
The Netherlands			
In Argentina	n.a.	2 038	2 863
In Brazil	n.a.	3 436	7 706
In Chile	n.a.	439	1 203
In A-B-C as % world total	n.a.	2.1	2.7
Switzerland			
In Argentina	n.a.	491	1 085
In Brazil	n.a.	4 385	4 375
In Chile	n.a.	903	686
In A-B-C as % world total	n.a.	3.5	2.5
Portugal			
In Argentina	n.a.	1 253	3 132
In Brazil	n.a.	3 676	400 601
In Chile	n.a.	0	168
In A-B-C as % world total	n.a.	0.8	23.9

Source: OECD.

A complementary way of assessing the relevance of the major Latin American markets is by their weight in the worldwide turnover of the 20 top MNCs (Table 3.7). Clearly it is only for one company, Repsol-YPF that the A-B-C region accounts for more than 20 per cent of its global turnover in 2000. Although Brazil is an important market for them all, Mexico accounts for a larger share of turnover in the case of producers of vehicles (General Motors, Ford, DaimlerChrysler, and Volkswagen), electronics (General Electric and IBM), and food (Nestlé), although not for oil companies (ExxonMobil and Royal Dutch/Shell).

Table 3.7. **The presence of the World's Top 20 MNCs in Argentina, Brazil, and Mexico in 2000**

Company	Country	Sector	Percentage of worlwide turnover in:		
			Argentina	Brazil	Mexico
General Electric	United States	Electronics	0.00	0.00	**2.02**
ExxonMobil	United States	Petroleum	0.59	**1.51**	0.00
Royal Dutch/Shell	Netherlands/UK	Petroleum	**1.53**	**2.62**	0.00
General Motors	United States	Motor vehicles	0.31	**1.97**	**5.23**
Ford	United States	Motor vehicles	0.60	0.91	3.30
Toyota Motor	Japan	Motor vehicles	0.00	0.00	0.00
DaimlerChrysler	Germany	Motor vehicles	0.43	**2.34**	**6.05**
Total Fina SA	France	Petroleum	0.00	0.00	0.00
IBM	United States	Computers	0.82	**1.84**	**4.29**
BP	United Kingdom	Petroleum	0.00	0.00	0.00
Nestlé S.A.	Switzerland	Food/beverages	**1.05**	**3.50**	**4.43**
Volkswagen Group	Germany	Motor vehicles	**1.10**	**5.57**	**9.68**
Nippon Oil Co. Ltd	Japan	Petroleum	0.00	0.00	0.00
Siemens AG	Germany	Electronics	0.59	0.81	**1.78**
Wal-Mart Stores	United States	Retailing	0.29	0.32	**4.64**
Repsol SA	Spain	Petroleum	**20.49**	0.00	0.00
Diageo Plc	United Kingdom	Beverages	0.00	0.00	0.00
Suez	France	Utilities	**1.61**	0.00	0.00
BMW AG	Germany	Motor vehicles	0.00	0.00	0.00
Weighted average			0.90	1.23	2.54

when 1%<weight<2%; when 2%<weight<5%; when 5%<weight<10%; when weight>20%.
Companies' ranking based on UNCTAD (2001), Table III.1; no data available for Mannesmann AG (now Vodafone Plc)
Source: Author's calculations based on AméricaEconomía (2001), *Especial 500* and Fortune (2001), *Global 500*.

By mode of entry

One of the key features of current FDI global trends is the increasingly large part of FDI that takes the form of cross-border mergers and acquisitions (M&As), including privatisation (UNCTAD 1999). The annual average of cross-border M&A sales jumped more than six times from USD 132 billion in 1993-95 to over USD 810 billion in 1998-2000. During the latter period, cross-border M&As amounted to 80 per cent of global FDI inflows and their share in total M&A activity has jumped to 2.3 per cent in 1999, from 0.6 per cent in 1992. M&As by TNCs are becoming a common form of foreign entry in Latin America and Africa, and more recently in Asian countries affected by the financial crisis. In 1998-99, Argentina and Brazil dominated cross-border M&A sales by developing countries. Excluding Bermuda, a tax haven, Argentina is the only non-OECD economy with target companies (YPF and Aeropuertos Argentinos) in the top 50 cross-border M&A deals completed during 1987-99.[14] As regards privatisation, three companies each from Argentina and Brazil appear among the world's largest deals involving foreign investors concluded in 1987-99.

Summary indicators for 2000 show the prominence of telecoms and banking (with a combined weight in excess of 70 per cent) among the 40 largest M&A deals (Table 3.8). Foreign investors accounted for 87 per cent of total activity – and they were the only buyers in the case of oil and manufacturing (in this last case there were three deals only). Although the sample is far too small to draw any kind of meaningful inference, it is interesting to note that domestic investors were particularly active in non-tradables (although not necessarily sheltered) sectors of the economy such as banking, finance, and media. Post-2001 data confirm these results (Table 3.9).

Table 3.8. **Summary indicators for the 40 largest M&A deals in A-B-C and Mexico in 2000**

Sector	Total value	Nr of deals	By nationality of buyer		Foreign/total %
			Foreign	National	
Telecoms	24 720	10	23 592	1 128	95
Banking	11 332	10	8 807	2 525	78
Oil	4 824	2	4 824	0	100
Energy	4 553	7	4 233	320	93
Media	2 132	3	1 225	907	57
Finance	1 788	3	555	1 233	31
Non-durables	752	1	752	0	100
Mining	530	1	0	530	0
Industrial commodities	510	1	510	0	100
Capital goods	415	1	415	0	100
Water	336	1	336	0	100
TOTAL	51 892	40	45 249	6 643	87

Source: Author's elaboration based on *Latin Trade*, April 2001.

Table 3.9. **Top Latin American targets M&A deals announced since January 2001**

Date	Target name (country)	Acquiror name (country)	Industry	Value (USD million)
May 2001	Banacci (Mex)	Citigroup (US)	Banking	12 821
Mar 2002	Banco Sudemeris (Bra)	Banco Itaú (Bra)	Banking	1 440
Jan 2002	Afore Banamex (Mex)	Banacci (Mex-US)	Banking	
Jul 2002	Pecom (Arg)	Petrobrás (Bra)	Oil	1 125
Jan 2001	Global Telecom (Bra)	Telesp (Bra-Spa)	Telecoms	1 116
Sep 2001	Bancomer (Mex)	BBVA (Spa)	Banking	1 094
Jan 2001	Iusacell (Mex)	Vodafone (UK)	Telecoms	973
Jan 2001	Portugal Telecom (Bra)	Telefónica (Spa)	Telecoms (mobile)	965
Feb 2001	Tess (Bra)	Telecom Americas	Telecoms	950
Aug 2001	Banco Edwards (Chi)	Banco de Chile (Chi)	Banking	943
Mar 2002	Pegaso (Mex)	Telefónica (Spa)	Telecoms	884
Jul 2001	Petrobrás (Bra)	Investors	Oil	807
Jun 2001	Seguros América (Mex)	ING (Nth)	Insurance	791
Feb 2001	Edenor (Arg)	EDF International (Fra)	Electricity	786
Mar 2002	Kaiser (Bra)	Molson (Can)	Beverages	772
May 2002	Quilmes (Arg)	Ambev (Bra)	Beverages	600

Source: *América Economia*, various issues.

Perhaps no single policy has characterised market reforms in Latin America in the 1990s as much as privatisation, and foreign investors have played a role that is difficult to underestimate. In the macro-region, 36 per cent of FDI in the 1990s were represented by foreign investment for privatisations (Lora 2002). The withdrawal of the state from the economic arena has been total in the case of electricity distribution, petrochemicals, railways, steel, and telecommunications. Foreign investors, in particular Spanish and US ones, acquired most of the utilities, whereas they played a less prominent role in manufacturing privatisation. In other domains progress has been either uneven across countries – this is the case of airports, banking, and electricity generation – or equally modest in all of them, such as in water and sanitation. What is constant, however, is the association between state divestiture and FDI.

Sometimes companies are sold because of succession struggles, a common instance in emerging markets where founding entrepreneurs are reluctant to separate ownership and control by seeking stock market listing. Sometimes the current owners are made an offer they cannot refuse. But more often owners sell because they lack the technology or the capital to compete in a more open market. In sectors where sunk costs, related to brands in particular, are crucial in building competitive advantage, MNCs have found it more expedient to acquire existing firms, and then inject their superior marketing and managerial skills. This form of entry, however, does sometimes give rise to worries regarding its developmental value, in particular for the risk of asset stripping and of seeing large inflows become large outflows when the investments are liquidated, contributing to exchange rate volatility (Lall, 2000). The impact on employment may also turn out to be adverse, although this may be part of a rationalisation effort that can raise productivity. Often, the first thing multinationals did to modernise their Latin American operations was knock down the walls that divided identical but separate operations in each country. Examples include Nestlé's reorganisation of its food factories throughout Mercosur, siting them where the raw materials are cheapest; Royal Dutch/Shell's creation of a new management post in London to co-ordinate purchasing by its operating units throughout Latin America; the transformation of IBM business activities in Latin America into individual profit centres and the fusioning of 16 back-office operations, one for each country, into a single one for the region.[15]

On the other hand, where the investor makes a long-term commitment to the acquired firm and invests in upgrading and restructuring its technology and management, M&As are very similar to a green-field investment and may yield significant economic benefits. In Argentina, cross-border M&As accounted for almost 60 per cent of FDI in 1992-99 – with a heavier weight

for privatisation deals in the first part of the decade (Chudnovsky and López, 2000). Although the difference is statistically not significant, comparisons of similar firms show that M&A firms performed better than non-M&A ones, especially if acquired by foreign investors. In Brazil 60 per cent of M&As saw foreign investors in the role of buyers, with a concentration of activity in the years of more intense privatisation – in this case the later part of the 1990s (Ferraz and Iootty, 2000). Contrary to what may be expected, foreigners tended to buy smaller target companies than domestic investors, a phenomenon that may be partly explained by the latter's concentration in capital-intensive sectors such as mining, steel and non-ferrous metals, and paper and pulp. For a panel of 120 target companies, Rocha *et al.* (2001) find a positive effect on performance (with a two year lag), that is largely explained by ownership transfer from the public to the private sector, and not from any significant modification of the investment behaviour nor to the presence of foreign investors.

Part II. Main effects

This section of the paper analyses the role of MNC affiliates in the A-B-C economies using standard measures and indicators. The aim is to put the sharp increase in FDI in the 1990s in the wider picture of the main changes that have characterised these economies, in particular the process of export reorientation (in terms of products and trade partners) and the widening of balance of payments imbalances – in particular in the case of Argentina and Brazil.

The weight of MNCs in A-B-C economies

In each of the three countries, the FDI boom has been reflected in a large increase in the participation of foreign-owned companies in big business's consolidated turnover, that has itself grown in importance. In Argentina, there were 249 (fully- or partly-owned) MNCs among the 500 top companies in 1999 and they accounted for 71.1 per cent of value added, 68.9 per cent of fixed capital formation, 50.3 per cent of employment, 56.2 per cent of wages, 64.8 per cent of exports, 78.2 per cent of imports, and 80.3 per cent of profits in the panel (INDEC, 2002).[16] Data covering the 1990s also show a very rapid increase in the weight of MNCs among the 100 top corporations (Table 3.10, Panel A). They went from less than a fourth of total sales in 1991 to half in 2000. Since joint-ventures also rose in importance, domestic-owned firms which accounted for 64.3 per cent of sales in 1991 now only represent 29.4 per cent.

The situation in Brazil is slightly different insofar as domestic conglomerates have resisted better to market opening and privatisation (Goldstein and Schneider, 2004). In the 1990s the 23 percentage point decline in the participation of SOEs to the total sales of the 100 largest corporations has benefited both private national companies (+9 per cent) and MNCs (+14 per cent) (Table 3.10, Panel B). Interestingly, in terms of size large domestic firms have become relatively smaller: in 1998 each was on average responsible for 0.7 per cent of sales (*vs.* 0.9 in 1990) while over the same period each MNC's average weight has grown from 1 per cent to 1.2 per cent.

Table 3.10. **Ownership distribution of the 100 largest corporations in the 1990s**

A. Argentina

	1991		1995		2000	
	No. firms	% sales	No. firms	% sales	No. firms	% sales
State Owned	4	33.5	3	3.8	3	2.8
Private national	49	30.8	48	35.9	34	26.6
Multinational	28	23.9	32	28.2	47	49.6
Joint-ventures	9	11.8	17	32.1	16	21.0
Total sales (USD billion)	36.8	..	63.8	..	84.1	..

Source: Kulfas, Matías (2001), "El Impacto del Proceso de Fusiones y Adquisiciones en la Argentina sobre el Mapa de Grandes Empresas. Factores Determinantes y Transformaciones en el Universo de las Grandes Empresas de Capital Local", *Estudios y Perspectivas*, No. 2, ECLAC, Buenos Aires.

B. Brazil

	1990		1995		1998	
	No. firms	% sales	No. firms	% sales	No. firms	% sales
State Owned	38	44	23	30	12	21
Private national	35	30	44	32	54	39
Multinational	27	26	31	38	34	40

Source: Siffert Filho, N. and C. Souza e Silva (1999), "Large Companies in the 1990s: Strategic Responses to a Scenario of Change", *mimeo*, Economics Department, BNDES, Rio de Janeiro.

Table 3.11 presents summary data on the 50 largest non-financial companies in each country in 2000 (34 largest in the case of Chile). Unsurprisingly, Brazil-based companies are consistently larger – in terms of sales, profits, assets, and employment – than those in Argentina and Chile regardless of ownership. As far as MNCs are concerned, they are on average larger than private national companies and smaller than the few SOEs that remain after privatisation – and that are concentrated in capital-intensive sectors exploiting natural resources. Compared to private domestic firms, MNCs do on average employ more capital and less labour. Regardless of nationality, privately-owned companies appear to have a rather similar export propensity in the two smaller economies, but MNCs a considerably lower one in the case of Brazil (although the ratio for domestic companies excluding Embraer is considerably lower at 11.5 per cent).

Table 3.11. **Summary data on the 50 largest non-financial companies in 2000**
Average value (USD million) per each indicator, corrected for the number of reporting companies

	#	Sales	Profits	Assets	Exports (X)	X/Sales	Employees
ARGENTINA							
MNC	32	1 407	116	2 576	101	7.2	5 823
PN	17	946	-6	1 409	76	8.0	9 839
SOE	1	1 586	..	..	0	0.0	500
BRAZIL							
MNC	25	3 745	224	4 465	189	5.0	11 314
PN	22	2 532	214	3 739	581	22.9	14 754
SOE	3	12 655	2 161	27 527	549	4.3	..
CHILE							
MNC	11	1 187	57	4 271	112	9.4	4 855
PN	20	938	76	1 614	86	9.2	7 008
SOE	3	1 919	76	2 626	1 155	60.2	10 232

Note : MNC= multinational company ; PN= private national ; and SOE= state-owned company.
Source: Author's calculations based on América Economía (2001).

The contribution of MNCs to the external sector

Trade has traditionally been the principal mechanism linking national economies. Following Mundell (1957) it was long thought that trade and direct investment were substitutes – crudely, in a world of differential factor endowments, either factors move or goods move. Most recent models emphasise potential complementarities between trade and FDI (Ethier, 1994 and Markusen, 1995). The trade effects of FDI depend to a large extent on whether it is undertaken to gain access to natural resources or to consumer markets, or whether FDI is aimed at exploiting locational comparative advantage and/or other strategic assets such as research-and-development capabilities. Such trade effects are the result of the package of tangible and intangible assets that MNCs can bring to a host country through FDI or such other relationships as subcontracting, and which, in an increasingly liberalised and global world economy, acquire considerable importance, particularly as regards developing countries, for competing successfully in world markets.

Trade

A key feature of trade competitiveness in the A-B-C countries is the concentration of exports in a small group of large firms, most of them foreign-owned. In Brazil, in both 1990 and 1999 – that is before and after trade opening – roughly 45 per cent of manufacturing exports originated in firms selling abroad at least USD 50 million per year (Pinheiro and Moreira 2000, Table 2). The number of such "large" exporters increased from 53 to 93 (consistent with the increase in the total number of exporting firms from 6 686 to 14 034). Although the share of local branches of multinationals in this sub-set of firms has remained stable at roughly half, their weight in total manufacturing export in 2000 has risen from 30.8 per cent to 38.3 per cent (*ibid*, Table 4). Brazil's FDI census provides additional information on such trends.[17] The firms included in the sample recorded exports for USD 33.2 billion (60 per cent of total exports) in 2000, an important increase over the 1995 total of USD 21.7 billion (47 per cent of the total). Import growth, however, has been even more substantial, from USD 19.4 billion in 1995 (39 per cent of total) to USD 31.5 billion (57 per cent) in 2000. Intra-firm trade registered a particularly fast increase – in the case of imports from USD 8.5 billion to USD 18.2 billion and in the case of exports from USD 9 billion to USD 21 billion. This last figure corresponds to 63 per cent of exports by sample firms (42 per cent in 1995) – and it equals the increase in their sales abroad. A simple comparison between 1995 and 2000 export figures shows that the increase recorded by firms with foreign participation (USD 12 billion) is larger that the rise in total exports (USD 9 billion), *i.e.* that foreign sales by fully-Brazilian companies decreased over the period.

In the case of Argentina, the number of MNCs among the 1 000 largest exporters almost doubled to 360 in 1998 and their participation rose from 32 per cent in 1990 to more than 54 per cent (Chudnovsky and López, 2001, Table 3-8). The increase was much more impressive when looking at data on importing firms – from 417 importing MNCs (61.9 per cent of imports) in 1995 to 524 (71.7 per cent) in 1998 – to reflect the import-intensity of fixed capital formation in privatised utilities. In Chile, the number of exporting firms has risen from 4 100 in 1990 to 6 022 in 1999 (Alvarez and Crespi 2000, Table 2). The degree of concentration, however, remain very high: firms exporting more than USD 100 million annually (23 in both 2000 and 2001) accounted for half of total shipments.[18] Of the ten largest exporters, responsible for 38.8 per cent of 2001 exports, half were foreign-owned, with a combined 13.6 per cent share (Prochile, 2002).

Among the 100 largest importing and exporting firms in Latin America, the subsidiaries of MNCs are significantly more represented among importers (57) than among exporters (47). Given that the number of state-

owned enterprises in the sample is roughly equal, this difference is due to the relatively large share of private, domestic exporters. Interestingly, such companies appear to be numerous in Argentina – as exporters of agro-business products – and in Mexico – especially in industrial commodities (cement, glass), light manufacturing (food, beverages) and services – whereas they are few in Brazil. The large numbers of drugs and chemical foreign-owned companies (Basf, Dupont, Dow, Aventis, Novartis, Bayer, and Roche) among Brazil's largest importers is also evident.

A second issue is the propensity to access international markets, and which ones. Multinationals tend to export more than Brazilian firms, but not as much as from their operations in other countries (Pinheiro and Moreira 2000).[19] Brazil-based multinationals' exports to Latin America accounted for 47 per cent of their total exports in 1997, up from 26 per cent in 1990, whereas the share of their exports going to OECD countries fell from 70 per cent to 44 per cent over the same period. In Argentina, the propensity to both import and export remained consistently higher for foreign firms across different industries, although in 1998 the export ratio between the two classes of exporting firms (2.1:1) was slightly lower than in 1992 (2.7:1) (Chudnovsky and López, 2001). Nonetheless, in both countries the Mercosur, or ALADI, bias is not significantly different between foreign- and national-owned industrial exporters. Castillo and Zignago (2000) also find that in both countries FDI is positively (and significantly) related to import and negatively (but weak) to export – with a positive and strong relation of integration on investment flows in the case of Brazil and a weaker or inexistent relation in the Argentinean case.

In Chapter 2 of this book, Oliveira-Martins and Price propose a classification of trade by industries on the basis of the degree of market fragmentation and R&D intensity. Unfortunately it is impossible to replicate their analysis for FDI as industry classifications are not homogenous. An approximation is possible for Brazil on the basis of the 1995 and 2000 censuses, with the important caveat that for the most recent year manufacturing industries only represent 30.8 per cent of foreign investors' assets, although a much higher share of other variables (Table 3.12). The segmented (high sunk costs), high R&D (SH) cluster tops the others in terms of assets and revenues, and not surprisingly trails the fragmented (low sunk cost), low R&D cluster (FL) in terms of employment. In 2000 each of these two clusters contributed roughly two-fifths of exports by foreign firms in the sample (which in turn contribute more than 87 per cent of total exports by foreign-owned companies in the census), but the trade surplus recorded by the FL cluster (USD 5.2 billion) is more than offset by the deficit recorded by the SH cluster (USD 5.4 billion). The SH cluster increased its participation in both imports (from 64 per cent to 70 per cent) and exports

(from 30 per cent to 40 per cent). Although no precise data is available on the intensity of intra-firm trade in the different clusters, extrapolating from the more general picture provided suggests that SH MNCs have kept buying from their international network of suppliers.

Table 3.12. **FDI data in Brazil according to industry taxonomy, in per cent**

	Assets		Revenues		Taxes paid		Profits		Imports		Exports		Employees	
	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000
FL %	41.7	37.2	37.6	37.0	45.8	34.2	44.7	55.5	29.6	24.1	42.1	38.0	50.6	48.2
SH %	41.7	43.0	51.9	51.4	42.8	52.6	36.6	-1.2	63.5	70.3	29.9	40.2	39.8	42.5
SL %	16.6	19.8	10.54	11.6	11.4	13.2	18.7	45.7	6.9	5.7	28.0	21.8	9.6	9.3
memo item: percentage of total FDI	53.1	30.8	65.6	55.7	73.1	75.4	82.4	-60.6	86.3	77.0	94.0	87.4	77.6	57.2

Note: FL = low sunk costs and low R&D; SH = high sunk costs and high R&D; SL = high sunk costs and low R&D;.
Source: Central Bank of Brazil (1995 and 2000), *Censo de capitais estrangeiros*.

Balance of payments

One of FDI's main contributions to a country's economy comes through the financing of balance of payments disequilibria. Moreover, relative to short-term (speculative) portfolio flows, MNCs should take a long-term view in their investment decisions and therefore be less volatile (and possibly more counter-cyclical) in their behaviour. For most of the 1990s FDI inflows have fully covered balance of payments deficits in Chile and, to a slightly lesser degree, in the other countries as well. The relative stability - if not upward trend as in the Chilean case – of long-term investment flows since the Asian and Russian crises is worth noting.

A key macroeconomic issue in the long-term sustainability of FDI flows is their form of financing. Two main mechanisms are capital contribution and profit reinvestment. Time and country variations are significant (Table 3.13). In the 1990-94 period there is a clear contrast between the largest economies of Brazil and Mexico, where capital accounted for 3/5 of financing, and the smaller ones, where the share was much higher. Profit reinvestment was substantial in Mexico and, to a smaller degree, in Argentina and Brazil – where other forms, such as debt for equity swaps, were also significant – but almost irrelevant in Chile. In the second half of the decade the clearest change happened in Brazil, where capital contribution went from 60 per cent to 90 per cent. Profit reinvestment lost ground in countries where it had previously been very important, but gained relevance in Chile. Finally, other forms became very important in Mexico, the country showing the most balanced FDI financing structure among the four.

Table 3.13. **Forms of FDI financing**

	1990-94			1995-2000		
	Capital contribution	Profit reinvestment	Other capital	Capital contribution	Profit reinvestment	Other capital
Argentina	88.9	11.7	0.0	83.8	6.1	10.0
Brazil	60.4	11.6	28.0	90.2	0.8	9.0
Chile	99.1	0.9	0.0	85.7	14.2	0.0
Mexico	59.9	28.8	11.3	52.2	22.6	25.2

Source: ECLAC.

Part III. Supply linkages

Beyond the gains from higher productivity of the foreign-owned establishments themselves, one area that has had little attention is the supply linkages between MNCs' foreign affiliates and local firms. Foreign affiliates, local companies, and host countries can all gain from the creation of linkages. By using suppliers in a host country, foreign affiliates can obtain inputs in a cost-effective, flexible and revenue-yielding manner. A local company can benefit through increased sales and by becoming linked to the global production network of a MNC and its stock of information and knowledge. Some MNCs have organised special programmes to assist their suppliers to upgrade the suppliers' technology, productivity and ability to compete internationally. However, the extent to which foreign affiliates forge linkages with domestic suppliers (as opposed to, say, using imports) is determined by the cost-benefit ratio of such efforts. The lack of effective local suppliers can be an efficient obstacle to the creation of such supply links. Policy makers can influence the willingness of foreign affiliates to use local suppliers by raising the benefits and/or reducing the costs involved. Specific policy measures that have been applied include the provision of information and matchmaking; encouraging foreign affiliates to participate in programmes aimed at upgrading the technological capabilities of domestic suppliers; and various schemes to enhance access to finance.

Host-country factors promoting vertical linkages are the strength of political commitment, the quality of infrastructure, and the size and the conditions of the local components supply industry. Experienced affiliates, joint ventures, and acquired affiliates also exhibit more extensive vertical linkages. Restrictive trade policies have a detrimental effect and local content regulations, although they may have a positive impact, do not stimulate procurement from locally-owned suppliers. However, the most important argument against investment incentives focusing exclusively on foreign firms is based on the evidence that spillovers are not automatic, but depend crucially on the ability and motivation that local firms have to learn from foreign MNCs and to invest in new technology. This implies that investment incentives aiming to increase the potential for spillovers may be inefficient unless they are complemented with measures to improve the local learning capability and to maintain a competitive local business environment. Features of such pro-active policies include collaboration with

the private sector, selectivity, and focus on particular services such as matchmaking, training, and financial assistance. The recent example of foreign aerospace companies investing in Brazil to better interact with Embraer (Box 3.3) shows that the interactions between lead firms and FDI in the global economy are multiple.

