6. South–South Regional Trade Agreements, comparative advantage and industrial growth: evidence from MERCOSUR countries

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6.1. INTRODUCTION

A vast number of South–South Regional Trade Agreements (RTAs) were signed during the 1990s and, as a consequence, South–South trade flows have increased substantially.

This chapter sets out to provide evidence on the existence of a long-run relation between the formation of a South–South bloc and industrial growth in member countries, seeking to account for possible differential long-run effects from integration. The formation of South–South RTAs can affect countries and even sectors within countries in a different manner, with comparative advantage sectors being fostered and the remaining ones being possibly negatively affected by competition within the bloc. This holds especially for smaller partners which do not possess a major internal market size to take advantage of economic geography forces when comparative advantage is missing.

This long-run nexus is specified as a cointegrating relationship between industrial output and the South–South bloc formation. The RTA is identified by the evolution of the preferential margin applied by partners in each sector. Estimation of the long-run relation is tackled by means of panel DOLS (Mark and Sul, 2003). Apart from the estimation of a homogeneous cointegrating vector for the whole group, separate cointegration relations for comparative advantage and disadvantage sectors were estimated in order to highlight whether the South–South integration has fostered specialization more than diffusion of industrial activities. Finally, empirical investigation is conducted on the MERCOSUR agreement: though some work has been done (Sanguinetti et al., 2004) on the effects of MERCOSUR on the distribution of industry within the bloc, we believe that no conclusive statements have emerged in terms of the overall long-run effects of the agreement. The evidence emerging from this literature (Sanguinetti et al., 2004) highlights the increasing relevance of comparative advantage in labour and skilled labour and a reduced role for market potential in affecting the regional market shares in manufacturing across partners. Sanguinetti et al. (2004) estimate an empirical model for three of the four members (Paraguay is excluded from the analysis) and exclusively focus on country sector production relative to the subregion. Moving from this relative setting, this work seeks to answer the question of whether the agreement overall and in absolute terms proved beneficial in the long run and to ascertain whether, in the long run, specialization was stronger than diffusion of economic activities. A further step ahead is the search for possible asymmetries between large and small partners out of comparative advantage sectors. With respect to the previous work on the topic, a particular advantage relies in the availability of a longer time span of observations in the post-agreement period (up to 2004), of a wider cross-section base, made possible by the inclusion of the fourth original partner (Paraguay) in the agreement, and of more detailed measurement of the integration process based on data specific for each country and within the country for each sector, provided by ALADI.

The work is organized as follows: after a short review of the literature on the topic and the description of the data set and sources in the next two sections, Section 6.4 describes the evolution of preferential trade liberalization, comparative advantage and industrial growth in MERCOSUR countries, Section 6.5 deals with the empirical model and the estimation strategy, while Section 6.6 presents the results, followed by some brief conclusions in Section 6.7.

6.2. LITERATURE REVIEW

The effects of trade liberalization on long-run industrial growth have been extensively explored in the theoretical literature: the availability of a wider variety of intermediates and a larger scale for production is thought to be the positive outcome of economic integration. The flow of ideas and knowledge is a further channel through which industrial growth can occur. However, such a flow is less likely in the framework of a South–South integration scheme, while in a North–South integration framework Walz (1997) shows the theoretical possibility of a negative growth effect from integration when the specialization of countries following the agreement causes reduced innovation activity in the North. A few empirical works have addressed the relation between the formation of a South–South trade agreement and industrial growth: Madani (2001a, 2001b) seeks to assess whether the availability of new imported intermediates and a wider scale of production has fostered industrial growth in the countries involved in the Andean Pact and in the Association of South East Asian Nations (ASEAN). The author pools across partners and estimates a separate regression for each industry: the agreement effect is detected via a dummy variable taking value 1 from the negotiation onwards, the results do not support a strong effect from integration *per se* and the main message is that a strong heterogeneity exists in the responses of industries to integration. This point is particularly important because if one is willing to find an unambiguous effect from integration a failure might occur if a certain degree of heterogeneity exists. The latter is important not only among sectors, as Madani suggests, but among partners and among sectors within each country as well. When the consequences of integration are studied in a framework enriched by comparative advantage (CA) and economic geography forces, the issue of the effect of integration on growth in industrial output becomes clearer.