Box 3.3. **A-B-C firms as catalyst for high-tech FDI inflows: The case of Embraer**

Embraer, a Brazilian aircraft manufacturer, transformed itself after privatisation to become a world market leader in a high-tech industry traditionally dominated by companies based in OECD countries. Several component-suppliers aerospace firms from Europe and the Americas chipped in as "risk-sharing partners" for its aircraft, directly investing in cash and materials and providing liquidity via deferred payment provisions. In the case of the new ERJ 170/190 family, development costs are substantial (about USD 850 million) and by far the largest investment ever made by Embraer. No less than one-third of such costs will be contributed in cash by risk-sharing partners, which will be responsible for developing, producing, and delivering entire systems as well as major components. Some foreign suppliers (such as Pilkington Aerospace, Parker Hanefin, and Sonaca) have already set up operations in Brazil, while others (such as Latecoere) are planning to do so. Sobraer, a subsidiary of Sonaca, for instance, opened a plant to perform the junction of the pylons in the rear fuselage supplied for the ERJ-135/145 programme and its final assembly, in a process that will be transferred progressively from Belgium. It will also produce approximately 250 milled parts of the Central Fuselage II of the ERJ-170/190 programme. C&D do Brasil, a subsidiary of C&D Aerospace, was established in 2000 in Jacareí to manufacture overhead bins and PSU structures. The total investment is estimated at USD 3.1 million.

Sources: Cassiolato *et al.*, (2002) and Goldstein (2002).

The car industry in Argentina and Brazil

Worldwide, the automotive sector has been a vitally important source of employment, revenue generation, and manufacturing growth as well as a main conduit for spearheading new management techniques and introducing innovative organisational structures in both manufacturing and services (distribution, finance). Inputs of which this industry is a heavy user include metals, plastics, textiles, and electric and electrical machinery. Since the 1950s, very few are the developing countries that have not tried to increase FDI in this industry, expecting the indirect results on other industrial sectors, through demand and supply linkages, to far offset the cost of the incentives that are usually offered to car companies. Policy tools have included high

tariff barriers and local content requirements. As already mentioned in Part II. above, while considerable diversified development took place under this protective regime (including the maturing of some indigenous car part manufacturers), the industry was also afflicted by the common ailment of a high cost production structure exacerbated by excessive proliferation apparent in the large number of models and makes of vehicles being assembled in low volumes.

Over the past decade, the sector has been increasingly exposed to international competition, although the extent of trade liberalisation has been lower than in the rest of the economy. In the framework of Mercosur, automobiles are dealt with by a separately managed trade regime, under which the value amount of every vehicle or auto part exported from Argentina to Brazil must be matched by a similar amount imported from Brazil. If it is not, then duty-free treatment does not apply and a levy of 70 per cent is applied. An imbalance of 5 per cent was allowed in 2000, 7.5 per cent in 2002 and 10 per cent in 2003. Surpassing this limit exposes firms to financial penalties. Complete free trade in automobiles will not come into effect before January 2006. The common external tariff (CET) for passenger vehicles was set at 35 per cent, and for buses and trucks, at 35 per cent for Brazil and 18-25 per cent for Argentina, a level that will gradually increase to that of Brazil.

With interest rates being characteristically high, it is expensive for automakers based in Mercosur to obtain credit and this subsequently pushes up the price charged to the consumer for the finished vehicle. Since the rate of auto tax that consumers pay depends on the size of the car, demand tends towards the small, economy passenger car. Manufacturers therefore chose Brazil as the major production base for these economy models over other countries in the region, partly as a result of its comparatively cheap production costs. Union opposition to new working arrangements is, although currently on the increase, still far lower in Brazil than it is in OECD countries, including Mexico. More contentiously, incentive-based competition has been very intense for attracting car assemblers – sub-national governments have significant autonomy in fiscal matters and the federal government refrained from imposing any kind of control on their action. The result has been a steep increase in productive capacity since 1996.

What has been particularly innovative in some of these new projects is the attempt to involve components suppliers in the vehicle manufacturing process to a much higher degree than in traditional assembly arrangements. Volkswagen first demonstrated the viability of this strategy through its innovative truck plant in Resende. Although the parts are manufactured off-site, they are installed into the trucks by the components suppliers

themselves, rather than by Volkswagen. In the new-generation factories, the proportion of components that can be manufactured on-site has reached unprecedented levels and, as a result, far fewer suppliers are now required. If automakers are able to cut production costs, as they are able to do at these new, innovative plants, their ability to price the cars competitively increases. Despite the fall in domestic demand in 2002, additional small-car manufacturing was added in 2002 and industry expectation is that the country has already gone some way towards gaining a reputation as a global small-car specialist.

The effects on local outfits have been dramatic. Brazil in particular had developed what appeared to be a rather sophisticated industry. In the case of pistons and connecting rods, for example, Metal Leve held more than 60 per cent and 98 per cent, respectively, of the internal market, set up a research facility in Michigan, and opened production facilities in South Carolina, in a non-unionised region. Another supplier that invested abroad, in Portugal, was Cofap. Trade opening abruptly showed their lack of global competitiveness and most – including Metal Leve and Cofap – were bought or merged with foreigners. By 2001 the share of domestic capital in the industry had fallen to 22.8 per cent of fixed assets (from 51.9 per cent in 1994), to 26.7 per cent of sales (from 52.4 per cent), and to 15.6 per cent of investment (from 52 per cent) (Sindipeças 2002, Chart 10). A few domestic-capital stalwarts were restructured and have survived. Sabó Retentores in particular is a global supplier of oil rings, rubber hoses, and gaskets for Volkswagen and has followed its largest customer by setting up plants in Mexico, China, and Germany.[20] It is also a seven-time recipient of General Motors' Worldwide Supplier of the Year award, now in its tenth edition.

The best-known example of active policies implemented by a lead firm to improve the lot of its suppliers is Fiat's "mineirização" programme.[21] In co-operation with the government of the state of Minas Gerais, Fiat Automóveis began a programme to increase its purchase from local suppliers in 1989. This has included both public incentives – such as tax holidays by the local government and subsidised BNDES credit lines – and a commitment by Fiat to sign long-term contracts of up to five years with qualified suppliers. *Minerização* has to some extent meant *italianisation*, insofar as most new investors have been firms that already co-designed with Fiat in Italy. This phenomenon is known as "follow sourcing". Since 1990, more than 70 suppliers have invested more than USD 600 million in the state. Sample results from 1994 and 2000 show that domestic suppliers have gone from 81 per cent to 20 per cent of the total, with a corresponding increase in foreign-owned suppliers from 5 per cent to 60 per cent. Fiat uses the threat of modifying its purchasing channels to maintain its profit margins. In other words, *mineraização* can be seen as an attempt, and a

rather successful one at that, to benefit from a high degree of vertical integration without the costs and risks of direct ownership and excessive diversification.

Another interesting example is the Mercedes-Benz plant inaugurated in Juiz de Fora (MG) in 1999 to produce the A-class car.[22] To attract the German assembler, the local government offered a wide range of subsidies, including tax and duties exemption for 10 years, free availability of the land, investment in subsidiary services, and financial capital at below-market rate. In exchange, Mercedes promised to invest BRL 845 million in 1996-2001, fill as many as possible of the 1 500 vacancies with local staff, give priority to local suppliers, convince its global suppliers to invest in Juiz de Fora, and contribute to enhancing technological collaboration between German and Brazil institutions. This venture, however, has failed well short of the company's – and by extension the local authorities' – expectations. At less than 13 000 units in 2001, production is a fraction of the maximum output capacity of 70 000. As the potential of the just-in-time production system cannot be exploited at such levels, only ten Tier-I suppliers set up shop in Juiz de Fora.

The mining industry in Chile

Mining generates more than 8 per cent of Chile's GDP. The total value of mineral exports in 1999 was over USD 6.9 billion, or 44 per cent of total exports. The country is the largest copper producer and exporter in the world. Additionally, it has approximately 38 per cent of the world's copper reserves. Copper alone accounts for 37.8 per cent (USD 5.9 billion) of total exports. The giant state-owned Codelco company produces 15 per cent of the world's total copper production and its current reserves account for approximately 20 per cent of the world's known resources. Chile is also the largest producer and exporter of potassium nitrate and sodium nitrate; the second-largest producer of rhenium, lithium, iodine and molybdenum; the fifth-largest producer of boron; the seventh-largest producer of selenium; the eighth-largest producer of silver; and the ninth-largest producer of gold. Eighty per cent of the medium-sized and large mines in Chile are open-pit mines. Copper production has increased from 1.3 million tons/year in 1987 to 4 million tons/year in 2000. Gold has increased from 20 to 50 tons/year, and silver has increased from 500 to 1,370 tons/year in the same period.

Chile's political stability, abundant natural resources and favourable regulatory regime for foreign investors has made it one of the most attractive emerging mining markets in the world. The private sector has taken over the government's traditional dominance of the mining sector, currently accounting for about two-thirds of copper production (from just 10 per cent in 1985) and almost all gold production. In the private sector the largest

open-pit copper mine worldwide is Escondida, jointly owned by Australia's BHP (57.5 per cent) and UK's Rio Tinto (30 per cent). Escondida opened in 1990 and now has a capacity of 900 000 t/y of concentrates. Escondida is currently implementing its Phase IV expansion, which involves a total investment of USD 1.3 billion. It is also conducting engineering studies for the exploitation of its rich Escondida Norte deposit. If this project is approved Escondida could reach 1.4 million t/y by 2002. Another Australian investment which started operations in May 2001 is AMP's (39 per cent ownership) El Tesoro, a USD 280 million copper project developed in partnership with Chile's Luksic group. The mining treaty with Argentina will also act as a catalyst to unleash investments in Chile's frontier border. Such is the case of the USD 950 million Pascua/Lama gold mine project and the USD 890 million copper project El Pachon.

Mining is notoriously a capital-intensive activity directed towards exports: only 3 per cent of copper production is consumed in Chile. The literature on the so-called "resource curse" argues that, for a variety of reasons, a country with a rich endowment in non-renewable assets finds it difficult to sustain high rates of growth. A counter-argument, however, is that in such countries the large demand for specialised equipment and know-how can be the basis for industrial development (Wright and Czelusta, 2002). In the case presented in Box 3.4, the experience gained from interacting with foreign-owned companies in the domestic mining industry allowed a small Chilean company to acquire an important fraction of the world market for large-scale (300 ton) mining dump bodies.

Box 3.4. **Turning resource abundance into hi-tech exports**

Desarrollos Tecnológicos, a small company headquartered in Santiago, introduced in a relatively short time an innovative and successful design now praised in mining operations around the world. Mining operations need trucks with thick bodies in order to increase their wear life but they also have to be as light as possible. The "Hi-Load" load-carrying tip bodies manufactured by DT differ from traditional ones since they are rounder, without most of the beams and used thicker steel. Based on the experience obtained with over 400 units operating around the world, the company can also confidently assure that maintenance costs for its bodies are less than for conventional bodies. The Hi-Load bodies can be used for many specific job sites.

Source : Fischer (2001) and "Light and tough", *Mining Magazine*, Vol. 187, No. 1, July 2002.

Retail distribution

In the past two decades retail trade in Latin America and other emerging regions has been reorganised from small owner-operated shops to supermarket chains and shopping centres. In A-B-C, supermarkets now account for between half and three-quarters of the food market, more than in Mexico, and also show larger densities. Foreign investors have played a leading role in this process. In the first half of the 1990s, local retailers entered into a series of alliances and mergers with major foreign players to introduce cutting-edge technologies and supply chain management techniques.[23] In general, these alliances and mergers failed to last, owing to cultural differences relating to company management and the foreign partners' desire to rapidly expand the network of branches and increase sales. Retail trade was also hit hard by the economic crises that hit Mexico and Argentina in 1995, Chile in 1998, and Brazil in 1999. For example, because of their weaker financial position, in 1998-99 eight of Brazil's top 20 supermarket chains were sold. This has led to increased concentration and "multinationalisation", especially in Argentina and Mexico (Table 3.14).

Table 3.14. **The evolution of supermarkets in the A-B-C and Mexico, (2000)**

	Nr of supermarkets	Supermarkets p/million population	Market share food (%)	Instant fruit and vegetables market share (%)	Top 5 market share (%)	Foreign market share (%)
Argentina	1 306	35	57	30	76	64
Brazil	5 258	31	75	50	47	43
Chile	654	44	50	5	55	10
Mexico	1 026	10	45	30	80	71

Source: Reardon and Berdegué (2002).

The introduction of hypermarkets of up to 13 000 square metres of floor space is offering customers a wider variety of products and services at lower prices. This development is squeezing out smaller supermarkets which cannot compete in either product selection or price. In Brazil, only one among the big chains, *Pão de Azucar*, is local. The few Argentinean retailers that had not been taken over in the 1990s are now succumbing under the weight of financial obligations. Following the default of its local partners (Velox Retail Holdings) in June 2002, Ahold took full control of the Disco 236-shop chain with 2001 sales of € 2.1 billion. Only in Chile, local retailers (Santa Isabel, Distribuidora de Servicios-D&S, Unimarc-Multiahorro, and Jumbo) have managed to remain competitive by investing in information technology, increasing the size of warehouses, introducing incentive

bonuses and flexible working practices. Since many of these occupy prime locations – an advantage that foreign newcomers cannot always match – the highest return on investment, however, has come from refurbishing the firms' old-fashioned neighbourhood supermarkets. US and European international chains only started investing in Chile in the late 1990s (Box 3.5).[24] On the other hand, a number of Chile's top chains have expanded abroad.

The concentration of the industry into fewer and larger companies has influenced wholesale distribution practices. The size of today's top chains is increasing their bargaining power with local suppliers, who used to be able to dictate their prices when the industry was more fragmented. Moreover, following established practices in the United States and Europe, major chains are introducing their own store brands.[25] These phenomena have important consequences for all those industries that produce non-durable goods – such as for instance fresh fruit and vegetables (FFV) or textiles and clothing – where global, large-scale, and concentrated buyers provide governance to commodity chains. For a more thorough analysis of agribusiness competitiveness, see the companion chapter by Brooks and Lucatelli in this volume. Suffice it here to refer briefly to some positive developments brought about by the presence of multinational retailers and to some pending issues.

Because of the perceived inadequacy of the services provided by traditional wholesalers in terms of quality, standards, and reliability, supermarkets are increasingly resorting either directly to producers through contact farming or to new forms of more sophisticated wholesalers (Reardon and Berdegué, 2002). Some A-B-C producers are benefiting from the regional and global sourcing networks of supermarket chains. For example, melon and salmon producers, in Brazil and Chile respectively, that entered into long-term contacts with Carrefour to cater for the domestic markets are now selling through the French company's global network. Domestic suppliers, however, are also challenged by the fact that large chains, regardless of their ownership, may use the option of importing as a means to negotiate lower prices. In Chile, for instance, it is customary for supermarkets to receive credit of more than 45 days from their suppliers. To find a solution to problems that derive from unequal bargaining power and unfair practices, in Argentina the government negotiated a commercial practices agreement in 2000.[26] Carrefour and Wal-Mart did not initially sign this agreement, arguing that the obligation to respect minimum prices run counter to their business models.[27] In the dairy industry, where multinational supermarket chains have global relationships with a handful of international suppliers – and therefore the respective bargaining position is less skewed –

it is the relationship between milk producers and dairy companies that causes concerns.

Box 3.5. **Retail trade: the Wal-Mart experience**

With USD 216 billion in sales, Wal-Mart has bypassed General Electric to become the world's second-largest company after ExxonMobil. With 1.2 million staff, it is the biggest private-sector employer in the world. It broadcasts more live television than any network. The computer controlling its logistics is the world's most powerful after the Pentagon's. Eight years ago it sold almost no food, yet today it is America's biggest grocery retailer. In less than four decades, Wal-Mart has come to account for 60 per cent of America's retail sales and 7-8 per cent of total consumer spending (excluding cars and white goods).

Although no other retailer comes close when measured by sales, with a presence in nine countries only, Wal-Mart remains far less international than France's Carrefour, which has stores in 31 countries, and the Netherlands' Ahold, which operates in 23. Its first overseas investment was in Mexico in 1991, when an equal-shares joint venture was set with Cifra, an association that has been characterised by prudence from the outset. Cifra's diversification (including the Vip restaurants and the Suburbia department stores) allowed it to finance the projected expansion. In 1997, Wal Mart bought an additional USD 1.2 billion stake in Cifra, thereby taking its share to 51 per cent and completing the definitive merger. In February 2000 the name changed to Wal-Mart de Mexico, which currently employs more than 81 000 associates and operates 572 units with annual sales of USD 9.8 billion.

Wal-Mart began operations in Brazil in May 1995 and entered Argentina in August 1995 – in both cases with the opening of a Sam's Club in suburban areas of each country's greatest city. The company employs more than 4,000 people in Argentina and around 6 000 in Brazil, where it is present in four states – São Paulo, Minas Gerais, Rio de Janeiro, and Paraná – and does business with approximately 5 000 suppliers. Its venture in Argentina, however, has been a partial failure, accompanied by heavy losses. As it also did in Indonesia and Germany, it made the mistake of exporting its culture wholesale, rather than adapting to local markets. To counter Wal-Mart, Carrefour slashed prices, remodeled, and even relocated stores.

Sources: ECLAC (2002) and "Selling to Argentina", *The New York Times*, 12 May 1999.

Part IV. Conclusions: The A-B-C area in comparative perspective

Both economic theory and recent empirical evidence suggest a beneficial impact of FDI on developing countries, for instance through new management techniques, different forms of enterprise linkages, and intensification of information flows between economic agents. The growth process can become self-sustained if backward and forward linkages emerge from MNEs to the host economy and if FDI contributes to raising the profitability of domestic investment. But recent work also points to some sources of potential risks and excesses: FDI flows can be easily reversed through financial transactions in some circumstances; there is an FDI bias in the composition of capital inflows, because of adverse selection and "fire sales". A large statistical effect of FDI on the level of domestic investment is likely to be the result of an endogeneity bias, and of heavy reliance by multinationals on borrowings from domestic lenders. The high share of FDI in a country's total capital inflows may reflect its capital-market institutions' weakness rather than their strength. Though the empirical relevance of some of these sources remains to be demonstrated, they do appear to make a case for taking a nuanced view of the likely effects of FDI.

The evidence presented in this chapter allows a balanced appreciation of the development contribution of FDI in the A-B-C countries, both in general terms and more specifically with respect to their competitive participation in global markets and supply chains. A first feature that clearly emerges is that MNCs have come to represent a very important portion of economic activity, employment, and trade flows – and this in countries where their presence is long-standing and has traditionally been important. Complementary to this is the observation that this expansion has often come through mergers and acquisitions, with implications that are not easy to discern. On the one hand, in keeping with standard hypotheses, a takeover should only take place when the new owners expect to increase corporate efficiency and returns on investment. The aggregate effects should therefore be positive. On the other hand – and even discounting the possibility that such consolidation may increase industrial concentration and hence dampen market competition – there is a risk that domestic sources of competence,

capability, and innovation turn too thin to sustain the process of continuous catch-up. This last point is crucial if transitions to high economic growth, far from being sparked by blueprints imported from abroad, result instead from country-specific institutional innovations that often depart from prevailing orthodoxy, are targeted on domestic investors, and are tailored to domestic institutional realities (Rodrik, 2000).

Further analytical considerations can be made on the basis of disaggregated indicators. In all three countries foreign-owned affiliates have increased their participation in external trade, although import intensity has increased more than export intensity. This is generally a natural outcome of the increased relevance of intra-firm trade in the global economy. Evidence from the car industry, for instance, shows that Brazil has increased its participation in the segmented-differentiated cluster through subsidiaries of global assemblers. What is more disquieting, however, is that local suppliers have not been able to surf on this trend – this is again well shown in the automotive industry, where the contrast between Brazil and Mexico is rather stark. Whereas FDI can greatly assist in technology-sharing, the real adaptation of these technologies is done in large part by local firms who then localise these technologies to improve their efficiency. This, however, does not mean that supply linkages have not been created, as documented for FDI in both non-tradable (*i.e.* retail trade) and tradable (*i.e.* mining) sectors. Similarly, FDI has somehow contributed to institutional strengthening. Where this process remains incomplete, such as in public utilities in Argentina, it cannot be inferred that the foreign ownership of the regulated companies is the explanation – although it is certain that these have not pushed for regulation that prevent them from extracting rents.

The list of policy issues that arise as a result is long. *First*, although there are no universal rules governing international investment, the A-B-C countries are among the non-member signatories of the *OECD Declaration on International Investment and Multinational Enterprises* to provide national treatment for established foreign controlled enterprises, to avoid conflicting requirements on those enterprises, and to work together to improve the investment climate.[28] These instruments have provided an effective framework for international co-operation and have served to underpin the liberalisation achieved in recent decades. On the other hand, Regional and Bilateral Investment Treaties (BITs)[29] amount to a patchwork of normative references and the case for a multilateral framework to secure transparent, stable and predictable conditions for long-term cross-border investment has been acknowledged at the WTO Ministerial conference in Doha. The establishment of multilateral rules on investment respectful of other concerns such as the environment, consumers, and labour conditions is an opportunity to move FDI flows from a purely power-based dynamic into

a rule-based system and to develop, in a credible way, an agenda for a "harnessed globalisation".[30] It is difficult, however, to predict the outcome of the WTO, and to create legal certainty and stability it is necessary to agree international standards on investment as has been done in trade.

Second, FDI is a major vehicle for international trade and policy issues increasingly cannot be adequately addressed in isolation from one another, at the risk of endangering further progress towards liberalisation. The GATS, TRIMs and TRIPs agreements partially cover certain investment issues, but there is growing need for comprehensive rules on investment in all sectors. The A-B-C countries have an interest in streamlining their regulatory regimes – domestically as well as in forums such as Mercosur, the Free Trade Area of the Americas, and bilateral negotiations with Europe – in order to make the trade environment consistent with FDI. Complex rules of origin, in particular, create potential inefficiencies.

Third, virtually all countries, developed and developing ones alike, are making efforts to attract more FDI. Some of the policy ingredients go under the collective name of "enabling environment – such as sanctity of contracts, protection of intellectual property, transparent rules, good governance, and the presence of supporting infrastructure and institutions – may be necessary for economic growth above and beyond the effects that they may have in convincing foreign investors to relocate. As explained in Box 3.6, however, the presumption that FDI flows from "good governance" is not uncontentious. Decisions regarding the locational choice of various activities within a global network have been viewed as key to the firm's global strategy. Policy makers should therefore first understand the decision criteria MNCs use in choosing global production locations. Field research in East Asia highlighted the importance of local availability of engineering and sourcing capabilities, as well as government incentives for technological upgrading (Song, 2001). However, there is a risk that countries enter into a zero-sum (if not negative) game to allure MNCs, offering preferential treatment through, for instance, tax holidays[31] or derogations to the general regulatory regime covering labour (including freedom of association) and environment standards (especially in the mining industry).[32] Indeed, the incentive-based competition for FDI has become a global phenomenon, involving governments at all levels (national and sub-national) in both OECD and non-OECD countries (Oman, 2000).

Box 3.6. **FDI and governance: Which way?**

Hausmann and Fernández-Arias (2000) found that the FDI share is higher in countries where the credit risk (as measured either by countries' credit ratings for sovereign debt or other indicators of country risk) is higher. In their view, the strong increase in FDI to Latin America is rather a reflection of the weaknesses of their financial and capital markets. Recent work on China, the world's second largest recipient of FDI, also challenges the standard accounts portraying FDI dynamics as rooted in a country's economic growth record, market size, and availability of cheap but disciplined labour (Huang, 2002). "Better" policies may not necessarily lead to higher FDI if they enhance domestic entrepreneurship and therefore reduce, in relative terms, foreign investors' competitive advantages. In this framework, the large scale of FDI in China is better accounted for by looking at inefficiencies in the Chinese economy, in particular the detrimental impact of the quality of financial institutions on the competitiveness of domestic firms, which make foreign-controlled companies stronger across the board. Razin *et al.* (2002) also find that corporate transparency in the host countries diminishes the differential value of intangible capital in the source countries and thereby reduces the flow of FDI.

Fourth, in the process of promoting linkages, many countries have recognised that protectionist policies and local content programmes, previously used to force foreign companies to buy local inputs, do not work well in the changing international environment. The formation of partnerships between MNCs and local firms may maximise capital's marginal productivity and stimulate company development. In the presence of market failures (such as lack of information, reluctance to co-operate, and externalities), it may be necessary to introduce tailor-made policies such as the targeting of foreign investors at the level of industries and clusters, or the setting-up of national agencies to market given geographical areas with the aim of matching the locational advantages of countries with the needs of foreign investors. Of course, with intervention the risk remains that government failures may in the end outweigh market ones.

A-B-C governments are pondering policy choices to attract more sophisticated FDI and increase their developmental impact. Chile is considering the elimination of a clause in foreign investment contracts that requires investors to keep their capital in the country for at least one year, and a reduction in the corporate tax rate of 42 per cent, offered as an option for investors interested in a tax stability clause – the current maximum corporate tax rate is 35 per cent. The government is also determined to turn high-technology services exports into a significant engine of growth, and is considering various mechanisms to increase the competitiveness of its

incentive schemes for these types of investments. This rethink was triggered by Microsoft's recent decision to locate a software development centre in Argentina's southern province of Neuquen rather than in Chile. In September 2000 Chile abandoned its orthodox free-market approach, ruling out special regimes for particular companies or industries, and began to offer various incentives for high-tech investment projects in excess of USD 1 million to foreign and domestic companies.