Abstracting from comparative advantage, Puga and Venables (1998) focus on agglomeration and dispersion forces as determinants of industrial development. Countries are supposed to be identical on the technology and factor endowments side; firms are only supposed to enter and exit the market according to short-run profitability affected by dispersion[1] and agglomeration forces.[2] South–South PTAs imply a reciprocal reduction in tariffs among low and middle income countries with an unchanged tariff with respect to the rest of the world and with unchanged access to third countries: the demand link is quite important since it is the internal demand which fosters industrialization.

The latter, though, occurs slowly and for one country in turn, and benefits accruing from liberalization are lower than those occurring under multilateral liberalization. Then in the long run the effect from integration is positive for all the countries involved, although ‘winners and losers’ might emerge in the short run.

By contrast, Venables (2003) combines the notions of CA and trade diversion and describes the effect of the negotiation of a Customs Union (CU) on industrial development both in symmetrical (North–North, South–South) and asymmetrical (North–South) agreements. The idea is that preferential tariffs can affect production location, enhancing the role of ‘regional’ comparative advantage in determining production patterns: *ceteris paribus*, countries with a share of skilled labour higher than their partners (though lower than the rest of the world) would see, after the formation of the CU, their share of skilled labour-intensive regional production increase with respect to the partners.

Now, regardless of the forces at work, both strands of theory on preferential trade liberalization and industrial growth stress that integration among symmetric Southern partners implies a certain degree of asymmetry in the response of the industrial structure. When turning to real settings, comparative advantage and geography forces actually interplay, possibly making the push towards specialization more severe: agglomeration forces can engender and enhance comparative advantage, on the other hand comparative advantage can foster agglomeration (Ottaviano and Puga, 1998). When liberalizing, initial differences in factor endowments can end in the agglomeration of industries just as agglomeration forces (for example economies of scale) enhance more than revert comparative advantages.

Recent developments in trade theory stress firm heterogeneity within sectors (Melitz, 2003; Behrens et al., 2007) and suggest an overall positive effect from RTA formation: the increased market access to partners' markets favours the increase in average productivity of insiders, but trade liberalization, in general, favours the reallocation of resources from smaller to larger partners (market-seeking attraction). Furthermore, Bernard et al. (2004) show that trade liberalization magnifies comparative advantage: creative destruction is stronger in CA sectors thus favouring the increase in industrial output and average productivity in these sectors more than in the rest of manufacturing.

Some empirical works have tried to show whether economic integration has reshaped the operating of comparative advantage and geography forces in determining industrial location across partners. The main reference point in the literature is the work by Midelfart-Knarvik et al. (2000) for Europe. Geography and comparative advantage are modelled so as to affect the localization of industrial activities and the pace of integration is reproduced by means of moving regressions: as long as liberalization takes place, economic forces become increasingly determinant.

In the case of South–South integration a recent contribution by Sanguinetti et al. (2004) studies the effect of the formation of MERCOSUR in 1991 on the location of industrial activities in three – Argentina, Brazil and Uruguay – of the four original partners between 1985 and 1998. The RTA effect is detected through the interaction of preferential tariffs and margins with some measures of factor endowments, scale economies and backward and forward linkages. According to their findings, preferential trade liberalization has favoured a reshaping of manufacturing according to regional comparative advantage in skilled and unskilled labour. In addition, declining internal tariffs have weakened agglomeration forces determined by the distribution of market sizes. Their conclusions suggest that small countries with the 'right' comparative advantage 'might' see their share of regional production of skill-intensive and labour-intensive products increase and the evidence of weaker agglomeration forces would confirm this fact. This means, for instance, that Uruguay, a small partner with a higher share of skilled labour compared to the partners, could experience an increase in its share of regional production of skill-intensive goods and that this is made more possible by the minor relevance of market size and potential favoured by the preferential liberalization process. However, the authors draw conclusions on the distribution of economic activities following the formation of MERCOSUR, leaving the fourth partner, Paraguay, out of the analysis. This country has a very thin industrial structure, but if one is willing to uncover possible diffusion effects from economic integration this omission might not be so naive. A second issue concerns the short post-agreement period (1991–1998) under analysis and the use of the Brazilian preferential and Most Favoured Nation (MFN) tariffs to measure the extent of preferential integration for the remaining partners as well. Finally, even if focused on the channels through which the formation of MERCOSUR affects industrial location within the bloc, they do not really answer the question on the long-run effects of integration on industrial output and do not address the issue of heterogeneous responses between comparative advantage sectors and the remaining ones, and within the latter between large and small partners. Countries might gain or lose in terms of regional production in a sector but this does not tell us whether industrial output has been fostered or hampered by the agreement as a whole. By the same token even if countries appear more specialized in trade and production, with their industrial structure hinging more on a few sectors, it does not necessarily mean that industrial output has not been fostered by the agreement in other sectors as well.