Aggressive incentive schemes to encourage MNCs to upgrade their operations, in conjunction with efforts to improve complementary infrastructures for advanced activities, seem to have generated a positive feedback loop in Asia, first in Singapore but then in neighbouring countries as well. Solving the problems caused by the bureaucratic nature and lack of flexibility of development promotion agencies, however, is only part of the solution. In the Brazilian case, for instance, considerable inefficiencies are provoked by the large incentives that currently exist to locate factories in Manaus, in the heart of the Amazon jungle. This mechanism results in taxes being higher than they would otherwise be on firms in more suitable industrial locations. At the moment there does not seem to be any prospect of a constitutional change to resolve this situation.

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Notes

1. In the past, FDI flows to individual countries were less volatile than other international capital flows: they changed direction less frequently and the range of fluctuations around their mean was smaller. That characteristic of FDI flows was demonstrated in the Latin American crises of the early 1980s. It was confirmed in the Mexican crisis of 1994, when direct investment inflows quickly regained their previous level, while other forms of capital inflow remained far below their peaks. And the pattern was further confirmed in the Asian crises of 1997, when direct investment inflows into developing Asia as a whole hardly paused in their rapid growth, while portfolio and other forms of investment dried up or turned negative on net balance (Lipsey, 2000/01).

2. And, as a matter of fact, an even larger share of outward FDI flows. This phenomenon is outside the scope of this chapter, although intra-regional flows, which have increased in importance in the last decade, are covered.

3. This hypothesis is grounded on the fact that the business scene in most developing countries is dominated by a handful of diversified conglomerates that interact on many different markets and therefore have more opportunities to collude.

4. In Mexico, the share of foreign capital in manufacturing GDP in the early 1970s was over 20 per cent (ECLAC 1999, p. 95).

5. To be eligible for DL 600 treatment, the announced investment must be at least USD 1 million (with a debt/equity ratio of 3/1). In the case of capital goods and technology, the threshold is much lower at USD 25 000.

6. These concern land transport (mandatory registration to serve international routes and restrictions on local services), local sea transport (cabotage), fisheries (for vessels registered in Chile non-residents cannot own more than 51 per cent), and printed media (employees and at least 85 of the capital investment must be Chilean).

7. The 1996 decree improved earlier patent legislation, but still falls short of the terms included in the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

8. However, there is no Bilateral Investment Treaty between the United States and Brazil.

9. Of such disputes brought before the ICSID, the longest-pending is Case No. ARB/97/3 (Compañía de Aguas del Aconquija and Vivendi Universal v. Argentine Republic).

10. In the case of Argentina, 1999 is an outlier year marked by the acquisition of YPF by Repsol. On the other hand, the dramatic FDI slowdown of 2001 – not only with respect to 2000, but more significantly relative to the 1995-2000 average – was largely due to the crisis, as shown by the fact that the deceleration in global FDI activity was much less pronounced. Similarly, 1999 was a record year in Chile when Endesa bought Enersis, but in this case the year-on-year variability is lower. Finally, Brazil represented more than 4 per cent of global FDI in 1998, when the Telebrás system was sold off, mainly to foreign interests, but in this case the 2001 deterioration in absolute numbers fully reflects global conditions, as proven by the fact that the country's share in the world total increased, if anything, to 3.1 per cent from 2.2 a year earlier.

11. "Brazil Telecom Uses Problems on Its Turf to Make Gains", *The New York Times*, 23 September 2002.

12. Neither country could match the subsidies and tax breaks offered by Costa Rica. Moreover, at least in the case of Brazil, the government reportedly proved unwelcoming to the management of the company.

13. See "El Sorprendente Boom de los Call Center", *Qué Pasa*, 14 June 2002.

14. Excluding again companies domiciliated in Bermuda, the only non-OECD acquiring company in the period was from Malaysia.

15. "Buy, buy, buy", *The Economist*, 4 December 1997.

16. In the sectors included in the survey, firms included in the panel represented 26.3 per cent of value added, 21.3 per cent of Argentina's fixed capital formation, and 67.8 per cent of total exports.

17. For the purposes of the census, "foreign" includes all firms with at least 10 per cent of foreign equity participation. This gives a total of 11,404 companies with total assets equal to BRL 914 billion (up from BRL 273 billion) and sales of BRL 501 billion (BRL 223 billion in 1995).

18. In the case of 2001 shipments to the EU, the 282 largest exporters (16.6 per cent of all firms) accounted for 96 per cent of the total value exported ("1 420 Pymes Exportaron a la UE", *Estratégia*, 28 June 2002).

19. Using 1980s plant data, Aitken *et al.* (1997) find a positive correlation between the regional and industrial concentration of multinational firms and the export propensity of Mexican manufacturing firms.

20. In Mexico, half a dozen local companies are emerging as multinationals in their own right. Nemak, a division of Monterrey conglomerate Alfa, is building a plant in the Czech Republic to supply aluminum engine heads to customers in Europe. Sanluis has become a leading supplier of suspension systems to Detroit's Big Three carmakers, with its own engineering center in Plymouth, Mich. Revenues have been growing by 20 per cent annually since 1996.

21. See Borges Lemos *et al.* (2000), and "Fiat cruises along Brazil's difficult roads", *Financial Times*, 4 April 2001.

22. See Bastos (2002).

23. The most important partnerships between Mexican and foreign firms include those between Cifra and Wal Mart, Gigante and the French supermarket chain Carrefour (which only lasted four years), and Comercial Mexicana and Auchan, the large French distribution group. This latter alliance was dissolved after one year, owing to a dispute over control of the firm. After this, Comercial Mexicana bought the K-mart stores left over from a failed union with Liverpool, which had also been unable to fulfil the expansion plans envisaged in the alliance.

24. Tough competition, amongst other reasons, forced Ahold and Carrefour to withdraw from Chile in 2003 and 2004, respectively.

25. Private brands generate substantially higher profit margins for chains and are believed to increase customer loyalty. In the case of Chile, while most store brands are produced domestically, others are imported. D&S contracts with private label suppliers in the United States and Mexico. Santa Isabel, which initially lined up private label suppliers in Chile, purchases from foreign suppliers, especially in Peru and Paraguay where it also owns stores.

26. The agreement prohibits selling at below-cost prices, except for defective or out-of-production goods; obliges retailers that fail to pay within 30 days of delivery to issue a negotiable financial instrument to suppliers; and introduces an arbitration mechanism to solve disputes. Similar regulations exist in OECD countries such as France, the Netherlands, and Spain.

27. "Los grandes compradores", *Mercado*, May 2000 and "Carrefour fica fora de convênio de mercados na Argentina", *O Estado de S. Paulo*, 31 July 2000.

28. As a counterpart to their commitments under this instrument, non-member adherents (which also include Estonia, Lithuania, and Slovenia) participate in related OECD work.

29. During the three decades leading up to 1990, only 500 BITs had been signed, whereas by the end of the 1990s this number has almost quadrupled; and in 1999 the vast majority were concluded between developing countries (UNCTAD, 2000).

30. International agreements increasingly constrain the ability of governments to use trade policies, whereas few constraints apply to the use of investment policies. Hoekman and Maggi (2002) analyse whether the foreign firm may be forced to adopt an inefficient mode of supply (exports versus FDI) when the domestic government is constrained in its ability to use trade policy, but is free to set its FDI policy. They find that the foreign firm chooses the efficient mode of supply, even under a discriminatory output tax levied on FDI. This result suggests that the case for multilateral investment rules on efficiency grounds needs careful evaluation.

31. For small open economies, efficient taxation of foreign and domestic capital depends on their relative mobility (Hanson, 2001). If foreign and domestic capital are equally mobile internationally, it will be optimal for countries to subject both types of capital to equal tax treatment. If foreign capital is more mobile internationally, it will be optimal to have lower taxes on capital owned by foreign residents than on capital owned by domestic residents.

32. According to the "conventional wisdom", foreign investors favour countries with lower labour standards. A recent study uses country-level measures of worker rights in regard to freedom of association and collective bargaining, child labour, and gender discrimination and inequality in econometric models of foreign direct investment (FDI) inflows and manufacturing wages in samples of up to 127 countries. Consistent with prior studies, no solid evidence is found in support of the "conventional wisdom," with all evidence of statistical significance pointing in the opposite direction (Kucera, 2001).

4. International competitiveness of the A-B-C agro-food sector

by Jonathan Brooks and Sabrina Lucatelli*

ABSTRACT

The agro-food sector plays a key role in GDP, employment, and in particular, exports in Argentina, Brazil and Chile (A-B-C). The three countries still have a large potential to expand both volumes and the product range by increasing land and labour productivity, and by converting large amounts of permanent pasture into arable cropland (except Chile). Moreover, large unexploited opportunities (in particular in Argentina and Brazil) exist to shift to higher-value products and differentiated primary products, but international (high tariff peaks and non-tariff barriers of OECD countries) and domestic constraints need to be addressed. With regard to the latter, framework conditions could be improved, in part to attract more FDI. Private initiatives for the development of new products and markets could also be better supported by focusing on education, infrastructure investment and public R&D rather than subsidies.

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Introduction

Agriculture and its associated industries account for a larger share of economic activity in Argentina, Brazil and Chile (hereafter A-B-C) than in most other countries at similar levels of development. The principal reason is that all three countries possess land and climatic conditions that are suitable for agricultural production. Yet these favourable conditions still need to be exploited, and it is important to identify the factors that determine the ability of business to compete successfully, and the role of government in enabling them to do so.

All three countries, but especially Argentina and Brazil, have the potential to increase their agricultural output significantly. However, despite the rise in production, the share of labour employed in agriculture is likely to decline as the economy develops. What happens to the excess labour depends on the extent to which the "pull" from employment opportunities generated in other sectors can absorb the "push" from productivity improvements in agriculture.

Generic policy prescriptions to ensure that there is sufficient demand for labour released from agriculture are relatively straightforward. They involve investing in human capital through education and training, and stimulating business investment by sound macroeconomic policies and investment in infrastructure. But translating general advice into specifics is a much harder task, because it involves looking at the sector-specific details which govern shifts in the balance of economic activity.

For some households and businesses, productivity improvements could lead to success within the agricultural sector. For many others, the best long-term opportunities are likely to lie elsewhere. A central premise of this paper is that Argentina, Brazil and Chile each have successful agricultural sectors that already form the basis for important downstream agribusiness industries, and that these industries have an important role to play in future economic development.

For concrete policy recommendations it is necessary to look at the domestic opportunities and constraints that determine sectoral competitiveness, as well as the international environment in which competition takes place. Accordingly, this chapter is organised as follows: the first section provides some background on global market developments in the agro-food sector and discusses the determinants of sectoral competitiveness. The second section reviews the importance of the agro-food sector in Argentina, Brazil and Chile, while the next section explains the underpinnings of this strategic role in terms of comparative advantage.

The fourth section considers the impediments to full exploitation of this comparative advantage in terms of domestic supply-side constraints. The next section discusses domestic and trade policies applied to the agro-food sector in each country. The sixth section examines the nature of foreign demand, and the extent to which this is limited by import protection and the subsidisation of rival suppliers. The following section provides some examples of successful strategies for development of the agro-food sector. The final section provides conclusions and policy implications.

Recent trends in the global agro-food sector

The ability of an industry to "compete" and generate export revenues will depend on the type of competition that characterises the marketplace and the extent of impediments to competitive trade (Oliveira Martins and Price, 2004). Primary agriculture is often taken to be a classic case of a competitive industry, with relatively homogeneous products and no individual producer able to exercise market power. Under such circumstances, the ability of a producer to compete depends on costs (given the ability to supply the right quantity and quality at the right time). This characterisation is broadly accurate globally, despite an increasing concentration of agricultural production in many countries and an increasing graduation of many agricultural products according to quality (Moreddu, 2003).[1]

Beyond the farm-gate, the food manufacturing sector is typically a "fragmented" market, with small firms dominating (Oliveira Martins and Price), although many of these firms are operated by the larger holding companies. Recent studies point to a growing consolidation and internationalisation of the sector worldwide, with a smaller number of manufacturers operating globally (Grievink *et al.*, 2002). This trend is apparent in both OECD and A-B-C economies. The retail distribution sector is now a key component of the food chain, with monopsony power reinforced by buyer alliances. The increased dominance of supermarkets has stimulated mergers and acquisitions within the food industry, and horizontal and vertical alliances, in an attempt to counterbalance bargaining power at the retail level (Reardon *et al.*, 2003).

A key feature of competition in the food industry is product differentiation, with thousands of new products and brands being introduced each year. Differentiation has both vertical (quality) and horizontal (variety) dimensions. Horizontal differentiation strategies relate mainly to packaging and branding.[2] Branding has been used to differentiate products and to build product reputation and consumer allegiance. But the fact that manufacturers often make rather similar products under different brand names maintains a

strong pressure on prices. Differentiation strategies are also a response to changing consumer demands. As consumers demand higher quality and/or greater service content, products such as ready-to-cook foods, ready meals, and specially labelled products continue to experience demand growth.

These differentiation strategies have an impact on primary producers. Retailers and manufacturers are asking increasingly for commodities that meet specific standards. Examples of differentiation strategies at agricultural level are organic or animal-friendly products, as well as different quality-graded commodities. Consequently, differentiation strategies require a strong co-ordination along the food chain (Farina and Zylbersztajn, 1997). Thus, integrated management is becoming an increasingly important determinant of competitiveness.

Even pure cost reduction strategies are changing in nature. The focus is no longer only on the prices of primary products, but also on elements such as transaction costs between different food chain levels; inventory management, and improvements in logistics. Put differently, commodity exports can also have an important service content. Exports of fruits are a good example of this integration, with transport and distribution systems an increasingly important determinant of international competitiveness. Transportation costs alone can account for more than one half of a commodity's total landed cost (Binkley, 1999), and largely determine the ability of firms to compete in foreign markets (World Bank, 2001). Storage capacity is also important for perishable agro-food products and for all products facing seasonality in demand or supply.

To sum-up, comparative advantages in agricultural production and low production costs alone do not guarantee competitiveness. The whole food chain matters, from farmers to traders (which can be multinational or national agro-business companies, import or export companies, or producers' co-operatives), and it is the interaction between these various elements that determines international competitiveness.

The agro-food sector in Argentina, Brazil and Chile

Agriculture is a relatively important sector in all three countries, accounting for 5 per cent of GDP in Argentina, 8 per cent of GDP in Brazil and 6 per cent of GDP in Chile in 2002. These shares are in each case roughly half what they were 40 years ago, following the general principle that agriculture's contribution to national output declines as *per capita* incomes increase (Table 4.1).

A major reason for agriculture's relative importance in these countries is that they have a comparative advantage in this sector, principally deriving from favourable natural conditions. Farming also provides the primary input for a range of associated food and industrial products. If the food industry is included, then the combined sector's share in GDP roughly doubles.

Table 4.1. **Importance of agriculture and agribusiness in Argentina, Brazil and Chile: Summary indicators**

	Argentina	Brazil	Chile	Mexico[1]	United States[1]
GDP *per capita* (USD), 2002	2 700	2 600	4 400	6 300	36 200
GDP *per capita* (USD PPP)[2], 2002	10 500	7 600	10 100	9 100	36 200
Share of GDP:[3,4,5,6]					
Agriculture	5.1	8.0	5.8	5.4	1.4
Fisheries	0.2	0.1	1.7	0.2	
Food, beverages and tobacco	4.1	6.0	3.9	5.1	10.9
Total	***9.4***	***14.1***	***11.4***	***10.7***	***12.3***
Share of exports:[3,4,5,6]					
Unprocessed agricultural products	18.3	24.0	8.6	2.3	7.6
Processed agricultural products	29.7	17.2	20.3	2.3	4.3
Fish products	2.2	0.5	13.9	-	-
Total	***50.2***	***41.7***	***42.8***	***4.6***	***11.9***
Total exports/GDP (per cent), 2002	28	15	34	27	10
Primary agriculture's share of labour force, 1999 (per cent)[7]	12		14	20	3

Sources: [1] OECD; [2] CIA Factbook; [3] Instituto Nacional de Estadística y Censos (figures for 2000); [4] Instituto Brasileiro de Geografia e Estastística (figures for 2000); [5] Banco Central de Chile (figures for 2001); [6] SAGARPA, Mexico; [7] World Bank, *World Development Indicators.*

The shares of agriculture and the food industry in total output understate the strategic importance of the two sectors for two reasons. First, both sectors are heavily export-oriented, with exports of agricultural and fish products accounting for over 40 per cent of total exports in all three countries. These high shares point to both the growing importance of downstream value added as *per capita* incomes improve and an increased export-orientation of the agro-food sector as *per capita* incomes rise. Second, agriculture accounts for a considerably larger share of employment than it does of output. This means equivalently that labour is less productive in agriculture than it is in other sectors – *i.e.* there is underemployment.

The agro-food sector as a key driver of exports

The export orientation of agriculture and related industries is of considerable macroeconomic importance in all three countries, since these sectors have traditionally played an important role in offsetting trade deficits in other sectors. In broader structural terms, if economic growth is not to be circumscribed by a balance of payments constraint, it is important that, as the economy grows and *per capita* incomes rise, the increased demand for imports should be matched by export growth. Traditional exports can provide a springboard for development, but for middle-income countries a question mark hangs over their ability to generate sufficient returns to sustain export-led growth in the long run.

In examining the potential of commercial agriculture and agribusiness to generate higher and less volatile export revenues it is important to make a distinction between the absolute and relative prospects for sectoral growth. The former is likely to be strong in all three countries, as each has a comparative advantage in important agricultural sub-sectors and the supply-side impediments to exploiting that comparative advantage are mostly being reduced over time. Nevertheless, it is likely that other sectors, particularly those starting from a lower level of development, have the potential to grow even more quickly, reducing agriculture's relative share.

It is also important to note that whereas agriculture and agribusiness make a broadly equal contribution to exports in all three countries, the importance of total exports to overall economic activity varies substantially. In particular, exports of goods and services accounted for 28 per cent of GDP in Argentina, 15 per cent in Brazil, and 34 per cent of GDP in Chile in 2002. In 2001, prior to exchange rate depreciations, the shares in Argentina and Brazil were 10 per cent and 11 per cent respectively. In the case of Argentina and Brazil, these shares are (usually) low by international standards (*e.g.* the shares of Mexico, France, and Germany are 32 per cent, 27 per cent and 31 per cent, respectively). On the other hand, they are above

the United States, which is the world's largest economy and can accordingly support a high degree of internal specialisation.

Several factors may explain these differences. Argentina and Brazil have larger populations (39 million and 182 million respectively) than Chile (15 million), and hence larger domestic markets. Yet while this may account for some of the relative difference between Chile and the other two countries, it cannot explain the relatively low share of exports to GDP in Argentina and Brazil compared with other similarly large countries. A common factor to all three countries is the considerable distances from their major international markets (notably the United States and the European Union), with relatively high transport costs acting as a systemic form of "natural protection", particularly for low value products. In the case of agricultural products, formal protection is likely to be even more important, with agricultural tariffs averaging approximately 60 per cent globally, compared with 5 per cent for industrial products (OECD, 2000). All three economies are relatively dependent on primary exports. In Chile, however, the historical dominance of copper exports led to a structure of production that was by nature more geared to exports. A final factor may be the historical legacy of import substitution policies in Argentina and Brazil, which contrasts with the much longer experience of relatively open borders in Chile.

Importance of the agro-food sector for employment

The importance of agriculture to employment reflects the dualistic structure of farming in all three countries (Table 4.2). This dualism is most apparent in Brazil, where, according to the latest census results, farms of less than 10 ha account for one-half of all properties, but farm just 2 per cent of total agricultural area. At the other extreme, farms exceeding 1 000 ha represent just 1 per cent of all holdings yet account for 45 per cent of total agricultural area. In Chile, the small to medium-scale farms are more evenly distributed, with 13 per cent of all holdings, occupying 0.8 per cent of total area falling into the 0-10 ha category. At the top end, however, the distribution is even more skewed than in Brazil, with less than 1 per cent of all holdings larger than 1 000 ha, yet these farms accounting for two-thirds of total area. In Argentina, the largest farms account for a lion's share of total area (75 per cent), but these holding are relatively common (7.2 per cent of total), a pattern which is explained by the exodus of less productive (small-scale) farmers from the sector as a consequence of economic development.

Table 4.2. **The distribution of land holdings (extremes only)**

	Argentina (1988)		Brazil (1995-96)		Chile (1997)	
	0-10 ha.	> 1 000 ha.	0-10 ha.	> 1 000 ha.	0-10 ha.	> 1 000 ha.
Per cent holdings	23.5	7.2	49.4	1.0	13.3	0.8
Per cent total area	2.2	75.3	2.2	45.1	0.8	66.5

Source: Argentina: Instituto Nacional de Estadística y Censos (INDEC), *Censo Nacional Agropecuário 1988*; Brazil: Instituto Brasileiro de Geografia e Estatística (IBGE), *Censo Agropecuário 1995-96*; and Chile: Instituto Nacional de Estadísticas, *Censo Agropecuário 1997*.

In each country, it is small scale, often semi-subsistence, agriculture that drags down average labour productivity. By contrast, the larger commercial farms are more capital intensive, and benefit from economies of scale and a range of other commercial advantages, such as easier access to credit and better co-ordination with downstream purchasers. In effect, these farms operate more like businesses in any other sector, and labour productivity is correspondingly higher. A key development challenge, notably for Brazil, involves putting the resources in small-scale peasant farming – a large pool of untapped labour potential – to more productive uses. History suggests that this process sometimes involves transforming some small-scale peasant operations into commercial enterprises, but more often creating viable employment alternatives in other sectors.

The role of agriculture vis-à-vis food processing industries

Bulk agricultural commodities and low processed food products collectively account for more than 60 per cent of agro-food exports in Argentina and Brazil, in sharp contrast with the case of Chile, where 60 per cent of agro-food exports are comprised of processed food products (Figure 4.1).[3] Whereas the share of processed food exports has tended to increase in Argentina and Chile (albeit gradually), this is not the case in Brazil, where the focus remains on primary commodities.

In Argentina, food exports are dominated by soy-based processed products and meat products (Figure 4.2). About 85 per cent of total soy production is processed into soybean-cake and soybean oil, of which 95 per cent is exported (these constitute “low-processed” products). Meat is mainly exported in bulk, refrigerated, and boxed. Differentiation and branding strategies are limited and if they exist, they are mainly oriented to

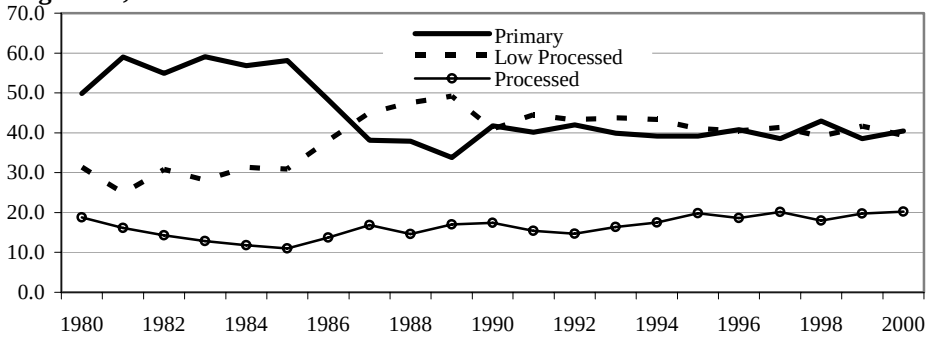
the domestic market. Some dynamic sectors are emerging, like the dairy sector and the beverage sector, within which the wine sector is very promising.

In Brazil, agribusiness exports are dominated by primary products, with unprocessed soybeans and coffee accounting for about 30 per cent of total agro-food exports. Among processed products, meat and orange juice are the most important sectors (Brazil is the world largest exporter of orange juice). In the case of orange juice, exports are typically frozen in bulk, and then sold under foreign big companies' brands.

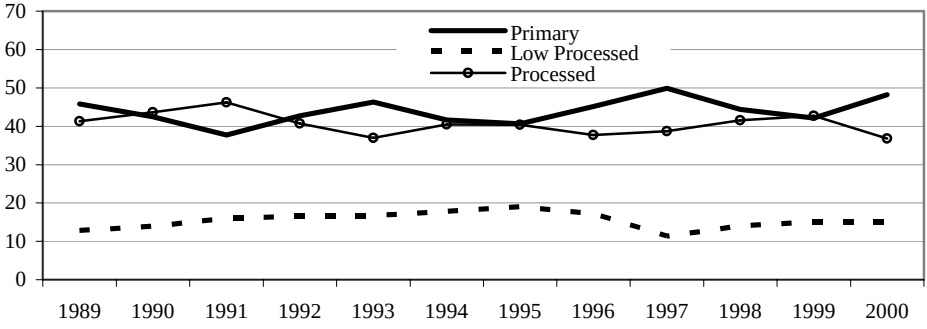
In Chile, three main products dominate exports of agro-food value added products: salmon, wine and fresh fruits. Relatively little differentiation in the form of branding has been undertaken for salmon. In contrast, wine is strongly differentiated, with branded Chilean bottled wine exported to many countries. Fruit is a hybrid case. Beginning as a small exporter of apples during the 1990s, Chile has become an important exporter of fruits, both fresh and processed. The importance of this sector is linked to the existence of food businesses producing a wide range of products: fresh, canned, frozen and dehydrated fruits and vegetables and fruit juices.

Figure 4.1. **Shares of primary, low processed and processed agribusiness exports**
In percentage

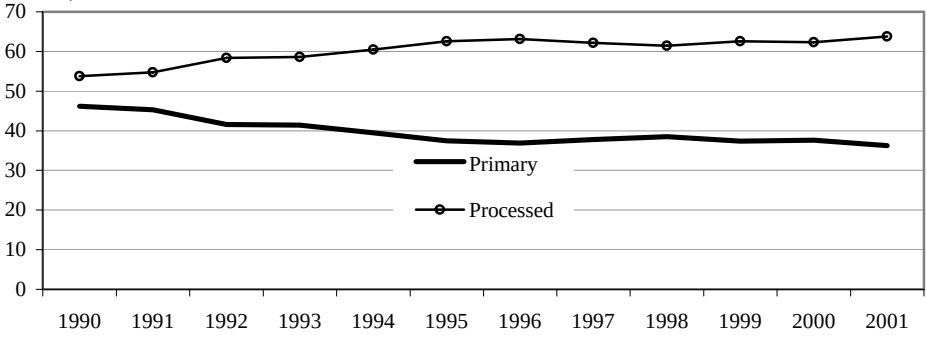
Argentina, 1980-2000



Brazil, 1989-2000

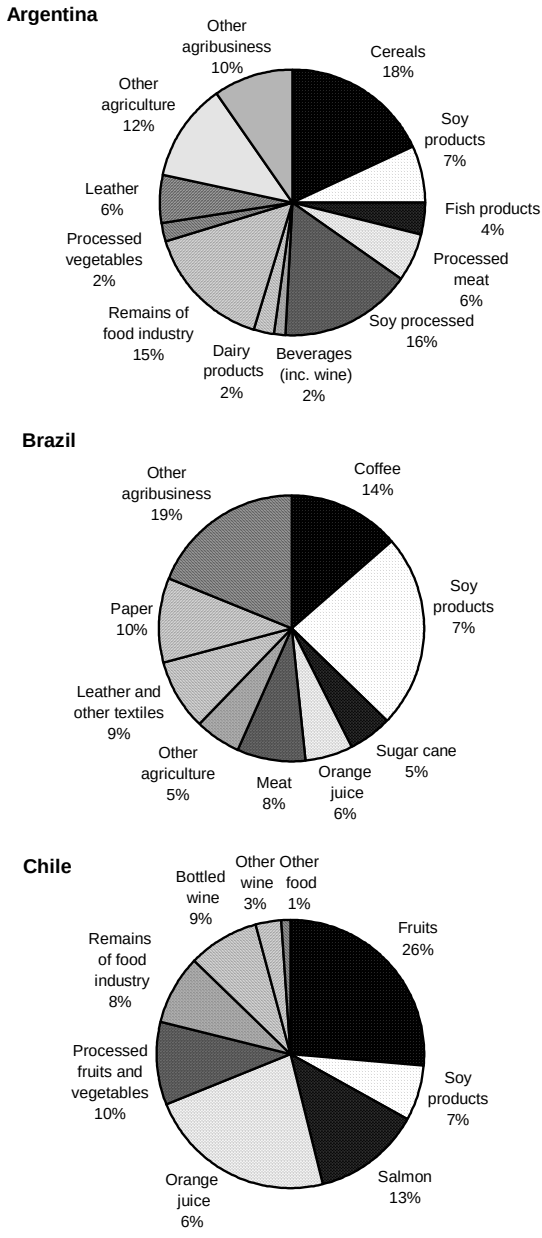


Chile, 1990-2001



Source: Authors' calculations based on INDEC, INE and COMTRADE data.

Figure 4.2. **Share in the agribusiness exports**
Average 1998-2000



Source: INDEC, IBGE, INE.

Comparative advantage in the agricultural sector

A country's comparative advantage depends on its factor endowments. Argentina, Brazil and Chile each have a comparative advantage in some forms of agricultural activity due to favourable natural resource conditions. These conditions dictate the kinds of agriculture that are feasible and the potential productivity of the land. However, other factors are also important.

First, the comparative advantage is not static but *dynamic* as the stock of natural resources can be increased by the opening up of new agricultural land (as in Brazil and to a lesser extent Argentina), and reduced by urban development in agricultural areas or by mismanagement of the land.

Second, a country's pattern of comparative advantage is also *endogenous* as it depends on the productivity of factors in alternative uses. How productively are land, labour and capital engaged in different agricultural activities, and how does the relative productivity compare with that of other countries?

Recognising that comparative advantage is endogenous has important policy implications. Investments to improve productivity can enhance a country's ability to exploit its basic resources. In agriculture, investment in research and development can improve the productivity of the land. Similarly, investment in human capital and infrastructure can extend the basis of that comparative advantage by enhancing the scope for adding value to primary production.

Natural resource endowments

To understand the nature of each country's comparative advantage it is instructive to look first at the respective patterns of land use (Table 4.3). Argentina and Brazil both have abundant agricultural land, with 169 million ha and 250 million ha, respectively. The combined total is approximately the same as the United States, although a much greater share of this land is devoted to permanent pasture. Of the total 419 million ha, 92 million ha are allocated to arable and permanent crops, compared with 179 million in the United States. Australia has a slightly larger total agricultural area (456 million ha) yet even less devoted to arable and permanent crops (51 million ha).

The most striking fact about both Argentina and Brazil is that both have considerable scope for increasing agricultural production by converting permanent pasture into arable cropland. In the case of Brazil, this potential is reinforced by availability of an estimated 90 million ha of extra arable land in the Centre-West of the country. Most of this land consists of Savannah

grasslands that can be developed through a rotation of crop plantings and pasture. By contrast Chile has virtually no additional land that can be converted to agricultural production, and its population density of 6.5 people per hectare of arable land is closer to that of northern Europe than of Argentina (1.4 people per ha) or Brazil (2.8 people per ha).

Table 4.3. **Land use patterns (million ha, 2000)**

	Argentina	Brazil	Chile	Australia	New Zealand	United States
Total area	278.0	854.7	75.7	774.1	27.1	962.9
Agricultural area	169.2	250.2	15.2	455.5	16.6	418.3
Pasture	142.0	185.0	12.9	404.9	13.3	239.3
Cropland	27.2	65.2	2.3	50.6	3.3	179.0
Arable	25.0	53.2	2.0	50.3	1.6	177.0
Permanent	2.2	12.0	0.3	0.3	1.7	2.0

Source: UN-FAO, FAOSTATS.

Argentina's Pampas region in the East Central part of the country has some of the most fertile soils in the world, benefiting from a warm temperate climate similar to that of the southern United States. This climate is ideal for the production of grains, oilseeds and livestock products, which form the backbone of Argentine production. Most farm businesses operate a mixture of all three, accounting for 50 per cent of the total value of production (the balance being made up mostly by temperate fruits such as grapes, apples and pears, and vegetables). A benefit of rotating crop production with cattle raising is that periodic reversion to sown pasture helps maintain soil fertility. It also represents a way of reducing the risks associated with both production and price volatility. The Pampas also extend into the warmer, semi-tropical provinces in the north, which support a diverse range of crops.

Argentina is the world's fifth largest cereal exporter (Table 4.4) and the third largest corn and soybean exporter. It is also the third largest producer of soybeans, behind the United States and Brazil. More than 80 per cent of this production is processed, making Argentina the world's largest exporter of both soybean oil and soybean meal. Argentina is the world's sixth largest beef producer but has been losing its share of the world meat market and now ranks 10$^{th.}$ (5$^{th.}$ if we consider the European Union as one exporter) with a 3 per cent world share. This contrasts with a 12 per cent world share in 1970.

Brazil has a more diverse geographical climate, which has led to a diversified agriculture of both temperate and tropical zone products. This

pattern of endowments suggests that there is a strong potential for diversification in agricultural production. The southern states of Parana and Rio Grande do Sul are on the same latitude as the more northern parts of Argentina's agricultural area and have similarly rich soils, which are suitable for wheat, rice, soybeans and livestock production, as well as horticultural products and (on the northern hillsides) coffee. This region has long been among the world's most productive agricultural areas.

The growth area of Brazil is the Cerrado lands of the Centre-West where the climate is more tropical. In new areas, pasture is being converted to arable cropland, with soybeans, maize and rotating pasture being the standard mix. Effectively, the exploitation of commercial possibilities in these areas generates external economies of scale that then enable the product mix to expand (e.g. through the development of supporting infrastructure, and the supply of grain that attracts poultry production). The North-East, while containing productive areas that are part of the Cerrado development, and competitive fruit production, also contains many more traditional farms. These tend to grow basic staples (*e.g.* corn and rice) for home or local consumption and are not competitive, being hampered by poor infrastructure, a lack of credit and relatively poor natural resources.

The upshot of this mixed temperate and tropical development is that Brazil is a major supplier of a wide range of agricultural products. It is the world's biggest producer of citrus fruits, orange juice, sugar cane and coffee, the second biggest in soybeans and products, and third in tobacco and poultry. It is also a major producer of corn, rice and beef.

Chile is a much smaller country and has a smaller proportion of its land suitable for agricultural production. Of 76 million ha, just 15 million are devoted to agricultural production – similar to New Zealand, which has just one-third of Chile's total area. As with New Zealand, most of this land is devoted to pasture, with just 2.3 million ha devoted to crops. Unlike New Zealand, however, most of those crops are annual row crops rather than permanent crops. For those areas where agricultural production is feasible, however, the climate is ideal – in effect the southern hemisphere mirror of northern California – and especially suitable for wine growing and temperate horticulture.

The fresh fruits and vegetables sector (including both primary and processed fruits) is dominated by fresh fruits, and accounts for about 8 per cent of total exports. Chile is the world's largest grape exporter (with a 25 per cent world market share) and ranks 7th in cherries (with 4.5 per cent of world exports). Wine accounts for 3 per cent of total exports, with 51 per cent bottled and the rest exported in bulk. Chile is the world's fifth largest wine exporter. The fish sector is increasingly important for exports

(accounting for 13 per cent of total exports), with high value added products playing a considerable role. In particular, Chile is the world's second largest producer and exporter of salmon, and the second largest producer of trout.

An important advantage for producers in Argentina, Brazil and Chile is that crop production is counter-seasonal compared with the northern hemisphere. This provides some price benefits to Argentine and Brazilian exports of grains and oilseeds. But for all three countries, the larger benefits are for more perishable products, notably fruits and vegetables. A further benefit is relatively long growing seasons, which allow for double cropping in Argentina and Brazil (and even some treble cropping in the Centre West).

Table 4.4. **A-B-C position in world markets of agricultural and food products**
Per cent of world exports

Country	Product	1970	Rank	1980	Rank	1990	Rank	1999	Rank	2000	Rank
Argentina	Cake of soya beans	0.0	**20**	1.6	**6**	17.3	**3**	30.1	**1**	31.9	**1**
Argentina	Oil of soya beans	0.0	**32**	2.7	**8**	23.3	**1**	32.2	**1**	36.6	**1**
Argentina	Soybeans	0.0	**27**	8.5	**2**	11.7	**3**	6.7	**3**	8.4	**3**
Argentina	Maize	15.1	**2**	4.3	**4**	3.4	**4**	9.3	**3**	11.6	**4**
Argentina	Cereals	6.9	**4**	4.0	**5**	3.9	**5**	5.8	**5**	7.0	**5**
Argentina	Meat bovine fresh	12.3	**2**	6.0	**7**	3.3	**9**	3.6	**9**	3.5	**10**
Argentina	Wine	0.1	**29**	0.2	**21**	0.2	**18**	1.0	**10**	1.2	**10**
Argentina	Meat and meat prepared	8.9	**4**	4.5	**10**	2.5	**13**	1.9	**16**	1.8	**17**
Argentina	Orange juice concentrated	0.0	**11**	0.3	**9**	0.7	**5**	0.4	**8**	0.1	**18**
Brazil	Coffee, green	30.8	**1**	20.6	**1**	15.8	**2**	22.9	**1**	18.5	**1**
Brazil	Orange juice concentrated	31.6	**2**	65.6	**1**	76.1	**1**	81.2	**1**	75.1	**1**
Brazil	Cake of soya beans	8.5	**2**	34.3	**2**	30.3	**1**	25.2	**2**	24.3	**2**
Brazil	Oranges	0.7	**18**	1.0	**15**	1.0	**15**	1.1	**16**	0.9	**16**
Brazil	Coffee, roasted	0.0	**37**	0.0	**45**	0.0	**41**	0.1	**35**	0.2	**30**
Brazil	Soybeans	2.1	**3**	5.5	**3**	15.5	**2**	20.8	**2**	23.8	**2**
Brazil	Oil of soya beans	0.2	**15**	21.1	**2**	18.7	**2**	17.8	**2**	13.5	**2**
Brazil	Cake of soya beans	8.5	**2**	34.3	**2**	30.3	**1**	25.1	**2**	24.3	**2**
Brazil	Tobacco	1.6	**14**	3.7	**6**	3.4	**7**	4.3	**5**	3.8	**5**
Brazil	Beef and veal boneless	na	**na**	0.5	**19**	1.4	**16**	4.3	**10**	4.8	**7**
Brazil	Beef preparations	5.8	**3**	24.9	**2**	14.5	**2**	32.4	**1**	27.0	**1**
Brazil	Sugar, total (raw equiv.)	5.0	**5**	8.8	**3**	4.0	**6**	18.9	**1**	13.5	**1**
Chile	Salmon fillets fresh	na	**na**	na	**na**	na	**na**	45.4	**1**	54.1	**1**
Chile	Grapes	2.5	**9**	7.9	**3**	21.9	**2**	17.6	**2**	19.9	**1**
Chile	Salmon fresh	na	**na**	na	**na**	na	**na**	12.5	**3**	16.5	**2**
Chile	Salmon fillets frozen	na	**na**	na	**na**	na	**na**	21.1	**2**	26.5	**2**
Chile	Wine	0.2	**24**	0.4	**16**	0.6	**14**	3.7	**5**	4.5	**5**
Chile	Apples	1.0	**16**	4.7	**8**	5.4	**7**	8.7	**5**	7.8	**5**
Chile	Cherries	1.2	**8**	2.0	**8**	3.7	**7**	6.1	**5**	5.2	**6**
Chile	Salmon, smoked	na	**na**	na	**na**	na	**na**	1.7	**9**	2.0	**9**

Source: FAOSTAT, FISHSTAT Plus.

Resource productivity

Producers in the commercial agricultural sectors of Argentina, Brazil and Chile typically have lower opportunity costs than producers in countries which provide large-scale government support and protection. In other words, their relatively unprotected status reveals a comparative advantage in these activities. In many cases their production costs are also lower in absolute terms, *i.e.* they have an absolute advantage as well. It is beyond the scope of this study to compute relative opportunity costs for a range of countries and sectors, or even production costs. From a strategic point of view, however, several important factors stand out.

In the case of Argentina and Brazil, fixed costs are typically lower, mainly because of the low cost of farmland. On the other hand, variable costs such as fertilizer, machinery, and interest on capital are relatively high.[4] Essentially, the low fixed costs are a function of these countries' abundance of natural resources, and correspond to a core comparative advantage. The relatively high variable costs, by contrast, are mostly a consequence of a relatively low level of economic development (or macroeconomic instability), and can be brought down over time. In other words, macroeconomic improvements should accentuate each country's core comparative advantage.

For bulk commodities, a major cost element is transportation, both internal (to major ports) and external (to major markets). Yet with soybean prices at an all time low of USD 175 per ton in 2001, Brazilian producers could still make a profit on production in the Cerrado, despite paying an estimated USD 45 a ton to transport soybeans to the nearest port. As these costs come down, the competitive position of South American producers will improve.

For all three countries, the yields for major crops are generally lower than in the most competitive suppliers (*e.g.* Australia, Canada, the United States), so it is low costs rather than high land productivity that drive competitiveness. There are several reasons for relatively low yields, including relatively extensive farming systems, the practice of double cropping, and a small technology gap. In overall terms, however, the soils are equally fertile, and the gap in yields is closing.

Yields are catching up on the strength of the increased chemical inputs and the use of improved seeds. It is likely that there will be a considerable closing of the gap with the United States and other efficient producers in the medium term. For example, Argentina is closing the gap due to focus on high yield varieties (*e.g.* adoption of a high quality wheat standard, Trigo

Plata) as well as more intensive production *(i.e.* greater use of inputs). Brazil estimates that its soybean yields exceeded those in the United States for the first time in 2001, largely as a consequence of research and extension tailored to local climatic conditions.

This closing of the gap in Brazil may be delayed by the expansion of acreage in the Centre-West, where soils are less fertile than those in the southern part of the country, or in the Pampas of Argentina. However, this region possesses other attributes that should nevertheless help maintain yields, including good water filtration and drainage and suitability for large-scale mechanisation. A more general impediment is that Brazil's production base is becoming more diversified, with a greater focus on tropical as opposed to temperate, products. This changing production mix calls for new research, and the benefits may take time to feed through.

In the case of Brazil, a major question mark hangs over biotechnology. The planting of GM crops is not permitted under law, and even if legislation to allow plantings of GM crops is approved, other countries (including Argentina) have a head start. Brazil's best prospects may lie in selling non-GM products at a price premium, which is a form of product differentiation, although industry representatives argue that a ruling in favour of GM crops is necessary for effective segregation and price differentiation to be possible.

Chile's situation is fundamentally different. Essentially, Chile has little extra land to be mobilised, and its exports of agricultural products tend to be more in the area of processed products. Here there is some potential for yield improvements, but more substantial gains are likely to result from adding value to these products.

At the downstream level, it is instructive to note that among the three countries the investment that has been made in increasing value added is inversely related to the scope for additional primary production. Thus, Brazil remains heavily focused on primary products. The same is true for Argentina, although there have been greater efforts to increase the degree of processing. In particular, Argentina's oilseed crushing sector has undergone rapid expansion in recent years, resulting in larger and more efficient capacity. Argentina is now the world's largest exporter of soybean oil and the second largest exporter of soybean meal. Chile, with little scope for expanding production, has invested heavily in expanding the value added component and exporting high value products as opposed to bulk commodities.

Domestic supply-side constraints on the agro-food sector

Whether production costs in Argentina, Brazil and Chile are higher or lower than in competitor countries depends on the balance of competing factors. To varying extents, the costs of land and labour are lower in all three countries than in industrialised OECD countries. At the same time, other costs tend to be higher. Foremost among these costs are the relatively high costs of transport and credit, both of which are largely outside the control of the individual firm and provide a role for government policy. The impact of such constraints varies considerably among different types of enterprise. Those likely to be most adversely affected are not the biggest firms (which may have economies of scale in terms of their access to transport and storage facilities and international credit), but smaller-scale potentially competitive producers who are constrained at the margin by inadequate infrastructure and prohibitively expensive domestic credit.

Agriculture tends to lose some sources of its comparative advantage over time as the cost of factor inputs (notably wages and land) is bid up in relative terms. Over the medium to long term, however, the decline in other costs is likely to be more rapid, with the result that each country's comparative advantage in agriculture-based activities is likely to improve. Within this generally favourable outlook, how are things likely to evolve in specific terms, and what can be done to alleviate the constraints?

Transport and logistics

All three countries have long coastlines and major seaports that provide outlets to international markets. However, the costs of getting products to overseas markets are a major concern, since producers are a long distance from their principal markets, and face internal logistics systems that are less developed than those of their main rivals for export markets (mostly OECD countries).

Infrastructure development is reducing this cost disadvantage over time. Argentina has a well-developed internal waterway, the Parana-Paraguay River system, which is located close to the major grain and oilseed producing regions. Similarly, Brazil's southern states are well connected to the main ports of Parana, Santa Catarina and Rio Grande do Sul. In overall terms, however, Argentina's internal infrastructure is much more developed than Brazil's. For example, 29 per cent of all highways in Argentina are paved, compared with just 10 per cent in Brazil (Table 4.5). The overall difference between the two countries is partly attributable to

underdevelopment in the North-East of Brazil, and partly to the opening up of new agricultural areas in the Cerrado region. Heavy investment in the latter, including development of the Amazon's tributaries, is bringing transport costs down sharply. In the case of soybeans, for example, completion of the North-West corridor project is expected to reduce shipping cost to the coast from USD 45 to USD 15 per ton. This creates a virtuous circle of agricultural investment and development of supporting infrastructure, with a considerable proportion of the latter being paid for by the private sector (*e.g* the Ferronorte Railway and the Madeira Waterway).

Chile's unique geography is a mixed blessing. On the one hand, internal transportation distances can be large; on the other hand, logistics are relatively simple, both by sea and by road. Once domestic suppliers have got their product on a main artery road or to a port, it is relatively straightforward to ship along the length of the country. In general terms, Chile's infrastructure is less developed than Argentina's but more developed than Brazil's. In terms of roads, for example, 19 per cent of all roads are paved. However, exports to other South American countries are impeded by the fact that there is only one navigable road over the Andes, and this is often closed in the winter. Hence most shipments have to go by plane.

Table 4.5. **Comparative geography and infrastructure in the Americas and Europe, 2000**

	Unit	Argentina	Brazil	Chile	Mexico	United States	Europe
Population density	People per sq km	13.3	19.9	20.1	50.0	29.2	118.3[3]
Landmass	Millions sq km	2.8	8.5	0.8	2.0	9.4	3.2
Total roads [1]	Km	215 471	1 724 924	79 353	323 977	6 348 227	3 920 659
per cent of paved roads	per cent	29.4	9.5	18.9	29.7	58.8	96.2
Paved highways	Km	63 348	163 868	14 998	96 221	3 732 757	3 771 674
Density of paved highway	Km/sq km	0.02	0.02	0.02	0.05	0.40	1.17
Total rail trackage [2]	Km	34 572	30 612	7 766	26 612	230 674	153 801
Density of rail trackage	10 km/sq km	0.124	0.036	0.103	0.136	0.246	0.475
Navigable waterways	Km	11 000	50 000	725	na	41 935	29 818
Density of waterways	Km/sq km	0.0040	0.0058	0.0010	na	0.0045	0.0092

Note: na: Not available.

1. Includes major and minor roads (excludes private roads in Austria (est. 100 000 km) and 700 000 km rural roads in France).
2. Data for Argentina, Brazil, Chile and Mexico include all trackage. Data for the United States and Europe include only the lines worked. (Additional data: Chile: lines worked 2 035 km, United States: all trackage 284 818 km.).
3. Density of the European Monetary Union.

Sources: World Bank, *World Development Indicators*, 2002; International Road Federation, *World Road Statistics* 2001; Union Internationale des Chemins de Fer, *Statistique Ferroviaire*, 2000; EU, *Transport in Figures*, 2000; North American Transportation in Figures (2000); US Bureau of Transportation web site (www.bts.gov).

For a number of years, producers in all three countries were handicapped by limited storage capacity. However, improvements in storage facilities have limited degradation and reduced the need to sell output at the time of harvest, thus raising (and smoothing) the prices received by producers. The development of refrigeration facilities has been particularly important to producers of meats, fruits and vegetables.

In general, international transport costs are less of an issue for high value basic products and processed products than for bulk commodities. Thus these issues are relatively more important for Brazil, which has both relatively less developed transport and logistic systems, and a composition of exports oriented to low value products

Access to credit

The terms and availability of credit are an important issue for agricultural producers and agribusiness companies in Argentina, Brazil and Chile. In each country, the opportunities for exporters depend fundamentally on whether they have access to credit on international markets, or whether they are obliged to borrow domestically at higher interest rates.

Commercial agri-businesses typically receive their payments in hard currency (mostly USD), which provides evidence of creditworthiness to foreign lenders. In many cases, these companies do their own lending to agricultural suppliers, either by providing credit or financing inputs (such as fertilizer) directly. In Brazil, for example, soybean farmers often find it cheaper to obtain finance from the crushers.

The greatest difficulties arise for smaller potentially competitive businesses, which are obliged to borrow on the domestic market. Here there are two basic problems. First, there is a structural problem in demonstrating creditworthiness. “Asymmetric information” between borrowers and lenders means that, overall, there is likely to be an under-provision of credit, most notably for smaller producers. There are two options for resolving this dilemma. One is government intervention. Indeed all three countries have policies designed to increase the availability of credit within the agricultural sector. The other possibility is alternative financing arrangements (such as the provision of credit by the purchaser). In Brazil and Chile, small-scale farmers, who would otherwise be unable to obtain finance, may nevertheless obtain direct finance in this way (*e.g.* by the provision of capital or inputs).

The availability of credit can be heavily affected by macroeconomic conditions. In Argentina, the withdrawal of domestic savings in response to the economic crisis has caused credit to dry up, not just for investment but for working capital and export finance too. It has also led to disputes

between agricultural suppliers and downstream agri-businesses.[5] The agro-food sector accumulated a large debt: in December 2001, it totaled a debt of 9 billion dollars, of which primary production accounted for 6 billion dollars. The government is currently attempting to arbitrate in this dispute. In Brazil the macroeconomic problems are less severe, but they naturally have a disproportionate effect on less well-established companies without easy access to overseas lenders. Chile has very favourable macro-economic conditions and a competitive banking system allowing for very low interest rates by regional standards. Nevertheless, its import-competing sectors have difficult access to credit, where the absence of a large domestic market means that a surge of imports from neighbouring countries (for example due to exchange rate fluctuations) can cause prices to fluctuate radically. This increases risk and makes financing more difficult to obtain. This problem is similarly being addressed through a mix of government policies and vertical contracts between suppliers and downstream agri-businesses. In Brazil, despite the fact that banks must allocate one quarter of their credits to the agricultural sector, access to credit is almost prohibitive due to the very high interest rates.