In this respect, our work appears to complement the existing literature. First of all, the focus on MERCOSUR is more thorough and complete than the evidence reported above: Paraguay is also included in the analysis; secondly, a longer time span – 20 years ranging from 1985 to 2004 – is used, thus allowing for 14 years of observations in the post-agreement period; thirdly, the information on preferential integration is country- and sector-specific, and this feature provides a finer and more precise identification of the agreement effect for each partner and each sector with respect to the aforementioned literature.

More importantly, it is the first time that the issue of the long-run effects from South–South RTAs on industrial output has been tackled, with regard to the question of the overall effects from integration for member countries. Furthermore, empirical analysis of the effects of a South–South RTA explicitly takes into account possible heterogeneous country/sector responses. Following the theoretical suggestions, estimation of separate models for comparative advantage and non-CA sectors, and for large and small partners for the latter, allows for heterogeneity in the long run. Although the cointegrating vector is homogeneous across groups, the estimation technique allows for a certain degree of heterogeneity in the short-run dynamics, individual specific fixed effects and individual specific time trends (Mark and Sul, 2002, 2003). A limited degree of cross-sectional dependence is also allowed through the presence of time-specific effects.

6.3. DATA

The data set used in the empirical analysis below comes from merging several sources. First of all, the data on industrial production, employment and value added for Argentina, Brazil and Uruguay are mainly from the PADI database. They are in the rev. 2, 3 digit ISIC version and range between 1985 to 2004, 2003 and 2001, respectively. This information was then updated for all the countries up to 2004, making use of data available from the national statistical offices and central banks. The real US dollar exchange rate was provided by CEPAL. The data for Paraguay were available in CNAP (Classificaciòn Nacional de las Actividades Productivas), a classification other than ISIC rev. 2, and contain a lower number of production activities such that in the end ISIC sectors had to be re-arranged in CNAP sectors for Argentina, Brazil and Uruguay.[3] Finally, the data on preferential and *mfn* (Most Favoured Nation) tariffs were kindly made available from ALADI and provided by CADEP-Paraguay. The export data for the calculation of trade flows and specialization indexes are from COMTRADE, available in 3 digit, rev. 2 ISIC classification, from the online WITS-WB database and were rearranged in CNAP sectors. Table 6A.1 in the Appendix contains all the data used and their sources.

6.4. THE FORMATION OF MERCOSUR AND INDUSTRIAL DEVELOPMENT IN PARTNER COUNTRIES

The Treaty of Asunciòn was signed in 1991 by Argentina, Brazil, Paraguay and Uruguay, and gave birth to one of the most important South–South regional integration initiatives. The agreement came about with major reforms in the countries involved and in particular with a general strong devotion to trade liberalization. Nevertheless, as witnessed in Table 6.1 the preferential liberalization effort was quite strong after the agreement negotiation. On average, the preferential tariff applied to partners, *prf*, has gone from about half to about one fiftieth of the *mfn* tariff.

As a consequence intra-regional trade has grown. Table 6.2 summarizes that after the 1990s the share of trade towards the region has increased more for the larger partners than for the smaller ones, although the latter have a higher dependence on the sub-region for their overall trade relations. Several empirical works (Yeats, 1998; Carrillo and Li, 2004) have dealt with the effectiveness of MERCOSUR in fostering trade flows and trade diversion. As a matter of fact, it has been shown (Sanguinetti and Volpe Martincus, 2005) that preferential trade liberalization is an important factor explaining the tendency towards sectoral divergence of geographical patterns in the larger MERCOSUR partners: Argentina and Brazil have a stronger re-orientation of exports towards the region in those industrial sectors with higher preferential margins.