Domestic agricultural and trade policies

Argentina, Brazil and Chile all apply relatively modest amounts of border protection for agricultural products and provide limited amounts of domestic market interventions. This market orientation dates to the early 1990s in the case of Argentina and Brazil, but has a longer history in Chile. All three countries are members of the Cairns Group of agricultural exporting countries, a coalition which argues in favour of open trade in agricultural products.

Import tariffs are used to provide social assistance to underdeveloped segments of the economy, notably the North-East region of Brazil and the South of Chile. Because protection is extended only to sectors for which each country is a net importer, domestic prices can be maintained above world market levels without recourse to domestic price interventions. In the case of Brazil, where some domestic price supports are extended, they are limited regionally and according to a trigger level of domestic prices, enabling the scope of support to be limited.

All three countries have relatively low bound tariffs under their WTO obligations. The maximum rates are 38 per cent (Argentina), 55 per cent (Brazil) and 31.5 per cent (Chile) although the rates actually applied are mostly well below these ceilings. Most intra-Mercosur trade takes place duty free, while the common external tariff does not exceed 20 per cent for any commodity. Until recently, Chile applied a variable tariff regime for

wheat, oilseeds and sugar, whereby the tariff levied varied inversely with the import price (although only for wheat and sugar was this of any practical significance). This system was challenged successfully at the WTO and has since been revoked. A distinguishing feature of the tariff systems in all three countries is the use of simple *ad valorem* tariffs, which in most cases are the same irrespective of the degree of processing. As a consequence, some of the specific problems confronted by A-B-C exporters (tariff escalation, and limited tariff-quota allocations) are avoided in the case of foreign exporters. On the other hand, intra-Mercosur trade benefits from lower tariffs (in most cases zero), which discriminate against non-Mercosur suppliers.

Agricultural and rural development initiatives comprise two kinds of measure. The first consists of instruments that improve sectoral efficiency (*i.e.* enhance the opportunities to become competitive), notably rural credit initiatives that overcome the basic difficulty of establishing effective loan systems in rural areas, and research and extension.[6] The second consists of general policies that are geared less towards agriculture *per se* and more towards improving economic opportunities generally. Such measures include investment in education and infrastructure.

The commercial export sector has benefited from a range of investments in transport and other infrastructure (which help businesses that are inherently competitive, but increase the exposure of uncompetitive enterprises to market forces). In addition, there has been a range of efforts, formal and informal, to promote exports. These initiatives relate to both internal communication (for example, producer associations can communicate the priorities of agribusiness to government) and overseas export promotion.

Other government policies also have an effect on export incentives. Until 1996, both Argentina and Brazil operated systems of differential export taxes (DETs) that, by charging lower taxes on processed than primary products, encouraged the export of value added products. These measures have been abolished, but the payment of internal taxes still has an effect on exporters' incentives. Argentina provides reimbursement of domestic taxes to exporters at a rate of between 1 per cent and 10 per cent. However, with the depreciation of the currency in 2002, these measures have been counteracted by temporary export taxes of 23 per cent in the case of agricultural products, 20 per cent for selected primary products and 5 per cent for industrial products. Under Brazil's ICMS tax system, each of the country's 27 states imposes its own taxes. This means that if soybean producers in Mato Grosso ship their beans to São Paolo for processing prior to export, they pay twice. The first tax is in principle refundable, but in practice it takes time to claim back. The same applies for the 3.65 per cent

federal sales tax (COFINS). However, local rates are not always applied at the official rate of 12 per cent.

Foreign demand and trade protection

The prospects for agriculture and agribusiness exports depend fundamentally on the evolution of foreign demand, and the extent to which this is constrained by trade protection.

For all three countries, traditional markets in high-income countries are still important. While these markets may exhibit relatively slow growth (with the demand for food products being relatively unresponsive to further income increases), they still dominate world demand and each country can benefit from increasing its market share – by displacing either domestic production or rival import suppliers. At the same time, it is markets outside the OECD area that are likely to provide superior long-term growth potential. For a number of agricultural products, China in particular presents vast potential, while income growth in South America should ultimately boost intra-regional trade more rapidly than has so far been the case.

Which products are exported to which markets?

In order to understand the evolution of foreign demand, it is instructive to look at which products are exported to which countries, and how those patterns have changed over time. Table 4.6 shows the shares of total agro-food exports going to major markets, while Table 4.7 provides a breakdown of the product composition of agro-food exports. Both tables are aggregations of bilateral trade flows in separate product categories, although they do not themselves reveal the specific detail on which products are exported to which markets. In interpreting these trade data it is important to bear in mind that the current importance of individual markets may itself be a consequence of trade protection, with some markets relatively less important precisely because protection is high.

There are considerable differences between the three countries in terms of which export markets matter. The European Union is the biggest destination for Argentine and Brazilian agro-food exports, while the United States is the primary destination for Chilean agro-food exports. Argentina stands out in terms of the importance of other South American markets (particularly Brazil), while Chile has a relatively low share of exports destined for non-OECD countries, largely because of its higher focus on exports of processed products.

Table 4.6. **Major agro-food export destinations, 1998-2000**
Per cent of total exports

	Argentina	Brazil	Chile
Canada	0.8	1.9	3.2
United States	5.2	10.1	25.5
Mexico	0.5	0.6	2.9
Japan	2.6	6.1	20.7
European Union	28.9	41.2	19.8
Other OECD	1.8	3.9	2.8
Argentina		3.1	3.0
Brazil	19.1		3.2
Chile	3.8	0.7	
Other Americas	9.0	4.7	10.3
Rest of the world	28.2	27.8	8.7

Source: CEPII, CHELEM database.

In the case of Argentina, the share of total agro-food exports to Brazil rose from 11 per cent in 1990-92 to 19 per cent in 1998-2000. The rising importance of the Brazilian market, and other markets in Latin America, is mirrored by the declining importance of the European Union, whose share of Argentine agro-food exports fell from 42 per cent to 29 per cent over the same period. These changes reflect the growing importance of cereals and other crops at the expense of livestock products. Cereals are now the biggest single export category, their share of total exports having grown from 37 per cent in 1990-92 to 40 per cent in 1998-2000. About 42 per cent of these exports are destined for Brazil. A similar proportion of exports of meat and meat products goes to the European Union, this share having fallen from over 50 per cent at the beginning of the 1990s.

The rising importance of trade with developing countries (including Brazil) could restrain the development of value added. The relatively low incomes in these countries (compared with the European Union) mean that demands are more likely to consist of basic foodstuffs as opposed to processed food products.

Brazil is more dependent than Argentina on the European market, although here too the share in total agro-food exports has fallen (from 50 per cent in 1990-92 to 42 per cent in 1998-2000). In this case, the accompanying growth markets have been outside the OECD area, notably in China and

other Asian countries, and the Middle-East. For example, 50 per cent of all poultry exports go to Japan and Saudi Arabia.

Soybeans are the biggest export earner, although Brazil also has a diversified export base, and the extent of diversification is increasing with time. Other important export categories are sugar, animal feed, beverages (coffee) and meat (beef and poultry). The development of new exports, notably in tropical products, means that there has been relatively less emphasis on value added, with little processing for a number of products. However, this pattern of development reflects not just prodigious growth in the agricultural sector, but also supply-side constraints to the development of downstream industries, and tariff escalation in destination markets. These themes are taken up later.

Chile is less focused on the European market than either Argentina or Brazil. It has also seen a sharp drop in the importance of this market, with the share of total exports. The United States has taken over as the principal export destination, with its share of all agri-food export rising from 19 per cent in 1990-92 to 25 per cent in 1998-2000, while Japan has overtaken the European Union in importance. Other South American countries (not including Brazil) now account for 10 per cent of agri-food exports – double their share at the beginning of the decade. In contrast with either Argentina or Brazil, Chile remains focused predominantly on high-income markets, an orientation which reflects its emphasis on high-value agricultural products.

Table 4.7. **Major export product categories, 1998-2000**
Per cent of total exports

	Argentina	Brazil	Chile
Cereals	21.7	0.2	1.7
Oth.edible agr. products.	17.4	35.7	30.6
N.-edible agr. products	3.2	7.2	15.2
Cereal products	1.7	0.3	1.1
Fats	19.0	3.9	1.1
Meat	10.9	9.4	22.4
Processed meat	1.5	3.0	3.3
Processed fruits	2.2	3.7	6.5
Sugar	2.1	13.2	0.6
Animal food	17.5	11.6	6.4
Beverages	2.6	10.6	11.1
Manufactured tobacco	0.2	1.2	0.1

Source: CEPII – CHELEM database.

It is important to underline that the share of processed products exported to the Mercosur area is growing for all these countries, with the exception of Chile. The share of processed products exported from Brazil to Mercosur countries increased from 2 per cent in 1990, to about 10 per cent in 2000. For Argentina, this share increased from 10 per cent in 1980 to about 20 per cent in 2000. Chile is the only country in which this share went down, from 20 per cent in 1980 to about 13 per cent in 2000 (Table 4.8).

Table 4.8. **Primary and processed agribusiness exports per destination**
Per cent of total exports

		PRIMARY					PROCESSED				
Country	Year	Japan	MERCOSUR	NAFTA	UE	Other	Japan	MERCOSUR	NAFTA	UE	Other
Argentina	1980	0.7	14.9	1.5	22.2	60.7	3.7	10.9	15.1	31.1	39.2
Argentina	1985	6.0	5.9	7.4	22.8	57.9	2.0	8.2	13.7	27.1	49.0
Argentina	1990	3.2	18.4	5.8	33.6	39.1	1.7	9.9	14.6	31.4	42.3
Argentina	1995	3.1	32.0	2.4	32.3	30.2	2.2	21.7	10.6	29.0	36.4
Argentina	2000	3.1	29.5	6.4	24.4	36.6	1.3	19.7	12.2	29.9	36.9
Brazil	1980	na	na	na	na	na	na	na	na	na	na
Brazil	1985	na	na	na	na	na	na	na	na	na	na
Brazil	1990	5.0	1.3	9.9	55.2	28.6	6.2	2.0	30.8	26.8	34.1
Brazil	1995	2.1	2.8	5.7	52.4	36.9	6.3	6.8	11.1	25.2	50.7
Brazil	2000	2.7	4.5	6.1	52.9	33.8	5.4	9.7	14.6	38.7	31.7
Chile	1980	na	na	na	na	na	na	na	na	na	Na
Chile	1985	na	na	na	na	na	na	na	na	na	Na
Chile	1990	13.9	6.1	38.8	27.6	13.6	12.5	19.2	30.2	17.4	20.6
Chile	1995	15.1	9.3	33.7	21.2	20.8	9.4	23.8	23.8	23.3	19.7
Chile	2000	10.6	6.5	49.0	17.2	16.8	10.2	13.7	30.1	29.2	16.9

Source: Authors' calculations based on INDEC, INE, COMTRADE data.

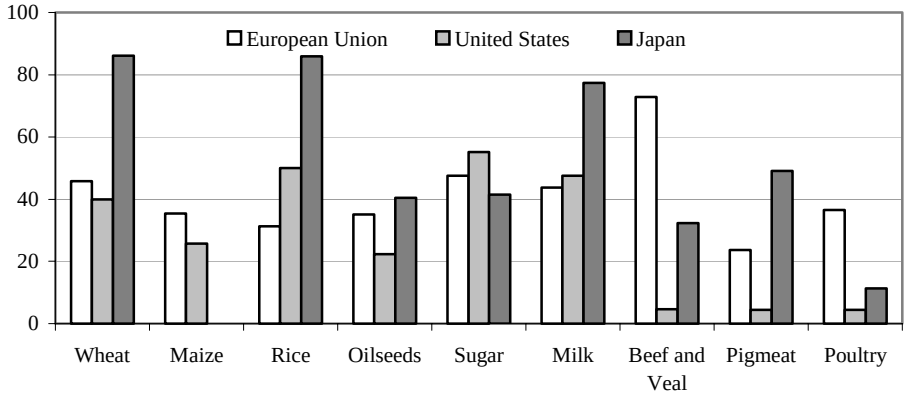
Overall levels of support and protection in key export markets

The A-B-C economies all have the misfortune to have a comparative advantage in a highly protected sector. This has impeded market access directly and, to the extent that policies in protected countries have stimulated production, undermined competitiveness in third markets. To some extent, the shift into new products and the search for new markets constitutes an attempt to circumvent high protection on basic commodities in traditional markets.

The OECD's calculation of producer support (via its Producer Support Estimate) gives a broad indication of the level of support that is extended to producers in important OECD country markets and among rival OECD country suppliers. Figure 4.3 reports PSEs for major commodities in the European Union, Japan and the United States. The PSE captures policy measures that restrict market access (by raising prices above international levels), and boost competitiveness through export subsidies and other measures that support production at higher levels than would be the case at international prices. It also includes payments that are decoupled at the margin. Hence it captures all measures that have an adverse impact on export suppliers, with the exception of those that discriminate between countries. The most important observation is that the main agricultural commodities receive extensive support in all three OECD countries.

The OECD does not perform a similar calculation for Argentina, Brazil and Chile, but in each case trade protection and support policies are much more modest. The average applied MFN tariffs are 11 per cent for Argentina, 12 per cent for Brazil and 6 per cent for Chile. Moreover, since these three countries are exporters of many of these commodities, there are no imports and the tariff does not induce a domestic price gap. Furthermore, given modest amounts of domestic support, it is safe to conclude that the level of support provided to producers is much lower than the average in OECD countries, and that in major export destinations, and (in the case of the European Union and the United States) major export competitors. The IMF estimates that the removal of agricultural trade protection in industrialised countries would cause real incomes to increase by 0.31 per cent if GDP in Brazil and 0.45 per cent of GDP in the rest of Latin America.[7]

Figure 4.3. **Producer support estimate as percentage of the value of production for the EU, Japan and the United States, 2000-02**



Source: OECD PSE/CSE database, Paris 2003.

The terms on which emerging market economies grant market access are similarly important. For countries acceding to the WTO the mechanism for determining market access are crucial. Competitive exporters have a natural interest in non-dicriminatory systems. If a tariff-rate quota (TRQ) system is introduced to administer market access (as in China), then the allocation of within-quota import volumes will have a fundamental bearing on export opportunities.

In order to understand in greater detail the effects of these policies, it is instructive to break down, by commodity and country, the specific issues confronting exporters in terms of market access and subsidised competition. The key market access issues are:

The levels of tariffs in key markets.

- Tariff escalation, *i.e.* the tendency for higher tariffs to be levied on products incorporating value added.
- Losing out to other higher cost suppliers through discriminatory import regimes (including administratively set TRQ allocation systems).
- Non-tariff measures such as sanitary and phyto-sanitary regulations that, irrespective of their legitimacy, impede market access.

Other concerns relate to support measures in other countries that reduce imports below what they would otherwise be and/or stimulate exports from rival suppliers. Table 4.9 summarises the constraints for each major export category, and supports the subsequent discussion.

Table 4.9. **External constraints to international competitiveness**

Product	Exporter	Main Markets	Competitors	Constraint
Cereals	Argentina	Brazil, EU, Japan	EU, United States, Cairns Group exporters	High tariffs into main markets, substantial support in non-Cairns Group OECD countries.
Soybeans and products	Argentina, Brazil	EU, Japan, United States, China, Korea, Thailand	United States	Tariff escalation, notably for soybean oil. Size of quota allocation in the case of China.
Sugar	Brazil	United States, Russia, Argentina, Colombia, Venezuela, Japan, China, Korea	ACP countries, Cuba	Tariff quota allocations that favour other exporting countries; high over-quota tariff rates.
Orange juice	Brazil	United States, Canada, EU, Japan, Korea, Mexico, Australia, China	United States	High tariffs and tariff escalation.
Coffee	Brazil	United States, China, Canada, EU, Japan, Chile	Colombia, Vietnam, Kenya	Tariff escalation.
Beef and leather	Argentina, Brazil	US, EU, Japan, China, Hong Kong, Saudi Arabia	United States	Non tariff barriers (SPS)

Table 4.9. **External constraints to international competitiveness (*continued*)**

Product	Exporter	Main Markets	Competitors	Constraint
Poultry and pigmeat	Brazil	Japan, Saudi Arabia	European Union	Subsidies to competitors.
Vegetables and temperate fruits	Argentina, Brazil, Chile	European Union, Mercosur	United States	Unfavourable TRQ allocations
Tropical fruits	Brazil	Other Latin America, non-OECD	ACP countries, Ecuador (bananas)	High tariffs, MFN treatment as opposed to preferences.
Wine	Chile	European Union, United States	European Union, United States, Australia, S.Africa	
Salmon	Chile	Japan, United States	Norway, United Kingdom	Anti-dumping case in United States
Tobacco and cigarettes	Brazil	United States, Canada, European Union, Japan, Russia, Mercosur	United States	Tariffs and supports in main markets. Quota allocation in the European Union.

Box. 4.1. **Protection in key markets: market access issues by sector**

Soybeans and soybean products (Argentina and Brazil)

Soybeans and soybean products are a key export category for Argentina and Brazil. Argentina tends to crush its beans domestically, with the consequence that exports of oil and meal account for 85 per cent of the total value of exports from the soybean complex. In contrast, Brazil exports mainly uncrushed beans (accounting for 50 per cent of the total value), mainly because of outdated and unproductive crushing facilities but also because of tariff escalation in major markets. Uncrushed beans enter the three principal markets – the European Union, Japan and the United States – duty free, while soybean meal (which accounts for about two-thirds of the value of the products) enters duty free in the European Union and Japan, but at a tariff of UDS 4.5 per MT (approximately 2.4 per cent) in the United States. By contrast, soybean oil incurs a tariff of 6.4 per cent in the European Union, 10.9 yen/kg (approximately 20 per cent) in Japan and 19 per cent in the United States. The most dynamic markets are China and Korea. Both of these countries operate TRQ systems which do not favour the lowest cost provider. Producers in the European Union and the United States also receive substantial support, as evidenced by the PSEs presented in Figure 4.3.

Fruits and vegetables (Argentina, Brazil and Chile)

Fruits and vegetables are a collectively significant export category for all three countries. With some exceptions (such as table grapes in Chile), exports are spread across a significant number of commodities, and varying degrees of processing. This makes it difficult to assess the full extent of protection. According to the US Department of Agriculture's estimates using the Agricultural Market Access Database (AMAD), the average OECD bound tariff on different categories of vegetables (fresh or processed) varies between 47 per cent and 87 per cent. The comparable range for various categories of fruits and nuts is 25 per cent to 36 per cent. A number of countries apply tariff-rate quota systems, which make the allocation of quota volumes very important. For example, the European Union applies a within-quota tariff of 5 per cent on vegetables and 6 per cent on fruits and nuts, compared with over-quota tariffs of 56 per cent and 42 per cent respectively. Argentine, Brazilian and Chilean exporters are mostly required to pay the higher rate. A further difficulty is non-tariff barriers that can be difficult to anticipate. The markets for many fruits and vegetables are relatively thin, with the consequence that the emergence of a major supplier can have an immediately identifiable effect on producers in other countries. Argentina, the world's second largest exporter of honey, has recently been the subject of anti-dumping and countervailing duty measures by the United States.

Cereals (Argentina)

Cereals are a major export category for Argentina, and face significant tariffs into all their key markets. Applied most-favoured nation (MFN) tariffs for the most important markets are 11 per cent in the case of Brazil, an estimated 77 per cent in the European Union and 46 per cent in Japan. However, the main problem is not market access *per se*, but rather losing markets to, and seeing world prices depressed by, subsidisation in other countries. Argentina competes in other markets, principally with Australia, Canada, the European Union and the United States. The latter two countries provide support to their farmers (Figure 4.3). The European Union has also used export subsidies when prices are low. The recent US Farm Bill reverts to more coupled policy measures, although support remains lower than in the European Union.

Coffee (Brazil)

Brazil is the world's biggest producer of coffee. However, production has stagnated since the Second World War, and the share in total exports has declined continuously since late 1950s. As global production has risen, Brazil's share of the world market has also fallen. Brazil's cost advantage in coffee production has waned, notably with the emergence of Vietnam as a major exporter. Vietnamese producers can obtain yields that are about three times higher than in Brazil (11.6 kg per ha. versus 34.3 kg per ha.). These pressures mean that Brazilian producers have to increase yields, improve quality, or both. Competitive pressures have been reinforced by trade protection. Tariffs on coffee exports are generally low, but there is a significant amount of tariff escalation, for example with instant coffee typically paying a higher duty than coffee beans. Even more importantly, most coffee trade is conducted through preferential trading arrangements, from which Brazil does not benefit. Thus Brazilian exporters pay a tariff of 7.5 per cent into the EU market, compared with 0 per cent for ACP countries and 2 per cent for GSP countries. Exports into the United States are exempt from tariffs, but nevertheless reduced by the benefits provided to farmers in Ecuador, Colombia, Peru under the Anti-Drugs Initiative. Under a similar programme, Canada exempts Colombia, Equador and Mexico from tariffs.

Sugar (Brazil)

Brazil is the world's lowest cost producer of sugar. However, sugar is among the most trade distorted of sectors, with high protection in OECD countries preventing Brazilian producers from exploiting their comparative advantage. The biggest problem for Brazilian exporters is the high levels of support provided to producers in the European Union and the United States, where in each case prices are approximately three times world market levels. In the case of the European Union, these supports have transformed the region into a net exporter.

Orange juice (Brazil)

The lion's share of Brazil's exports of orange juice goes to Europe, incurring a tariff of 15 per cent. Exports to the United States would be much higher were it not for the high protection provided to producers in Florida. The composition of trade is also affected, with the United States charging prohibitive tariffs on exports of fresh oranges. In response to these policies, Brazilian companies have invested heavily in Florida, owning an estimated 40 per cent of the state's processing capacity. It is important to note that there is considerable potential for domestic demand growth, which augurs well for the sector, but may absorb much of the contribution that frozen orange juice currently makes to agricultural exports (about 10 per cent). However, there is plenty of scope for expanded production of other fruits, including mangoes, table grapes, papayas, melons, passion fruits and limes. None of these are individually important but collectively they could constitute a major export category.

Meat (Argentina and Brazil)

Meat exports are important for both Argentina and Brazil. In the case of Argentina, these exports are mostly beef, while in Brazil poultry and pigmeat are increasingly important too. In these sectors, the biggest impediment to export growth is not formal trade barriers or subsidies to other competitors (note from Figure 4.3 that the PSEs are generally low relative to other commodities) but rather non-tariff barriers in the form of sanitary restrictions. Thus, exports of beef from both Argentina and Brazil are banned from the European Union, Japan and the United States due to the presence (or alleged presence) of foot and mouth disease. The same is true for pigmeat from Brazil, with the additional claim of swine fever. Similarly, Brazilian poultry is banned from the United States due to alleged contamination with Newcastle Disease (a claim which Brazil refutes). Countries clearly have a right and responsibility to keep such diseases out. Yet there is a danger that such measures could be used to provide trade protection beyond that warranted by animal or human health concerns; for example through delays in the lifting of bans, or a reluctance to recognise the different status of geographically distinct regions (an important consideration for Brazil). Aside from NTBs, further issues are tariff escalation in the beef sector, with processed products (such as corned beef) and by-products (leather) incurring higher tariffs. TRQs are also a problem for Brazil, with the European Union applying high over-quota tariffs.

Tobacco and cigarettes (Brazil)

Brazilian exports of tobacco products are limited by significant tariffs on tobacco in major markets, and by higher rates on tobacco products (cigarettes and cigars).

1. Gibson *et al.* (2000).

Strategies for the development of the agro-food sectors

A consideration of the factors described above suggests that agriculture and agribusiness will have markedly different roles to play in all three countries:

- *Argentina* and *Chile* are the richest economies in South America, although Argentina's income fell strongly as a result of the 1998-2002 economic crisis. Argentina remains dependent on relatively unprocessed commodity exports, and the absence of a more diversified export base weakens its potential to grow rapidly. If consistently strong rates of economic growth are to be maintained over the long-term, there is a need for strong export growth (that will raise the ratio of exports to GDP), associated with a move into new sectors with a higher value added content. Essentially, the rates of return to exporters need to improve, and there are two ways of doing this: improving productivity in existing areas of specialisation, and moving into new activities. Both are complementary insofar as agricultural productivity is depressed by the absorption of relatively unproductive labour.

- *Brazil* has a number of the same structural features. However, a key difference is that *per capita* incomes are much lower, an attribute that is associated with considerably more underemployment in the agricultural sector. This has a fundamental bearing on sectoral opportunities. Essentially, Brazil is looking for returns that can support income growth from a lower base, and in the medium term these may be more attainable in agribusiness sectors than elsewhere.

- *Chile* has enjoyed a sustained period of income growth on the strength of macroeconomic stability and strong export growth in primary products. As a smaller country, Chile needs to maintain a strong share of exports to GDP. For current economic growth rates to be maintained over the long term, that implies raising export growth at an equally prodigious rate. Recent successes in the wine and salmon industries point the way forward, but it is questionable whether natural resources can continue to deliver such success stories.

It is important to underline that the need for export diversification does not lead to an anti-agriculture policy prescription. Absolute growth is still of benefit, irrespective of the sector it comes from. Productive resources will not be released from the agricultural sector; rather, unproductive resources will need to become more productive, or move into other activities. Moreover, adding value to commodity exports may offset some of this relative decline. The role of added value may be most important in Chile, where there are few additional land resources to be mobilised, but relatively less important in Brazil, where plenty of land is still available and incomes are relatively low. Both strategies, *i.e.* expanding agricultural area and moving to processed products, may be important in Argentina.

From commodities to differentiated products

Structural change in the A-B-C agro-food sectors has been strongly influenced by the rapid emergence of supermarkets, which now dominate the retail end of the food chain.[8] This transformation occurred over a period of 50 years in OECD countries, but has taken just a decade in Latin America. In Argentina, supermarkets controlled about 57 per cent of the total food retail market in 2000, compared with 35 per cent in 1990. In Brazil the percentage is even larger, with a 75 per cent of total food sold in supermarkets in 2000. In Chile this percentage is 50 per cent. Global retailers such as Wal-Mart, Carrefour and Ahold have significant market shares in Argentina and Brazil, whereas in Chile the large groups are domestically owned.[9]

The rising importance of supermarkets in A-B-C food economies has a number of implications. First, the determinants of competitiveness become increasingly similar to those existing in OECD food industries. In particular, supermarket chains are increasing their demand for products meeting specific quality standards, and for differentiated products.

The increased focus on value-added and product-ranking by quality has been referred to as a process of "de-commoditisation" of the primary sector. This is particularly relevant for exporting sectors, where products are required to meet specific characteristics and grading systems. Furthermore, firms must often comply with rather complex regulations put in place by importing countries. Responding to this demand for increased product variety and specific characteristics is becoming an essential element of international competitiveness.

Adding value to primary products

Even for primary goods it is possible to develop strategies leading to specific market niches, higher quality and service content.[10] Organic agriculture is an interesting case of a primary product with a strong export growth potential in Argentina (Box 4.2). Another example is that of Argentina's Plata Maiz (Plata Maize). The segmentation between this corn variety and the others has allowed Argentina to enter markets demanding a specific quality level (Box 4.3).

Box 4.2. **Organic agriculture in Argentina**

Argentina was the first Latin American country to put in place a regulatory framework for organic agriculture. The sector is not subsidised and has grown seven-fold in volume in the past five years. Argentina has currently about 3 million hectares of land under organic agriculture, with organic livestock playing an important role. About 80 per cent of organic agriculture production is exported. The main markets are the European Union, which absorbs 80 per cent of Argentinean exports and the United States which absorbs 11 per cent. There are no official foreign trade statistics for organic food products. Nevertheless, the International Trade Centre UNCTAD/WTO (ICT) estimates that the world retail market for organic food and beverages increased from an estimated USD 10 billion in 1997 to an estimated USD 17 billion in 2000. Although this is a promising sector, it remains a niche market, as organic sales' share of total food sales is still quite small in all countries (between 1 and 3 per cent), albeit one that could provide a large export potential in the future. However, export opportunities for organic products may be weakened by non-tariff barriers imposed by developed countries, where the existence of different regulatory frameworks is perceived as (and effectively is) a non-tariff barrier for these products. The development of mutual recognition systems and harmonised standards at international level would support growth potential in this area.

Brazil provides examples of commodity differentiation through the application of standards for many products (wheat, fruit, and vegetables and dairy products). The most interesting case is that of coffee. Brazil is the largest world exporter of unprocessed coffee (green coffee), with a world share of about 20 per cent (Table 4.4). In contrast, Brazil is losing its market share in processed coffee (roasted coffee and instant coffee). In the market for instant coffee, Brazil's market share decreased from 30 per cent in 1985 to 12 per cent 2000.[11] It is almost absent from the market for roasted coffee, with a world share of less than 1 per cent. During the mid-1990s, private firms (the Coffee Roasters Association and other international firms installed in Brazil) began a differentiation strategy based on classification of coffee into different blends and quality grades. This was done to enter the higher quality segment of the market, and to obtain the premium prices at the farm level that permit farmers to absorb quality control costs. There are also other projects underway in the country for the production of organic coffee and shade coffee, as well as fair-trade coffee.

Box 4.3. **Differentiating corn qualities in Argentina**

Until recently, the two main varieties of Argentinean corn (*Híbridos Dentados* of US origin) and *Flint (Plata* of Argentine origin*)* were both classified as *tipo duro,* coloured. However, the introduction of new hybrids during the 1970s and 1980s, while improving productivity, lowered average quality. Therefore, Argentina decided in 1997 to introduce a specific classification for the variety *Flint (*or *Plata* of Argentine origin). This allowed the segmentation of the market and the higher quality variety has since been increasing its importance for exports, accounting for roughly 80 per cent of total certified corn exports in 1997-98.[1]

1. Only 5 per cent of total exports are certified as Flint by *El Servicio Nacional de Sanidad y Calidad Agroalimentaria*, so the export potential for the higher quality (certified) variety seems high.

In Chile, the fruit sector is an interesting example of a primary product with an increasingly high service content (Box 4.4). A good logistic strategy together with a cost saving strategy explains the success of this sector, which accounted for around 8 per cent of total Chilean exports over recent years.

Box 4.4. **Fresh fruits in Chile: an example of a primary product with a high service content**

The fresh fruit and vegetable sector (*i.e.* both primary and processed fruits) is dominated by fresh fruits, which accounted for 27 per cent of total agro-business exports in 2000. Chile is the world's leading exporter of table grapes (accounting for 25 per cent of world exports) and the 7th largest exporters of cherries (with a 4.5 per cent share of the world market). The international competitiveness of this sector has been enhanced by good co-ordination and logistics along the whole food chain, which allows for better quality control. This co-ordination is ensured by well specified contracts between industry and agricultural producers and takes place at two levels: co-operative arrangements among farmers, and between farmers and the industry. Contracts between industry and farmers have protected the latter from strong price fluctuations, while assuring the industry of access to supplies and allowing it to control the quality of production. There have also been cases of vertical integration in the sector, with exporters directly engaged in fruit production. This development has allowed for new technology to be transferred to the primary sector.

A co-ordinating Committee for Fruit and Vegetable Producers and Exporters has established a "code of good practice" for production, processing and distribution of fruit for exports (Farina and Reardon, 2000). The aim here is to implement quality and safety standards to allow Chilean fruits to meet the quality standards required by large supermarkets in the region (Chile and Mercosur) and by importers. Overall, these strategies are creating a differentiation of Chilean fruits at the international level, which sometimes appear under the country brand at the food retailer level in OECD countries. Together with the Ministry of Agriculture, the Fruit and Vegetable Committee is also active in the improvement of infrastructure (road, ports and storage facilities). The use of advanced technologies at different levels (computerised irrigation, modern selection procedures and packaging systems, as well as controlled atmosphere storage and air-conditioned transport) explain the high service content of these products.

Producing differentiated food products

Differentiating a product can be a complex strategy, given the many non-price dimensions by which a product is perceived by consumers. Nonetheless, the analysis of several case studies in A-B-C enabled some key factors to be identified. These factors are mainly related to *i)* the respective roles of the private and public sectors; *ii)* the presence of foreign producers; *iii)* branding investments; and *iv)* co-ordination of the production chain.

Both private and public sectors have important roles to play. This was demonstrated by both the wine and the salmon sectors in Chile. The government provided a stable macroeconomic environment, training and R&D programmes and helped to create a national brand for wine. In this

context, private firms were able to develop an export strategy, targeting a specific market segment (Box 4.5).

The presence of FDI was another key element underlying the most successful cases. On the basis of the case studies, access to international distribution networks seems to be the most important benefit of FDI. In terms of technological transfer, the presence of FDI helped the adoption of the most recent technologies, although it was not always the determining element. Another aspect is that FDI also played a role in infrastructure investments and the quality of public services (transportation systems; logistics systems and communication services).

In Argentina, the first wave of FDI in the food industry was mainly directed to homogeneous products, with the aim of exploiting abundant natural resources. But this situation has changed over the last decade, with FDI increasingly directed to industries producing more differentiated products (beverages, dairy products, bakery and confectionery products) in order to penetrate local and regional markets. In other words, the development of FDI flows in Argentina has been coherent with the global market structure trends discussed in the introduction of this paper.

Co-ordination across the different actors of the food chain has been a key element for success. The co-ordination between the industry and the farmers has permitted the necessary technological transfer and has been facilitating the application of quality strategies. Improved co-ordination has allowed quality strategies, as was the case for the Brazilian coffee producers, with a differentiation strategy based on classification of coffee on different blends and quality grades.

In Chile the successful move towards more differentiated products has been facilitated by policy synergies. These include macro-economic policies and regulatory measures that have attracted FDI; privatisation that has led to an improvement in infrastructure; and agricultural policies designed to integrate small farmers into commercial networks, improve access to credit and extend the benefits of R&D.

Box 4.5. **The contrasting development of the wine industries in Argentina and Chile**

Chile started with a strategy of penetrating international markets with average quality wines sold at a low price. Therefore, competitiveness was mainly determined by the capacity to achieve costs savings. To this aim, different strategies were applied. Some wineries went through a concentration process that allowed them to exploit scale economies. Other small local producers created associations, in order to reduce transaction costs. The small wineries grouped together in companies (Sociedad Anonimas) which were able to finance investments through capital markets. This enabled the sector to attract large FDI inflows. Joint ventures with foreign firms also transferred technology to local producers, a process which was further supported by a number of governmental projects that funded R&D expenditures to help smaller producers in improving their grape and wine varieties. Chile is now moving into higher quality segments of the wine market, with greater emphasis on quality and branding (which requires consistent investments in R&D and advertising). The big wine producers have invested in promoting a brand reputation, while small wineries' associations have been applying quality standards and promotion strategies. Finally, producer associations and governmental bodies (*e.g.* the government export promotion agency PROCHILE) have succeeded in creating a country image: Vino de Chile. FDI during the 1990s also improved the infrastructure and the quality of public utilities (transportation systems; logistics systems and communication services), which supported the above developments. In 2000, Chile was the fifth world wine exporter and wine accounted for 3.2 per cent of total country exports.

Argentina has a natural comparative advantage in wine production due to a temperate climate and abundant natural resources. It is the largest wine producer in Latin America, the world's fifth largest producer and the 9th largest exporter in 2000. In contrast with Chile, the wine industry in Argentina was traditionally oriented to the domestic market (Argentina has one of the world's highest rates of wine consumption *per capita*). But domestic demand favoured lower priced wines and wine production was dominated by old and low quality grape varieties. Despite huge potential, total wine exports accounted for less than 1 per cent of all exports in the late 1990s, with only around 6 per cent of total wine production exported. Moreover, Argentine wine exports are not highly differentiated, as more than half of total wine exports consist of bulk or tetra-packed wine. But the transition from a traditional sector to a modern and differentiated one is not easy and has been constrained by a number of factors. In particular, it is not possible to produce high quality wine without high quality grapes. Farmers have been reluctant to invest in this area and the lack of co-ordination between wine industries (bodegas) and farmers has also hampered this transformation. There was also little public policy effort to help the conversion from a traditional to a modern sector.

FDI in the wine industry has been quite limited. While many foreign groups acquired wineries in Argentina over the last ten years, the technology transfer did not materialise at the farm level. The latter would have required a learning process supported by policy initiatives (training courses; improvement of information channels between different levels of the food chain; initiatives from producers associations). Nevertheless, a stronger presence of foreign companies and an increase in FDI is helping the sector produce higher quality wines. Concomitantly, there is a recognition on the part of the public and private sectors of the benefits of creating a national wine brand, as was done in Chile.

Conclusions and policy dimensions

Agriculture and its associated industries are strategically important in Argentina, Brazil and Chile, owing to their sizeable contribution to national output and employment, and their even more important share of overall exports. Moreover, there still remains plenty of scope for each country to increase both production and exports in absolute terms. A dependence on commodity exports places a structural constraint on economic growth. As incomes rise, so overall import demand tends to increase. This can lead to balance of payments problems in the absence of a concomitant growth in export supply. A major question for Argentina, Brazil and Chile is whether agricultural exports can grow sufficiently quickly to underpin rapid overall export growth. There are several reasons for expecting faster rates of growth to originate elsewhere.

One is that, in overall terms, the returns to agriculture (in terms of marginal labour income) are relatively low. That is not to say that agricultural businesses are not inherently profitable. Rather, that agriculture employs more labour than its contribution to output would suggest, and that a shedding of unproductive labour from the sector, while improving returns, will reduce its importance to the extent that labour can be employed more productively elsewhere. This is particularly the case in Brazil.

To some extent, an investment in human capital, and an alleviation of the supply-side constraints to business development (notably through sound macroeconomic conditions and investments in infrastructure) should ease the structural constraint imposed by a dependence on primary exports. In principle, improvements in labour productivity in agriculture should allow labour to be engaged more productively elsewhere. Agriculture would assume a lesser contribution to output and exports, but returns would be correspondingly higher.

Some of the constraints have a sector or region-specific dimension. In general terms, transport and logistics infrastructure is invariably less developed in rural areas, where there is often an under-provision of credit to the agriculture sector. Accordingly, these are areas in which the governments of all three countries may need to assume a pro-active role.

In practice, there is also a need to think strategically about how each country's core comparative advantage in agricultural activities can be leveraged. While individual decisions are no doubt best left to private businesses, there may be a role for government policies that enable the private sector to exploit opportunities that build around the core comparative advantage in agriculture, and open up a smoother and more accessible development path.

In this respect, there is a variety of possibilities. The first thing to note is that in all three countries agriculture itself offers many new business opportunities. These opportunities are particularly apparent in Argentina and Brazil (where more land remains available for agricultural production) but are also valid in Chile, where uncompetitive production of grains and oilseeds could give way to further development of exportable temperate fruits and vegetables. In each country, product diversification and a shift into higher value commodities are also likely to be beneficial. A notable facet of development in the *Cerrado* lands of Brazil is that the external economies of scale that come with opening the region to a basic mixture of oilseeds and grains rotated with pasture is paving the way for investment in other products (notably poultry).

Beyond primary agriculture, there remains considerable scope for development of downstream industries that use agricultural products as a core input. As discussed in this paper, a general trend in the agro-food sector is an increase in product differentiation. With even basic staples tending to be differentiated by consumers, non-price competition is becoming increasingly important. This accentuates the need for agri-businesses to focus not just on the supply-side (costs), but also on foreign demand and the role of export promotion. Many of the sector-specific factors that condition competitiveness depend on the structure of the market – and the nature of competition – along the food chain.

The emergence of large food retailers in the A-B-C economies (and Latin America generally) over the last ten years has created demand for differentiated commodities as well as for processed food products. The tendency of big supermarket chains to invest not only in big urban areas, but also in smaller cities, is having a significant impact on the role played by the farmer within the food chain. Agricultural supply is increasingly demand driven, through supermarkets and/or importers, requiring of farmers a new business oriented approach, and the capacity to react to the information signals coming from the consumer via the retailer.

This paper has provided examples of differentiation strategies applied by A-B-C countries to primary and processed products. But the importance of more processed products in creating exports revenues is still limited, especially in the case of Argentina and Brazil. The situation is different for Chile, where the effort to apply differentiation strategy in the food sector is also reflected in the share of processed food products in total exports.

The capacity to export more differentiated and diversified products faces international and domestic constraints. At the international level, tariff escalation is a significant obstacle. At the domestic level, shortcomings in

areas such as logistics, access to credit, and R&D investments may be eased by public sector involvement, including partnerships with the private sector.

The scope for entering international production and distribution networks often depends on the capacity to attract FDI. Good co-ordination across the food chain is a further condition for benefiting from technology transfers and up-grading product quality. Finally, investment in branding, including at the national level, can be required to penetrate some strong value-added segments in the international food markets.

Exports of more differentiated products could be increased within the *Mercosur* area if food regulations were better harmonised. Currently, the existence of different country regulations, or even the absence of national regulations (with the appearance of many standards imposed directly by the private sector) impedes trade between countries within the region.

Overall, the shadow that hangs over all attempts to improve competitiveness, and to build successful agri-businesses around a core comparative advantage in agriculture, is trade protection in important markets and subsidised production and exports by rival suppliers. Some of the adverse impacts can be cushioned by moves into products where effective demand is less constrained (*e.g.* tropical products in the case of Brazil), but these policies nevertheless impose an important constraint on the agro-food sector's growth prospects. With supply-side improvements likely to continue in all three countries, the need for further liberalisation of trade in agricultural products becomes ever more important.

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Annex 4.A1.
Tariff protection in Key Commodity Markets for A-B-C exports

(In per cent unless indicated otherwise)

Soybean products (Argentina and Brazil)

	US	EU	Japan	China	Korea
Soybeans	0	0	0	3 per cent in-quota; 180 per cent over-quota	5 per cent in-quota; 530 per cent over-quota
Soybean meal	USD 4.50 per ton (≈ 2.4 per cent)	0	0	5 per cent in-quota; 70 per cent over-quota	3
Soybean oil	19	6.4	10.9 JPY/kg (≈ 20 per cent)	74.14	8

Coffee (Brazil)

	US	China	Canada	EU	Japan	Chile	Poland	Mexico	Argentina
Coffee beans	0	15	0	3.3	0	11	9.2	20	13*
Instant coffee	0		14 c/kg (≈102/ton)	9	12.3	6.6	25	20	19*

Sugar (Brazil)

US	Russia	Argentina	Colombia	Venezuela	Japan	China	Korea
USD13.75/ton (≈5 per cent) in-quota; USD352/ton (≈128 per cent) over-quota	0	18	20	20	84.5JPY/ton (≈337 per cent)	20 per cent in-quota; 74.14 per cent over-quota	5

Orange juice (Brazil)

US	Canada	EU	Japan	Korea	Mexico	Australia	China
USD 40/ton (≈60 per cent)	0-3	15.2	25	58	20	5	15

Beef (Argentina and Brazil)

	US	EU	Japan	China	Korea
Beef	Ban (FMD)	Ban (FMD)	Ban (FMD)	31.8	-
Corned beef	3.7	22.9	25.8	0	-
Leather	56	6.5	20	-	10
Footwear	5-13	8	21.6 per cent in-quota; 52.3 per cent over-quota	-	8

Pigs and poultry (Argentina and Brazil)

	US	EU	Japan	Argentina	Hong Kong	Saudi Arabia
Pigmeat	Ban (FMD)	Ban (FMD)	Ban (FMD)	0*	0	-
Poultry	Ban (Brazil, Newcastle disease)	78 per cent over-quota	10	0	0	20

Tobacco products (Brazil)

	US	Canada	EU	Japan	Mercosur
Tobacco	1.14 c/kg (≈2.7 per cent) in-quota; 597 c/kg (≈118 per cent) over-quota	36.08 c/kg	14 per cent-23 per cent (avg 21.5 per cent)	0	0
Cigarettes	USD1.05/kg + 2.3 per cent of value MFN)	16.4	63.3	-	0

Notes

1. The largest 25 per cent of farms accounted for 73 per cent of the value of agricultural production in the European Union in 1999, and 90 per cent of the value of agricultural production in the United States (although the United States has a broader definition of what constitutes a farm).

2. R.T. Rogers (2000), for example, classifies different food industry sub-sectors according to their levels of advertising.

3. Among agricultural processed products, there are also some classes of products which are not food products, but other manufactures such as leather.

4. See for example USDA report by Schnepf *et al*. (2001).

5. An estimated USD 3 billion of commercial debt is owed by commercial farmers to the agribusiness sector (three-quarters of this in soybeans, maize, wheat and sunflower). The latter want this to be settled in US dollars, while the producers naturally wish to pay in pesos.

6. For a review of rural credit policies in Brazil, see the OECD Economic Survey of Brazil, 2001.

7. IMF (2002).

8. Supermarkets are defined as having roughly 350 to 4 000 square meters and/or 3-4 or more cash registers (See Reardon/Berdegué(2002).

9. Ahold and Carrefour had minor shares in Chile in the early 2000s, which they withdrew in 2003 and 2004 respectively.

10. A detailed analysis of food industry sub-sectors exporting higher value added products is available in the annexes on case studies.

11. FAOSTAT.

5. Competition Policies and Competitiveness – A View from the Literature and the Case of Argentina

by Carlos Winograd, Marcelo Celani and Jae-Woo Kim*

ABSTRACT

Competition policy contributes to improve economic performance through increased innovation, productivity and investment. In this chapter, different dimensions of competition policy are discussed, such as classical anti-trust regulation as well as competition advocacy initiatives in infrastructure and other industries. Argentina is singled out here as a case study, because the need for an effective competition policy had become particularly pressing during the period of the currency board when a major increase in the relative prices of the non-tradable sector occurred. Up to 1999, competition policy in Argentina was limited to resolving private claims of anti-competitive behaviour. Thereafter, competition institutions were reinforced and have been playing an increasingly active role in competition advocacy, notably in regulatory reforms of non-tradable sectors. This trend is illustrated by several case studies (electricity distribution, postal services and telecoms, among others).

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Introduction

Over the past decades the emphasis in reforms in emerging economies has shifted from macro-reforms to microeconomic reforms. The former mainly aim at overall stabilisation, while the latter focus on the rules and institutional developments prone to foster market competition, by reducing barriers to entry and enhancing market transparency.

Today there is a wide consensus that market competition benefits economic performance in the long run by encouraging efficiency through productivity gains and increased incentives for innovation.[1] Institutional design and regulatory reforms focus increasingly on fostering competition in economies where privatisation has been a dominant trend as well as in countries where public ownership (control) remains an important feature (*e.g.* France and UE competition policy). In this framework, competition policy is increasingly understood as a set of policy instruments rather than the traditional anti-trust approach. Regulatory reform, an intensive area of policy making in the recent period, has been developed in the framework of a competition policy approach. This trend in the content of regulatory reform and practice emerges strongly in European countries.

This chapter first describes the two main fields of competition policy: competition law enforcement and competition advocacy. It then discusses how competition policy improves economic performance in the light of the findings of theoretical and empirical research. Lastly, it presents a short overview of the competition policy in Argentina and concludes with some final observations related to this experience.

What is competition policy?

Competition policy can be seen as a set of tools and criteria to organise market structures pursuing welfare improvement. Competition policy (CP) can be split into competition law enforcement and competition advocacy.

Competition law enforcement

Competition law generally aims to prevent or remedy business actions or situations that constrain market forces, cause economic harm and weaken economic performance. Competition law enforcement prevents economic agents in the market from distorting the competitive process through various kinds of anti-trust torts such as agreements with other companies or unilateral actions designed to exclude actual or potential competitors. Law enforcement is an important tool to encourage competition and market efficiency since price-increasing horizontal and vertical cartels and

monopolies either cannot be spontaneously corrected through market mechanisms, or the correction will take too long and impose social costs on market participants.

Competition law embodies different instruments that are conventionally categorized as either structural or behavioural (conduct). The structural instruments relate to mergers and monopolies or dominant firms. These components relate to business behaviour such as price-fixing and other collusive agreements, vertical restraints, and the abuse of dominant market position. The conduct-oriented components can be divided into two sub-categories: "agreements" which concern relationships and agreements among otherwise independent firms, and "monopolization or abuse of dominant positions" concerning actions by a single firm with certain economic position.

Competition laws have taken different stances to safeguard market competition. Most contemporary competition laws treat naked agreements to fix prices, limit output, rig bids, or divide markets very harshly. In most OECD member countries, price-fixing and similar forms of collusive arrangements, such as bid-rigging are *per se illegal*.[2] In other areas of business conduct, such as vertical restraints (resale price maintenance, tied selling, exclusive dealing, and geographic market restrictions), *the rule of reason* is generally applied; this means that the lessening of competition can be accepted depending on specific situations. Stringency in vertical restraints differs by countries.

As for the structural provisions of competition policy, the presence of monopoly or dominant firm position is not *per se illegal* in OECD countries. However, specific types of conduct are prohibited. Abuse of dominance and monopolies are categories that concern the conduct and circumstances of dominant firms and monopoly. Laws against monopolies are typically aimed at exclusionary tactics such as predatory pricing, by which firms might try to obtain or protect monopoly positions. Laws against abuse of dominance address the same issues, and may also try to address the actual exercise of market power, for example, pre-emption of scarce raw materials or distribution channels.

Merger control tries to prevent the creation, through acquisitions or other structural combinations, of undertakings that could have the incentive and ability to exercise market power. There are disagreements on the objectives and instruments in the treatment of mergers. In the case of horizontal mergers, competition authorities watch either the increase in market power or economic efficiency, or both. Some countries place more emphasis on economic efficiency than concentration or market share of firms while other countries put more emphasis on concentration. What is

evaluated and considered important is the post-merger conduct of firms and their ability to exercise market power through price increase or stable pricing. Mergers that, while perhaps reducing competition, may lead to efficiency gains are exempted. Most systems specify procedures for pre-notification to enforcement authorities in advance of larger, more important transactions, and special processes for expedited investigation, in such a way that problems can be identified and resolved before the restructuring is actually undertaken.

Competition advocacy

Governments must also advocate competition by lowering barriers to entry, promoting deregulation and market-friendly regulation, as well as trade liberalisation and non-distortionary government intervention. Government policies, institutional arrangements and private restrictive business practices often reduce competition. Thus, the competition authority must also participate more comprehensively in the formulation of its national economic policies, which could adversely affect competitive market structure, business conduct, and economic performance.

The advocacy role of the competition authority is apparent in the process of regulatory reform based on competition principles. Regulatory reform that permits and encourages reliance on market forces can enhance competition, lower costs of entry or expansion, and produce more competitive and efficient industry structures. Amongst the major benefits of regulatory reforms to consumers and to producers are lower prices and higher output, often in the form of greater variety, higher quality, better service, and new products. For reform to be successful, it should be built on a firm foundation of competition policy. Regulatory reforms that foster competition consist of two main fields: enhancing market structures promoting entry incentives, expansion and market access as well as eliminating conduct restrictions on competition.