Table 6.1. Evolution of tariffs by time

Period	Average *prf*	Average *mfn*
1991–1994	6.88	15.71
1995–1999	1.57	11.96
2000–2004	0.26	11.99

Source: ALADI. Own computation.

Table 6.2. MERCOSUR countries' share of trade towards the subregion

Period	ARG	BRA	PRY	URY
1995–1999	0.13	0.07	0.49	0.39
1991–1994	0.20	0.12	0.41	0.46
1995–1998	0.25	0.15	0.56	0.50
1999–2004	0.22	0.11	0.57	0.43

Source: COMTRADE-WITS. Own computation.

In order to have a quick view of regional integration and industrial growth, Table 6.3 displays some information on the evolution of industrial manufacturing growth, Δy_{ijt}, partners' preferential margins, $\Delta m\arg_{ijt}$ and own preferential tariffs, Δprf_{ijt} within MERCOSUR countries over the period 1985–2004. For each country i the partners' preferential margin is calculated as

$$m\arg_{ij} = \sum_{h \neq i}^{N} \frac{mfn_{hj} - prf_{hj}}{mfn_{hj}} \tag{6.1}$$

As anticipated above, mfn_{hj} is the Most Favoured Nation tariff applied by partner h for $h=1, 2,...,N$ and $h \neq i$ to imports of product j coming from GATT/WTO members, while prf_{hj} is the preferential tariff applied by partner h to country i according to the preferential liberalization scheme. On the other hand, prf refers to the preferential tariff applied by country i to its partners in the agreement. Summing up, $m\text{arg}$ represents the preferential treatment applied by partners to country i in sector j while, for the same sector, prf represents country i's preferential trade liberalization in sector j towards the partners.

The data were averaged across four five-year sub-periods to clean them of short-run fluctuations. Then average growth in industrial output, preferential margin, $m\text{arg}$ and tariff, prf was calculated and the information was merged with the evidence on initial regional comparative advantage by sector and country measured as the symmetric version of the initial Revealed Comparative Advantage (RCA) in exports with respect to the sub-region, $sym.reg.RCA$. Although the latter is not a real measure of a country's natural comparative advantage, it expresses the extent of export specialization of countries under the hypothesis that if a country has an higher index than the rest of its partners it has proved to be 'better' at producing and exporting that good. The index is calculated as the 'regional' Revealed Comparative Advantage in exports according to the following formula:

$$sym.reg.RCA_{ij} = \frac{reg.RCA_{ij} - 1}{reg.RCA_{ij} + 1} \tag{6.2}$$

where

$$reg.RCA_{ij} = \frac{X_{ij} / X_i}{X_{rj} / X_r} \tag{6.3}$$

Here X_{ij} represents country i exports in sector j, X_i refers to overall country i' exports and the same definitions hold for the ratio in the denominator where r stands for the whole region, that is MERCOSUR. The index in formula (6.2) is symmetric, ranging between –1 and 1, with 0 representing neutrality. The advantage is that all the countries and sectors have a common range and the indexes can be ordered and compared. In this sense, the numbers in bold in Table 6.3 refer to the highest $sym.reg.RCA$ (for brevity RCA from now onwards) indexes in each sector for the whole region meaning an initial more favourable position for the respective country.

As the table suggests, average industrial growth is positive and higher in larger countries, and negative, on average, in smaller partners. The general picture is of a certain polarization of comparative advantage in the initial period (1985–1990) with the smallest partners specialized in more resource-based and traditional products and Brazil focused on exports of more advanced products. Argentina lies in the middle of these extremes: the RCA index is positive for several sectors meaning a general vocation for manufacturing[4] but its position is weaker in terms of initial supremacy in a sector. The rows displaying the country averages show that the growth in preferential access to partners' markets has been favourable for Argentina and Paraguay especially, while the decline in the preferential tariff has been more important for Brazil and Uruguay, with Paraguay displaying the lowest growth in preferential liberalization vis-à-vis its partners. When turning to comparative advantage sectors, industrial growth is higher than the country's average (see Table 6.3), especially for Brazil. Growth rates outside comparative advantage sectors are generally negative in smaller partners and positive in larger ones.