Removing constraints to market entry is usually a critical step toward enhancing competition. Thus the simplest competition-enhancing reform is one that lowers or completely removes regulatory barriers to entry and expansion, including constraints on entry through international trade. However, it is not the simplest reform from a political economy perspective as it affects the interest of incumbents that may have considerable political clout. Cases of reform failure rooted in the political economy dimension abound. An example of a regulatory barrier is licensing requirements that set excessive hurdles or even give incumbent firms the power to veto new entrants. Greater freedom of entry and exit tends to reduce concentration after a once-protected monopoly is exposed to competition. In

telecommunications, for example, the appearance of competitors has reduced the market share of the former monopoly holder. Rules that mandate services or prevent firms from leaving a market also inhibit competition. Firms will be reluctant to enter if they fear they will be forced to stay despite losses. A barrier to exit creates a sunk cost, and thus the prospect creates a barrier to entry. Part of reform in the surface transport sectors has been to permit railroads and trucking companies to change or even stop their services to destinations depending on whether the traffic could support profitable operations.

Reforms that fail to address entry in a comprehensive manner will tend to fail. Eliminating price regulation without eliminating entry controls, for example, may leave prices non-competitively high, or innovation disappointingly sluggish, if the incumbents find that they face no competitive threat. Privatising a monopoly without uncoupling its parts into more competitive structures does not resolve the problem of monopoly. Providing free entry and promoting more competitive structures are not enough in themselves; it is also necessary to prevent collusion and other non-competitive conduct. Thus relevant aspects of business behaviour are also often the direct objects of reform. Ending unnecessary price controls is equally a fundamental and direct pro-competitive initiative. In several countries, for instance, a path-breaking reform in the oil sector has often been the abolition of official price controls. Where some form of price regulation to deal with natural monopoly is needed, it should be designed to maximise the responsiveness to economic incentives, consistent with preventing monopoly abuse.[3]

Competition advocacy can be informal or, preferably, have an explicit, statutory basis. “Advocacy” of regulatory reform is a key activity of competition agencies in OECD countries. Even when the enforcement and policy divisions are separated, the former has often (informally) contributed to regulatory reform decisions. A wide array of advocacy activities of competition authorities exist in OECD member countries (Box 5.1).

Box 5.1. **Advocacy activities of OECD countries**

The Australian Competition and Consumer Commission submits reports to other commissions and departments, makes appearances before Parliamentary committees, and has seconded staff to other offices.

In Canada, the Competition Bureau offers policy and legislative advice within its own Department, gives advice to other Departments on request, does research into emerging problems, participates formally in regulatory proceedings, and submits reports to committees.

The German Bundeskartellamt concentrates on enforcement, but has also prepared formal statements on legislation at the Ministry's request. In important reforms, such as those of electricity and telecommunications, staff of the Bundeskartellamt has testified in Bundestag committees and hearings.

In Japan, the Fair Trade Commission has used its right of consultation to ensure that bills do not contain elements contradictory to the Anti-monopoly Act or to competition-related policy objectives of regulatory reform.

In Mexico, the Federal Competition Commission is a member of the inter-ministerial privatisation commission. In addition, it submits official statements to other bodies.

In Norway, the Competition Authority presents research reports on regulatory issues at formal hearings and submits other presentations through its Ministry. The agency may intervene in regulatory proceedings on its own initiative, typically in response to complaints from market participants about regulatory barriers to entry.

The Polish Anti-monopoly Office (AMO) judges all draft normative acts, and its president participates in meetings of the Cabinet and the Government's Economic Committee. Sometimes the Parliament approaches the AMO for advice. Informally, enterprises often complain about anti-competitive regulations to AMO. It may in turn discuss the problem with the relevant ministry, and suggest reforms.

Source: OECD Report on Regulatory Reform (1997).

Competition policies and economic performance

A view from the literature[4]

While there is broad consensus that competition increases static efficiency, there is an on-going debate on whether competition is necessary for dynamic efficiency and growth. Standard microeconomics demonstrates the value of competition resulting in static allocation and productive

efficiencies. However, one of the main contributions of competition to development is the incentive to be dynamically efficient (Bresnahan, 2001; Ellig, 2001). Recent advances in economic theory also stress the importance of the mechanisms that promote efficiency in the long run (a dynamic perspective).

Traditionally, efficiency analysis was based on static welfare comparisons (Harberger, 1954), showing that resource allocation is optimal when agents take their decisions using market information. Harberger's famous "triangles of surplus" constituted a major piece of economic policy. Economic theory built around this conceptual framework focused on allocative efficiency. A feature of this approach is the hypothesis of atomistic agents. While this is a necessary condition of the perfect competition model, it also deserves attention for competition policy practice. Basically, atomistic competition means absence of market power: no one can affect the model's parameters (prices). But in practice atomistic competition means a large number of competitors, which turns out to be a more stringent condition than absence of market power.

Contestability theory (Baumol *et al.*, 1982) showed that perfect competition efficiency results may also be attained under monopoly conditions (one firm). The key question becomes the absence of entry and exit barriers, rather than the presence of a large number of small agents.

This approach to the role and effects of competition on static efficiency has been subject to criticism, mainly based on the assumptions of perfect information (no asymmetries) and costless transactions. Vickers (1995) argued that competition under information asymmetries is far from being fully understood and that the results, typically analysed through principal-agents models, are ambiguous. If incentives are misaligned, the cost functions are not necessarily minimised and efficiency may be harmed.

Another critical view of perfect competition models comes from transaction cost economics (Williamson, 1975, 1985). The point made is that transactions among independent agents are possible if the cost of organising them is low relative to other ways of organising economic activity. The costs of searching information, organising transactions, writing contracts, and enforcing them, are taken into account by agents. These costs are supposed to be zero by standard perfect competition models. Thus, not only production costs matter for efficiency, but also transaction costs should be considered.

Other critics focus on the relationship between competition and incentives to invest. Competition has usually been seen as an environment where economic rents disappear. In this case, it has been argued, there would be no incentives to innovate.[5] Simple models assume perfect capital

markets, so that the Modigliani-Miller theorem applies and the innovation path is determined by the total net present value of monopoly rents from innovating. Product market competition in these models is unambiguously negative.

Recent research, however, challenges these theories. Endogenous growth literature has focused on the effects of corporate governance on innovation and growth. Nickell (1996) and Blundell *et al.* (1999) report positive correlations between competition, productivity growth and innovation. Aghion *et al.* (2002) have shown an inverse-U relationship between product market competition and patenting activity in the case of UK firms. Too much competition may harm innovation as much as too little competition may do. Carlin *et al.* (2001), report that growth of sales is related to the number of competitors with an 'elasticity of demand' indicator. Firms with competitors fighting for a market share have shown faster growth rates in sales than those with no competitors. This line of research points to more subtle effects that drive investment decisions, showing that although some decisions are positively correlated to competition, the net effect is ambiguous.

In this new generation of models, innovation depends not only on future rents, but also upon the difference with pre-innovation rents (incremental profits). In Aghion's model, competition could finally boost innovation and growth because firms are trying to "escape competition". This effect is more evident in "neck-and-neck" industries, in which oligopolistic firms have no competitive advantages. The point is that competition may reduce current rents faster (neck-and-neck) than future rents increase incremental profits that justify R&D expenditures in order for a firm to become a leader.

Ellig (2001) mentions complementary views about the dynamic effects of competition: Schumpeterian, Austrian, evolutionary, path dependence and the resource view of the firm. All of these theories express basically the same idea: market power is not necessarily a consequence of anticompetitive behaviour, and concentrated markets may produce efficient outcomes when innovation, network effects and specialised resources (like knowledge) are involved.

These findings are at the core of the discussion in the anti-trust arena of the United States and Europe nowadays. Many authors draw attention to simple rules of anti-trust or traditional approaches about how markets work in the "new economy".[6] In some industries, concentration is a natural consequence of technical progress and the way competition works, so punishment could be a misleading strategy. One interesting issue is that under certain conditions, like technology uncertainty, firms compete for the market through network effects and externalities. Competing standards in

electronic services or high-tech industries seem to reflect this behaviour. Evans *et al*. (2001) argue that little static competition in industries could hinder vigorous dynamic competition.

This point may be relevant for developing countries. Concentration measures are not a necessary condition for intervention and sometimes are less relevant as most practitioners may think. Small markets and scale economies naturally admit few players. So the relevant question in terms of competition is whether there are barriers to entry or any other condition that weaken the minimum threshold of contestability in that market. Gal (2002) and Winograd (2003) discuss the case of competition policies and institutional design in small open economies. Competition is not necessarily a process entailing a large number of players. This point is important as regulatory reforms have often been guided by the prejudice that "more is better than a few".

Empirical findings

There are many empirical studies linking competition with changes in productivity. Comparative case studies of selected industries in the United States, Japan and Europe (Baily, 1993; Baily and Gersbach, 1995) show that global competition with best-practice producers enhances productivity. Nickell (1996) and Disney *et al.* (2000) used several indicators of competition in productivity regressions and found that competition increases productivity levels and growth.[7]

Competition law enforcement

The negative impact of anti-competitive conduct on consumers and economic efficiency is difficult to measure. Some very crude estimates of the overall social costs of monopolies have been made (*e.g.* Posner, 1975).[8] More precise evidence is available for individual cases.

Cartels raise prices above their competitive level, reduce output and labour productivity. Consumers pay higher prices or forgo the cartelised products. Fourteen case studies done by competition agencies in OECD countries showed that cartel overcharges varied between 5 to 65 per cent, with the median being around 15 to 20 per cent (OECD, 2002). OECD (2003) illustrates that the international trade of 16 large cartel cases exceeded USD 55 billion. Historical studies also point to the economic damage caused by cartels. For example, in the United Kingdom price fixing was common in three-quarters of British industry until the adoption of the Restrictive Practices Act in 1956; these cartels reduced annual labour productivity growth by 0.8 percentage point (OECD, 2002).

Resolving other anti-trust torts, such as vertical constraints and abuse of market dominance, also increases consumer welfare, productivity and innovation. For example, following the recent abolition of resale price maintenance for manufactures of certain pharmaceuticals in the United Kingdom, supermarkets reduced prices by between 25 and 50 per cent (OECD, 2002). Competition law enforcement may also prevent damage caused by abuse of dominance, such as predatory pricing, exclusive dealing and tying which can deter market entry. It should be stressed that, except for cartel conduct, a case-by-case approach is needed.

Restructuring monopolies and safeguarding structural reform

Competition law enforcement can help restructure monopolies, bring innovations and huge price cuts. For example, in the United States the Sherman Act of the 1970s helped restructure the national telephone system. The 1984 divestiture initiative separated manufacturing, long distance, and local services operations of the US telephone system. The reforms led to price cuts of long distance toll and international services by 17-50 per cent during the 1984-96 period (OECD, 1999). Fierce competition may have stimulated further innovations, such as fibre optics.

Competition law enforcement is also a fundamental component of successful structural reforms. Co-operative behaviour or dominant positions induced by regulation will not simply disappear because of less regulation. Delivering a strict application of competition law is very important. The enforcement of competition law should apply to any anti-competitive action that can undermine reform.

Competition law should be applied to all sectors of the economy. Many sectors claim, however, their own particular set of competition rules or competition enforcement authority, on the grounds of their *uniqueness*. One should be very cautious with the introduction of sector-specific competition laws or enforcement agencies as they may adopt an approach to competition that is overly congenial to the industry's traditional mode of operation instead of promoting the competitive regime that regulatory reform typically aims at. Sector-specific agencies may also resist the pro-competitive thrust of reform because of self-interest. Indeed, an agency whose chief purpose is to regulate an industry may have incentives to ensure its own survival by keeping regulation in place.[9] Capture problems may also tend to emerge more frequently under these institutional arrangements. Success and failure in pro-competition initiatives highlight the critical role of institutional design and political economy arguments in the development of regulatory reforms, in particular in the relative political clout of incumbents (firms and unions) versus potential new entrants and consumers.

Competition advocacy

Many studies on OECD countries illustrate the positive effects of competition advocacy leading to more competition, higher efficiency, lower costs of entry and expansion, and more competitive and efficient industry structures (Ahn, 2002). The United States has been a leader in competition-based structural reform (see Annex 5.A1 for more details). Two fundamental regulatory features of the United States are the *pro-competitive policy stance of regulatory regimes* and the openness and contestability of regulatory processes.[10]

Economic reform based on competition enhances economic performance, resulting in gains in labour and capital productivity, and lower prices due to lower operating costs. Moreover, labour, capital and total factor productivity increased. Reforms stimulated firm restructuring which in turn also improved productivity. Regulatory reform also contributed to increase capital productivity. It favours the introduction of new technology, such as fibre optic and digitalised networks in telecommunications. It forced firms to eliminate excess capacity, as in electricity.

Gains in reformed sectors spill over to other sectors, either through demonstration effects or because the reformed sectors supply important inputs. Improved, unbundled, and customised services permitted customers to improve productivity. Guaranteed delivery time in transportation facilitated more efficient supplier-producer relationships such as just-in-time inventories. Development and application of sophisticated pricing, routing and logistical software in formerly regulated sectors had important demonstration effects in other sectors. And their pioneering developments reduced the costs and improved the quality of new technologies, facilitating their adoption in other industries.

Regulatory reform by increasing competition also improved the dynamic allocation of resources and investment, possibly also leading to long-term gains in productivity. Pro-competition initiatives in the financial sector have also improved the functioning of capital markets, increasing the efficiency of investment. In the US case, the combined size of reformed sectors is relatively small – 5 per cent of GDP – but the benefits of productivity growth in those sectors may have contributed to improvements in productivity performance in the economy as a whole.

Regulatory reforms also may have significant macroeconomic effects. They may lower prices, benefiting both business and final consumers. Lower input prices may in turn lower output prices. Lower prices and greater price flexibility in turn may have contributed to price stability. In most reformed sectors, employment has increased in the long run after initial

declines due to restructuring. Moreover, employment has been reallocated to more efficient firms within the sector. Increased output and income in the reformed sectors also may raise output and employment in the rest of the economy.

Competition policy in emerging countries

Developing countries, even those with a relatively small private sector, may benefit from the enactment of anti-trust legislation and the creation of a competition agency in various ways:[11]

- A competition agency may become a centre of expertise in anti-monopoly policy and can help to develop deregulation, privatisation, and restructuring plans that could improve the functioning market economy.
- Competition law enforcement improves the performance of state enterprises by subjecting them to clearly defined principles concerning avoidance of abuse, dominant position or other anti-competitive actions.
- Competition law enforcement can help the state agencies - procurement - to obtain better goods and services at lower prices while compelling enterprises to strive for greater levels of efficiency.
- Competition law enforcement can fight guild-type policies prevalent to local service, which resist social and economic changes thus leading to enhance competition and efficiency gains.

In most Latin American countries, although progress has been made through reforms during the past decade, competitive market structures still have to be implemented through competition policy. Most countries have had legal frameworks since the seventies (Chile), or eighties (Argentina, Brazil, among others) and they are trying to foster institutions related to competition policy (CP). But they lack the institutional strength and reputation that characterise these instruments in OECD countries. The process is difficult and needs a better understanding of the challenges involved. Moreover, excessive distortionary regulation still persists in Latin America.

Policy objectives include the reform of market regulations, eliminating them where unnecessary, the design of incentive mechanisms to reduce price frictions apart from the more traditional anti-trust policies – control of mergers to prevent the development of monopolies and control of anti-competitive conduct. Following Lachmann (1999): "*In developing countries*

competition policy has to comprise the provision of a favourable climate for competition and the development of competitiveness".

The case of Argentina

From anti-trust to competition advocacy

Argentina set up a Competition Law and a specialised competition agency (*Comisión Nacional de Defensa de la Competencia*, CNDC) in the early eighties. In the mid-90s, competition policy started as a policy tool. The most salient case of this period was related to the country's biggest firm, the oil company *Yacimientos Petrolíferos Fiscales* (YPF). However, even though extensive privatisation took place in the 1990s,[12] competition policies were not a fundamental element of the political agenda, and effective initiatives were rare and non systematic. Under the new government taking office in 1999, competition policy acquired more importance, becoming a first order tool of economic policy aimed at enforcing better market regulations. Furthermore, under the fixed exchange rate regime established in 1991 – and, hence, the low degrees of freedom to respond to changes in relative prices – the role of competition policy became crucial: it was one of the few policy instruments available to gain efficiency and international competitiveness.

The need for a better institutional framework in competition policy prompted the government in 2000 to evaluate the preferred design in an environment with structural institutional fragility. A decision was taken to develop a multiple agency model in regulation with the objective of inducing a certain degree of competition for reputation between regulators aimed at reducing the incentives for capture.

The immediate antecedent of legislation regarding competition policy in Argentina is Law 22.262 (August, 1980).[13] This norm established that all conducts that limit, restrict and distort the normal functioning of markets are to be analysed by the CNDC. This law mentions, but does not define "general economic interest", a concept linked to what economists refer to as total surplus. The law that created the CNDC failed to define the proper place of this agency in the institutional hierarchy and the necessary degree of independence. Moreover, the legislation did not regulate mandatory *ex-ante* mergers and acquisitions control. Nevertheless, the CNDC decisions contributed to the growth of CP as an instrument.

A new law passed in 1999 (Law 25.156 and Decrees 1019/99 and 85/2001) introduced *ex-ante* control of merger and acquisitions. Further provisions defined more precisely the limits of the legislation and made possible its application (Resolution 40/2001). This law was complemented

in 2001 by a Decree (396/2001) establishing limits to economic operations that needed *ex-ante* control. The latter piece of legislation was aimed at a more focused use of the existing resources on highly relevant M&A, excluding second order operations that drain scarce human capital and unnecessarily increase transaction costs (and opportunities for corruption).

In 1999 the new government created a higher instance, the Secretary for Competition and Consumer Affairs – *Secretaría de Defensa de la Competencia y Del Consumidor* (SDCyC). The CNDC was made dependent on this agency, thus establishing a clear hierarchy. The multiple agency scheme was developed by the creation of the Tribunal of Competition - *Tribunal de Defensa de la Competencia (TDC)*. This tribunal was endowed with financial and jurisdictional autarchy and autonomy and was assigned to investigate and punish conduct that could damage general welfare. In this new institutional design, SDCyC could operate as a complement to the TDC (in line with the UK model). This "double agency" model has several advantages over a single agency scheme, if higher aggregated administrative costs. First, each agency exerts control over the other. It is expected that the SDCC will act like an attorney and the TDC like a judge. This scheme has proved to work well in many countries, including the United States. Second, a two-agency scheme minimises the probability of capture, by increasing the cost of capture and benefiting from competition in the reputation of the regulators. Third, both agencies work towards the same goal and can, in a way, "compete" for better results.

Until the reform of the legislation instituted in 2001, too many operations had to be revised by the CNDC. This produced a congestion of administrative procedures that ended up in some operations being approved tacitly or stuck in the middle of the process. Furthermore, less operational time was left for the relevant M&As. With the new scheme, the TDC does not have to deliberate *ex-ante* on operations that are not of prime economic importance. Thus, the government expected that the CNDC would become more efficient.[14]

The experience of Argentina reveals two main stages in establishing a functional CP. The first lasts until 1999 when CP was limited to react to private claims. For instance, acting against anti-competitive behaviour occurred only after a private company raised the case against another company, and never *ex-officio*. The second stage started at the end of 1999. The newly established SDCyC decided to press ahead with intensive and pro-active competition policies, *i.e.* deciding *ex-officio*. After the 1999 reform of the legislation, regulatory issues were tackled more efficiently. This is well illustrated by the case of Endesa in electricity as well as other technically – and politically – complex anti-trust and regulatory initiatives (see below).

With the successful intervention of the SDCyC in the case of electricity companies, this agency became crucial in settling regulatory issues regarding public utilities, as well as many other instances (telecommunications, postal services, airports and ports).

Competition advocacy and regulatory reform

With the creation of the SDCyC and its active role, regulatory reforms in electricity, credit card systems, football, postal services, telecommunications, were quickly approved. The following is an overview and a brief summary of actions developed in the years 2000-01.

Electricity distribution

The Argentinean energy market was privatised and modernised in the nineties. Reforms in the electric sector included the vertical separation of generation, transport, distribution and commercialisation. As transport was divided into regional monopolies, distribution was structured in the same way. In distribution, by regulation, the metropolitan area of Buenos Aires was divided into two halves and independent monopolies were established using a *yardstick* competition approach. The two privatised companies were named Edesur and Edenor, for the southern and northern areas respectively.

The Spanish firm Endesa was a major shareholder of Edenor in partnership with the French company EDF and Astra, an Argentine oil company later sold to Repsol-YPF. Edesur was controlled by the Chilean energy conglomerate Enersis. In 1997 Endesa bought Enersis, inheriting the control of Edesur. The latter company thus turned into a major shareholder in both distribution companies of the metropolitan area of Buenos Aires.

In 2000 the competition authority, the SDCyC, decided to launch an active competition initiative to separate Endesa's property in the two firms through a disinvestment operation. When Endesa became a major shareholder in both companies, the fundamentals of the regulatory framework based on yardstick competition were jeopardized.

How would economic interests be affected by the concentration of control in the distribution and commercialisation markets? This operation raised issues such as access to the distribution network for third parties, and the reinforcement of the proper incentives for the sustainability of the electrical sector. After an investigation, the SDCyC recommended that Endesa's property be separated, leaving it to Endesa to decide in which company it would keep its participation and in which company it would sell.

This recommendation initiated a new phase in regulatory reforms in Argentina giving rise to a new approach in regulation and competition

policy, as well as bringing a significative gain in reputation for the newly created agency. Since then, most regulatory reforms required the participation of SDCyC and increased the chance of applying CP principles. The SDCyC's participation in regulatory reform policies has transformed the way most people involved understand the scope for CP. Regulatory reforms in the postal sector illustrate this point.

Postal services

The public postal operator in Argentina was privatised in 1997. The privatisation process consisted of a concession with a universal service obligation covering the whole nation and a few regulated prices like simple letters and small packets.

One of the main concerns in the sector was the emergence of growing competition in the ultra-rapid services like messengers and corporate segments given the absence of (legal and technological) barriers to entry. This competition eroded part of the financing mechanism implicit in the universal service obligation and the tariff structure of the new private operator.

In 2000 the discussion concentrated on setting up a new regulatory framework that could be consistent with the needs of the official operator and the main competitors. The main operator *Correo Argentino* alleged that the situation was not sustainable and proposed the establishment of entry barriers that would limit the work of small companies in messengers markets as well as more rigorous controls over the rest of the companies. Additionally, the main operator lobbied for restrictions imposed on the rest of the operators (its main competitors) and the setting up of reserved areas of business (stamp emission, for instance) for the main operator, where regulatory (legal) guarantees would be established. All these arguments were based on a very ambiguous and debatable regulation framework. The other operators competing directly with *Correo Argentino* also lobbied for entry barriers but tried to avoid restrictions in the competition arena with the latter. Indeed, a very *natural* political economy of market regulation.

By mid-2000 *Correo Argentino* announced a merger with OCASA, the second company in the market. This initiative was the result of a financial crisis of the main operator whose debt to the government amounted to more than USD 200 million. *Correo Argentino* and OCASA submitted the operation to the CNDC as required by the prevailing Law of defence of Competition.

The CNDC rejected the merger based on welfare considerations. The operation would have reinforced a position of market dominance, and the

CNDC argued that the companies had not given evidence that the merger would produce any efficiency gains. Market information did not support the thesis of *ruinous competition*. As Table 5.1 shows, after privatisation production expanded almost 30 per cent between 1997 and 2001 and prices declined (Table 5.2). The contraction of activity in 2001 was due to the economic slowdown (CNC Annual Report, 2002).

Table 5.1. **Postal services in Argentina – Physical output**

Services		Number of units (000s)				
		1997	1998	1999	2000	2001
Postal services	Letters	611 090	651 255	750 508	772 648	750 183
	Corporate services	149 263	166 365	204 956	223 390	195 487
	Credit Cards dispatches	2 297	3 570	4 406	5 355	4 737
	Legal letters	5 261	5 676	6 080	7 026	7 034
	Banking clearing	4 165	4 048	2 964	3 126	2 735
	Newspapers and magazines	21 006	27 089	45 209	33 104	23 138
	Parcels	4 832	6 068	5 109	7 005	7 958
	Couriers	1 330	1 649	1 629	1 188	1 179
	Total	801 814	868 767	1 021 512	1 052 945	992 457
Telegraphic services		7 287	7 809	7 620	6 843	6 741
Monetary transactions		3 472	3 630	3 280	3 254	3 153
Total		812 373	880 199	1 032 962	1 063 043	1 002 351

Note: items do not add up to totals as minor services are not shown.
Source: CNC (2002).

Table 5.2. **Postal services in Argentina – Prices**

Year	Average price $[1]	Variation (annual change in per cent)	Consumer price index (annual change in per cent)	Average real price (1993=100)[2]
1993	1.28		7.4	100.0
1994	1.33	3.9	3.9	100.1
1995	1.23	-7.5	1.6	91.1
1996	1.18	-4.1	0.1	87.3
1997	1.07	-9.3	0.3	78.9
1998	1.11	3.7	0.7	81.3
1999	0.96	-13.5	-1.8	71.6
2000	0.84	-12.5	-0.7	63.1
2001	0.82	-2.4	-1.5	62.6
1993-2001		-35.9	9.9	-37.4

1. Calculated by CNC as an average of certain types of standard services. Nominal prices are in pesos. Recall that from 1991 to 2001 the exchange rate parity was fixed and constant.
2. Deflated by the CPI.

Source: CNC and authors' calculations.

The SDCyC argued that erecting barriers to entry meant regulating through instruments independently of results. This approach was an important break-through that challenged the established consensus. In contrast with SDCyC, the regulator (*Comisión Nacional de Comunicaciones*) was inclined to accept a heavier regulatory burden, a *classical* reaction of sectoral regulators and potential vested interests in the process. A more complex and somehow arbitrary (discretionary) regulatory framework enhances the role and legitimacy of the sectoral regulator. The SDCyC proposed a competition-based neutral approach to universal service financing. The regulatory framework developed by the SDCyC addressed the compulsory universal service and its costs – leading to intensive lobbying for distortionary barriers to entry-based regulation – through the design of a fund with contributions from all players proportional to their income as is currently applied in the telecoms industry. This proposal of regulatory reform did not reach the approval stage in Parliament, but the consolidation of excessive market power in the hands of one player was avoided by refusing the merger.

To sum up, the interventions of SDCyC and CNDC contributed to improving the debate as to what should be the best regulatory policy for the postal sector. First, arguments leading to stringent (distortionary) regulations to improve business performance of the main operators were defeated. Second, the proposal to impose entry barriers restricting informal and illegal operators was rejected. The SDCyC argued that increasing the barriers to entry would only aggravate the problem of informality in the market. The solution was to improve the regulatory technology to control operators without lessening competition.

Telecommunications

The role of SDCyC in the telecom reforms was different from that in the reform of postal services. In the former the regulator incorporated several tools of competition policy in the regulatory framework (mainly essential facilities use). The role of SDCyC was to strengthen and drive the reform process while promoting a rational use of pro-competitive instruments to attain dynamically efficient regulation.

Decisions that affect economic interests should be appreciated beyond their mere economic purpose (Noll, 1989). In telecommunication, as in other sectors, all parties try to protect their own interests. During regulatory reform, lobbying may be very intense as reforms may affect the future market structure and thus expected rates of return of incumbents and potential entrants. Reforms in well developed political systems need to be based on negotiations and public discussion to sustain the whole process.

The telecommunications reform in Argentina is an illustration of this case. Its main objective was to eliminate all entry barriers and to stimulate the erosion of monopoly rents by implementing the essential facility principles. The SDCyC focused on the analysis of the long-run effects of the reform, bringing international experience in telecoms liberalisation from a competition policy perspective, as well as inducing all parties to engage in transparent negotiations.

While the shared goal of the reform was to open the market, the Communications Secretariat and the SDCyC debated on the use of instruments. Many regulators view market liberalisation as an instrument to maximise the number of operators rather than welfare.[15] From a competition policy perspective, this approach is questionable as the number of players is endogenous and the objective function should maximise aggregate welfare (Kahn *et al.*, 1999).

The international experience in the telecoms industry suggests that an aggressive use of the essential facilities doctrine may not lead to better market outcomes (NERA, 2000). In Argentina, the sectoral regulator expected lower concentration ratios and larger participation of small players through the elimination not only of legal entry barriers but also of economic and structural barriers. The first proposal in place declared almost all network elements as essential facilities without carrying out a rigorous market analysis.[16]

In the face of this initial approach of the sectoral regulator, the SDCyC intervened favouring a regulation that would be sustainable in the long run. The trade off between maximum competition in the short run (regulator's approach) and long run efficiency (competition policy approach) needed to be carefully considered. Under the regulator's approach, instant competition would erode rents and make the industry more efficient. But in presence of economies of scale and scope the number of players is finite and the market characterised by a non-atomistic industry structure.[17] It should be noted that the instant erosion of rents may foster exit, but not necessarily entry.

Despite the political need and pressures for a swift reform, the development of a regulatory framework required a consistent microeconomic foundation. The latter would take into account both the need for opening the market in the short run (lowering prices as an immediate effect) as well as considering the incentives to invest in the long run, using the essential facility principle correctly.

The implementation of the essential facility propositions contributes to the proper understanding of the economics of regulation in practice. The owners of the network try to block the use of its facilities by third parties (the so called *open access* scheme), based on property rights and investment

incentives arguments. But access is rather a matter of use than a problem of property. The main argument for open access is that social benefits from competition cannot be internalised by the firm acting as a profit maximiser. Competition leads to lower prices but also provides variety, thus improving welfare.

If regulation favours *unbundling*, the question remains as to how far the regulator should go. In telecoms, international experience shows that regulators went as far as they could (European Union, United States, and small economies like Australia and Argentina). The implementation required intensive political, technical and legal resources since the incumbents reacted strategically by delaying implementation. In all these countries, regulatory reforms in telecommunications were very time consuming.

The fact that parts of the telecommunications network may not be economically duplicable is not a sufficient condition to impose the essential facility rules. A market definition problem needs to be solved first (see ITU, 2002 and Gual, 2002). The enforcement of the unbundling of parts of the network should be based on economic foundations rather than legal arguments.

The competition approach emerges as the best tool to respond to the fundamental questions of regulation in practice: CP integrates demand and supply conditions, with both sides of the market being relevant for a proper design of open access rules. This procedure prevents policy makers from making two types of errors. The first one is to overshoot: declaring essential facilities where market conditions suggest that demand and supply substitutability are present, for example through alternative technologies. This consideration could be very important in corporate markets. The second type of error is that of not declaring essential facilities where competition is impossible and anti-competitive behaviour may emerge. In telecommunications, the second error has been less frequent than the first one. The SDCyC did not succeed in incorporating these criteria into the Decree 764/2000 of telecom regulation.

Newspapers and publishing

In 1945, newspaper and magazine distributors in Argentina were assured territorial exclusivity of their shops – the Law 12.921 prevented competition in the same region or area. Moreover, this Law established a set of regulatory restrictions like a margin over the total shop sales or revenue. This type of anti-competitive regulation had been popular in many countries in the post-war period. In the metropolitan area of Buenos Aires the wholesale distribution of magazines and newspapers was concentrated in an

independent private body called Magazine Distribution Centre (MDC) comprised of publishing companies along with representatives of the two stages of distribution in this market – distribution networks and shops or retail "kioskos". The distributors (each supplying a number of shops or retail stores) acted as monopolists in a given area, supplying final stores, the latter with a certain market power depending on the size of their area. Licences for entry were jointly regulated by the MDC and the Ministry of Social Security and could not be cancelled. The MDC had wide powers, including that of restricting the circulation of a magazine. The latter was a credible threat when an editor developed an alternative retail distribution scheme or a subscription system that led to bypassing the established network. The MDC could also manage the allocation of risk among the different participants by implementing the rule of plain devolution of unsold newspapers and magazines. The editors had to run all the risk of unsold stock. Concerning the distribution of business margins, according to industry information, editors got half of the final price, and the other half was attributed to the distribution network.

The regulation then in place for the retail stores or "kioskos" granted a perpetual right of operation to an individual (not a company) with no right of transfer to third parties, whereas no individual had the right to run more than one store. Thus, regulation simultaneously forced an atomistic market at the retail level, while guaranteeing a cartel in the upper stages of distribution. The number of stores was close to 5 000 in the metropolitan area of Buenos Aires and La Plata (population, 5 million). Entry restrictions at this end of the sales market were decided by an entity under the direct control of the shop owners. As in the upper stage of distribution, the incumbents were regulating entry.

The regulatory framework established in 1945 prohibited magazine and newspaper retailers to develop other activities. Customers could not buy at night because retail regulation imposed a closing time of 8 p.m., except for a few shops in Buenos Aires. But in spite (or because) of the heavy regulatory burden, high levels of informality and illegal sales points developed.

In 1999, a regulatory reform, aimed at fostering competition and greater transparency, was undertaken:[18]

- Elimination of entry restrictions;
- Elimination of privileges such as territorial exclusivity and prohibition of multi-purpose shops including magazine and newspaper retail;
- Assessment of possible anti-competitive behaviour.

The underlying principles of these reforms were that competition increases welfare, and that entry barriers generate inefficiencies and do not prevent but increase informality. The benefits of the reforms were:

Direct advantages:

- Modernisation of distribution and retail channels incorporating supermarkets, gas stations, small business and other types of distribution induced by competition, including automatic machines;
- Wider coverage areas for distributors and the elimination of sale time restrictions;
- Lower retail costs due to economies of scale and scope.

Indirect advantages:

- Creation of new job opportunities, including for autonomous workers wanting to become retailers;
- Development of a transparent (costless) market for the transfer of property rights;
- Better environment for tax auditing by the state administration;
- Improved opportunities for independent editors opening access to a larger client base at lower cost;
- Increased freedom of expression and diversity of opinion.

The case of the newspaper industry shows that the application of CP principles in regulatory reforms may induce large benefits. Initially both entrepreneurs and trade unions feared that competition would cause the loss of market share and jobs, but in the course of reform strong arguments emerged that deregulation would promote the expansion of the retail sector, broaden the freedom of customers and thus improve welfare. The resistance of incumbents to reform based on the rationale of CP is not unusual and should not be neglected. The political economy of successful reforms needs to anticipate the reactions of the relevant players. While deregulation may hurt some businesses, it improves the conditions for others, and creates room for new entrants leading to welfare gains through product variety.

Condominiums in Buenos Aires

The administration of condominiums is carried out by independent companies or by the proprietors in the building. The parties agree by contract to delegate some authority to the administrator or manager. This

relationship has many features of a typical principal-agent problem. The manager possesses relevant information on costs and the incentive to carry out the job, while the neighbours lack the same set of information without incurring sizeable costs. The *condomini*, the principal, are represented by a Council or a collegial body who is in charge of auditing the manager's activity.

As the principal-agent theory suggest, the asymmetry of information may cause market distortions due to misaligned incentives. Managers may not be as efficient as they should be from the point of view of the Council. A typical example of potential dispute is the level of monthly maintenance expenses.

In Argentina, the SDCyC noticed that consumers' representatives – as well as non-governmental organisations – complained against significant and unexplained differences in the level of maintenance expenses between condominiums.

A project was launched to study the determinants of the expenses of the condominiums in Buenos Aires. The SDCyC set up a web-based system aimed at weakening the information asymmetry by comparing different parameters considered "reasonable" explanations of "true" expenses levels. The first step was the determination of these parameters. Using official information on the location and characteristics of buildings of more than five floors, the SDCyC used a randomly generated data base of 1 035 cases. The second step was to estimate econometrically the relevance of every parameter and then to select the most relevant and statically consistent estimators of a hypothetical expense, given some characteristics.

The study revealed a very significant dispersion in the levels of expenses and – as expected – the particular relevance of a certain number of variables. These results could be used for a manager or a Council participant to estimate how far the expenses were from the "standard level" predicted by the model. The simple model was freely accessible for the population on the web and produced an intense debate with the almost *furious* reaction of the incumbent condo administration firms.

Competitive systems are based on information symmetries and on the wide access at low cost of this information for large numbers of decision makers. This study revealed that there is room to improve the supply of relevant information and thus market transparency simply by choosing the correct variables and showing the results appropriately.

Concluding remarks

In this paper discussed the impact of competition policy on economic performance. It has been argued that competition policy should be understood as a set of policies that go beyond classical antitrust regulation. Regulatory reforms should also be considered in view of the competition policy approaches. In line with these propositions we have reviewed the two main policy areas, namely competition law enforcement and competition advocacy.

The recent experience of Argentina was then analysed, which is an interesting case of competition policy among emerging economies. If trade openness in a small economy has contributed to foster a more competitive environment, active competition policies were only developed in recent years in an extensive range of markets and resorting to a diverse set of instruments. The initiatives extended from infrastructure sectors to more unusual markets such as newspaper distribution and expenses of condominiums. The infrastructure sectors (airlines, energy, railways, telecom, toll highways, water distribution, etc), were privatised in the 1990s, but in many cases the regulatory frameworks were deficient and rigorous competition policies were not adopted. Under a regime of fixed exchange rates with reduced degrees of freedom to respond to sharp changes in relative prices, the role of active competition policies gained particular relevance.[19]

Competition policies imply the identification of ill-functioning markets and measures to improve them, even if slowly. But the development of effective competition policies and a competition culture leading to sustainable long term welfare gains require skilled human capital as well as credible institutions. The political will to develop both is a necessary condition. A long term effort is required to establish robust competition as a fundamental of the business environment. The threat of competition or its effective action tends to bring innovation and greater efficiency as well as a continuum of business changes that produce losers and winners in the market place. It is thus clear that the political economy of competition policies cannot be neglected if one wants to maximise its probability of success.

As the case of Argentina shows, competition policy is a complex and diverse set of policies contributing to the better functioning of markets, reducing barriers to entry, fostering business best practice and market transparency that go beyond the standard approach such as anti-competitive conduct and the control of mergers and acquisitions. Every sector of the economy should be considered a candidate for a regular monitoring of its

competitive environment, and this paper highlighted active regulatory reform in infrastructure as well as rigorous competition initiatives to enforce existing rules in a country with a long history of rather weak institutions. In these infrastructure markets with complex regulation it was stressed the need to complement traditional regulatory practice with consistent competition rules. This approach can be foreseen as the new policy to deal with the potential benefits of competition in these markets, where natural monopolies may still be present in certain areas (*i.e.* energy distribution, water supply).

Argentina experienced a severe economic and financial crisis in the years 2001-02, with a sharp contraction of output and a significant rise in inflation. In an environment of macroeconomic instability the conduct of competition policies, that inevitably require systematic and rigorous fine tuning, is a difficult challenge. The urgency of stabilisation drains most of the political energy and when conflicts of objective and interest emerge, competition policy may loose the battle in the policy arena. This is more likely to be the case when institutions are weak.

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Annex 5.A1.
Competition advocacy in the United States

Air transport

Route regulation was phased out in 1981 and fare regulation in 1983. Although there was no evidence of scale economies, this was originally motivated by 50 per cent lower fares in unregulated intra-state markets. Reform led to total price decline of 33 per cent to 20 per cent from deregulation mainly by removing pre-reform large cross-subsidies from long to short-haul routes. The largest price declines occurred in long-haul and high-volume city routes for which 80 per cent of the fares fell; reducing annual consumer expenditure by USD 30 billion by 1996.

Noticeably, safety performance improved despite the price cut. Moreover, flight frequency increased. Although employment fell by 7 per cent immediately after the reform, it increased again (by around 40 per cent until 1996) in response to lower fares. Cost reduction was obtained through wage cuts: earnings of flight attendants and pilots fell by 39 per cent and 22 per cent, respectively, between 1983 and 1992.

Efficiency and productivity also increased since seat-occupancy, especially on long-haul routes, increased from 55 per cent at the beginning of reforms to 70 per cent in 1996. Another gain from reform was the move from point to point to hub and spoke networks. Reforms also spurred innovation in information technology in pricing and computer reservation systems which helped to maximise loads and revenues. As a result, TFP increased fast, reaching 15 per cent in the early years after the reforms. The industry structure also changed after reforms: at first the number of effective competitors declined and concentration increased, but later effective competition increased by 70 per cent in long-distance and by 2 per cent in short-distance routes.

Road transport

Price collusion was curtailed by rate bureaux through regulatory changes that culminated in the Motor Carrier Act of 1980. Before that time,

rate bureaux had been permitted under an anti-trust exemption. The United States also eliminated restrictions on entry by territory and type of product. After the reform, service prices fell by 25 to 11 per cent through 1982, 75 to 35 per cent by 1995, especially due to large reductions in high volumes and large shippers. The annual savings in 1996 were estimated at USD 18 billion. In spite of price reductions there were improvements in service time and reliability.

Average wages fell by 1 to 4.5 per cent, while those of union workers dropped 10 per cent. Employment declined in LTL ("less than truck load") while it rose in TL ("truck load") and net gain in employment reached 16 per cent through 1990. Overall the reform led to the modernisation of the truck load industry. By 1996 operating costs fell by 35 per cent (LTL) and 75 per cent (TL) even though increased customised service costs partly offset productivity gains in volume service. The result was the increased pace of innovation in the use of information technology to maximise routing efficiency and track shipments. Information technology leads to development of third-part freight analysts and brokers through very complex analysis of shipper distribution patterns. Finally, there were significant changes in industry structure: a tenfold decline of large LTL trucking firms and increased competition from UPS, Federal Express, and 175 per cent increase in the number of TL carriers through greater concentration in the largest and more competitive firms.

Rail freight

Rail freight was reformed by the Staggers Rail Act of 1980. This Act eliminated rate regulation except for maximum tariffs on "captive bulk commodities". This is admitted because railroad had monopolistic power in providing services for "captive bulk commodities" against other transports. Contracts by shippers were completely deregulated and the suppression of low-density routes was permitted. This reform was driven by low rates of return, and low service quality. The reform was expected to deliver higher tariff rates, higher profits and greater investment.

In contrast with original expectations, prices declined by around 7 per cent at the beginning, 39 per cent by 1990 and 50 per cent by 1995. Larger price falls occurred in high value, non-bulk commodities. The reform allowed rail companies to compete in these areas. The annual savings were estimated to amount to USD 12 billion in 1996. There was steady improvement in service quality: *i.e.*, more frequent departures on high volume routes, volume discounts and services tailored to cost. Employment fell by 41 per cent. Wages significantly increased until the late 1980s, but substantially abated later on with declining labour demand.

By 1990, track usage intensity increased by 54 per cent as low density uneconomic routes were abandoned. Reform led to huge productivity gains: annual labour productivity growth doubled and total factor productivity TFP gains tripled in the 1980s. Total costs dropped by almost 60 per cent, of which about two-thirds can be attributed to deregulation. The industry structure also changed, as mergers resulted in four large Class 1 firms, while the entry of many small firms helped to create small systems on track abandoned by large companies.

Telecommunications

Being an international pioneer in this sector, the United States introduced the famous 1984 divestiture act, which split AT&T into one long-distance company and seven local operating companies. The reforms addressed the problem of monopoly profits, potential savings of long distance toll charges, and large cross-subsidy of local, residential calls. Following this reform, the number of important long-distance carriers increased. As a result, most benefits occurred in long-distance, international and mobile communications markets.

Together with a significant decrease in prices of long-distance toll and international services, the quality of service also improved; access to service improved, the percentage of calls completed increased. The reform also spurred technical innovation. Optic fiber and digitalised networks were more rapidly introduced. Automation and computerization of operator and directory services accelerated along with higher R&D expenditures. The reform also had an impact on industry structure. The AT&T's market share of long-distance calls fell from 68 per cent in 1984 to under 50 per cent in 1997, with Sprint and MCI accounting for most of the residual market. The seven RBOCs, GTE and other local exchange companies control virtually 100 per cent of local services in their regions.

Other fields

Other areas, such as electric power, natural gas distribution, and financial services, were also substantially reformed. These reforms mainly introduced more competition in the respective markets even though the specific policies and tools differed. For example, in the electricity industry, competition in power generation is the principal aim. In gas distribution, the goal is to create open access to interconnected grids by brokers and distributors. As in other sectors, the reforms brought improved service quality along with lower operating and maintenance costs.

Annex 5.A2.
Empirical findings on link between competition and economic performance

Country (sample period)	Samples	Main findings	Researchers
Selection effect			
United States – 1977,1982,1987	All manufacturing and selected service industry (auto repair shops)	Reallocation of outputs and inputs from less productive to more productive plants makes a significant contribution to aggregate productivity growth.	Foster, Haltiwagner, and Krizan (1998)
– 1963, 67, 72, 77, 82, 87 (census), – 1972-88 (annual survey)	23 manufacturing industries (plant-level data with firm-identification)	- Growing output share in high-productivity plants is a major factor in the productivity growth of an industry - Plant closure is frequent even within successful and growing industries.	Bailly, Hulten and Campbell (1992)
Netherlands (1980,1991)	All firms with more than 10 employees.(8859 in 1980, 8388 in 1991)	Net firm turnover contributes a third of the 3 per cent annual growth of labour productivity. This is because exiting firms are much less productive than the average firm	Bartelsman, Leeuwen, and Nieuwenhuijsen (1995)
Korea (1990 -98)	All plants with 5 or more employees in mining and manufacturing industries	Plant entry and exit effects accounted for 45 per cent of aggregate productivity growth during cyclical upturn (1990-95) and 65 per cent during cyclical downturn (1995-98)	Hahn (2000)
United Kingdom (1980-92)	Around 143 000 establishments	-Exit of less efficient plants, entry and growth of more efficient plants accounts for 50 per cent of labour productivity growth and 90 per cent of TFP growth over the period. - Plants with below average productivity are more likely to exit	Disney, Haskel Heden (2000)
Productivity Growth and Innovation			
United States (1952-91)	Telephone Industry (AT&T Long lines and 8 regional companies)	Both the estimation of TFP growth and the analysis of shifts in cost functions show a markedly faster change in efficiency in the effectively competitive market than for the local monopolies.	Gort and Sung (1999)

Source: Ahn (2002).

Notes

1. Non-linearities in the relationship between competition and innovation highlighted by Aghion *et al.* (2002) will be reviewed in the third section.

2. Against the general consensus, however, different legal and economic standards have been adopted to attack price-fixing agreements. In Australia, Germany, and the United States, for example, price-fixing is *per se* illegal and subject to criminal penalties. In Canada, although such agreements are treated as criminal acts, they must affect a substantial part of the market. In Spain, Sweden, and the United Kingdom, a rule-of-reason standard is applied to judge the legality of price-fixing agreements.

3. Competition policy analysis has pointed toward methods, such as price caps or RPI-x, that encourage relative prices to respond to changes in costs directly, rather than through the thick filter of the regulatory process.

4. For links between competition and development, see: Ahn (2002), Lachmann (1999) and Rey (1997).

5. The term innovation is used here as an indicator not only of technological change but also for the introduction of new products (Aghion *et al*., 2002).

6. Evans and Schamalensee (2001).

7. Based on a sample of 676 UK firms over the period 1975-86, Nickell (1996) found strong evidence that competition (measured by increased numbers of competitors or by lower levels of rents) led to higher productivity growth. Using a more recent and much larger data set of around 143,000 UK establishments over the period 1980-1992, Disney *et al.* (2000) show that market competition significantly raised levels and growth rates of productivity.

8. Posner estimated the social cost ratio in proportion to sales turnover in the United States around 14 per cent in medical services, 13 per cent in optical industry, 19 per cent in transport, 20 per cent in oil refinery, and 20 per cent in airlines.

9. Transportation deregulation in the US offers examples of sector-specific agencies applying the general competition law inconsistently. Though originally charged with ensuring competition, the US Interstate Commerce Commission and the Civil Aeronautics Board became a means for maintaining cartels. For several years after the US airline industry was deregulated, jurisdiction over airline mergers remained with the Department of Transportation, rather than the anti-trust agencies. The Department approved several combinations leading to significant market power in several city-pair markets despite vigorous objection from the anti-trust authorities. The same recently happened in the case of a railroad merger approved by a special Board within the US Department of Transportation. In Australia, the general jurisdiction competition agency is slated to become the residual "regulator", in order to avoid the problems inherent in relying on sector-specific enforcement bodies.

10. The pro-competition policy stance in the United States ensures that regulations are based on market principles. Regulation has usually been used to establish conditions for competition rather than to replace competition. This pro-competition policy stance was based on strong competition institutions. The openness and contestability of regulatory policies weaken information monopolies and the powers of special interests, while encouraging entrepreneurship, and the continuous search for better regulatory solutions.

11. Since the early 1990s, there has been an accelerated world trend toward the adoption and strengthening of legislative measures designed to create and promote a market economy. The four key policy measures have been privatisation, restructuring, deregulation (including elimination of price control) and adoption of competition legislation.

12. During the 1990s, the government undertook an extensive and rapid programme of privatisation of state firms, in a large number of sectors of the economy such as, electricity, oil, postal services, telecom, transport, water distribution, etc. The political economy of these reforms and its popular support in the 1990s can only be understood considering the previous history of state provision of services in Argentina. The decades' long experience was predominantly unsuccessful with severe deficiencies of governance, low productivity, overstaffed firms and serious problems of corruption and capture. State-owned companies' huge structural deficits had a significant negative impact on the macroeconomic performance of the country. Given the initial conditions, thus, privatisation rapidly improved performance and services in a number of sectors of the economy, such as energy and telecom. In certain cases, such as electricity, the reduction of prices was also significant, contributing to lower input costs and thus to competitiveness. See Larrain and Winograd (1996) and Celani and Winograd (2003). In other sectors, such as highways, postal services, and transport, the results of privatisation were

not satisfactory. In the privatisation of airports, no consideration was given to the rationale of potential competition in the industry.

13. There were two previous laws passed by the Congress: Ley N° 11.210, (1923) and Ley N° 12.960 (1946). The first one was intended to fight against trusts integrated by meat processing firms and the second was a review of the former.

14. It should be noted, however, that given the fact that the thresholds for M&A controls are fixed in nominal pesos, the inflationary burst experienced since the collapse of the convertibility regime and the sharp devaluation of 2002 has progressively increased the number of operations subject to official review. To address this problem, the adjustment or indexation of thresholds' values could be envisaged.

15. The use of the unbundling obligation is interesting in this regard. For a critical assessment of the US Federal Communications Commission's (FCC)'s regulation and its likely impact on welfare see Hausman *et al*. (1999) and Jorde *et al*. (2000).

16. For adequate application of pro-competitive measures in telecommunications, see ITU (2002), Jauk, (2000), and Australian Competition and Consumer Commission (1999). Recently the FCC changed some the requirements of unbundled network elements for local carriers (FCC 03-36, August, 2003).

17. For a discussion of creating effective competition in telecom markets, see Shepherd (1998).

18. Resolution MEyOySP N°416/99.

19 The growing role of competition policies in Europe in the recent period may also be linked to the restricted set of macroeconomic policy instruments at the national level.

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OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(11 2004 03 1 P) ISBN 92-64-10871-8 – No. 53701 2004