Turning to the relation between industrial growth and preferential integration, the three highest growth rates for Argentina are recorded in sectors with the highest pace of liberalization in partners' markets. Leather and footwear is the sector with the highest overall growth and it is also the sector with the highest tariff applied to partners in the agreement. For Brazil non-regional comparative advantage sectors experience a positive growth in output and the highest growth in preferential access to partners' markets.

Paraguay displays several negative growth rates over the whole period in non-traditional sectors. The positive growth recorded in these sectors, instead, goes together with some of the highest growth rates in preferential access. The highest growth rates are recorded in Paper and Paper Products, and Drinks and Tobacco.

Despite several negative growth rates, Uruguay's industrial output in Meat, Drinks and Tobacco, Oil Refinery and Metal Products, Machinery and Equipment is positive. Nevertheless, these sectors display no relevant dynamic in preferential access or tariff.

Summing up, the table suggests that larger partners experience in general positive growth even outside comparative advantage sectors, while smaller partners experience negative growth in non-RCA sectors and, with very few exceptions, this holds even more for non-traditional production. There is therefore a certain asymmetry across large and small partners especially outside comparative advantage sectors: Table 6.4 shows correlation coefficients between the preferential margin *marg* and industrial output in the top panel, and between industrial output growth and the growth in preferential margin at the bottom of the table for the whole period 1985–2004: the correlation between output and preferential margin is always positive, and is higher for large partners and in comparative advantage

Table 6.3. Overall sector growth, preferential integration and comparative advantage by sector and country

	Δy_{ijt} 1985–2004	$\Delta marg_{ijt}$ 1991–2004	Δprf_{ijt} 1991–2004	*initial reg.RCA*	Δy_{ijt} 1985–2004	$\Delta marg_{ijt}$ 1991–2004	Δprf_{ijt} 1991–2004	*initial reg.RCA*
sect./country		ARG				PRY		
Meat	0.08	0.37	–0.73	0.27	0.04	0.37	–0.58	**0.31**
Drinks and Tobacco	0.09	0.47	–0.76	0.18	0.16	0.42	–0.49	–0.31
Apparel and Textiles	–0.18	0.47	–0.77	0.11	–0.11	0.52	–0.65	–0.11
Leather and Footwear	0.17	0.58	–0.70	0.16	0.01	0.65	–0.63	0.21
Wood	–0.04	0.58	–0.77	–0.44	0.01	0.36	–0.80	**0.52**
Paper and Paper Products	0.11	0.59	–0.75	–0.03	0.18	0.38	–0.66	–0.51
Oil Refinery	0.03	0.38	–0.79	0.12	–0.10	0.39	–0.86	–0.52
Chemicals	0.12	0.56	–0.76	0.12	–0.10	0.44	0.74	0.10
Non-Metallic Mineral Products	–0.01	0.41	–0.77	0.04	–0.05	0.38	–0.46	–0.49
Metals	0.08	0.41	–0.74	0.09	–0.06	0.43	–0.10	–0.45
Metal products, Machinery and Equipment	–0.04	0.40	–0.80	–0.01	–0.05	0.44	–0.44	–0.52
Manufacturing, n.e.c.	0.03	0.56	–0.77	–0.28	–0.01	0.39	–0.54	–0.52
Country average	0.04	0.48	–0.76	0.03	–0.01	0.43	–0.46	–0.19
sect./country		BRA				URY		
Meat	0.20	0.36	–0.64	0.12	0.20	0.34	–0.80	0.24
Drinks and Tobacco	0.02	0.40	–0.84	0.07	0.15	0.37	–0.78	**0.48**
Apparel and Textiles	0.09	0.53	–0.92	0.10	–0.27	0.46	–0.78	**0.48**
Leather and Footwear	–0.09	0.66	–0.91	0.17	–0.09	0.58	–0.71	**0.26**
Wood	0.11	0.40	–0.95	0.23	–0.07	0.34	–0.83	–0.49
Paper and Paper Products	0.29	0.35	–0.94	**0.22**	–0.01	0.30	–0.77	–0.11
Oil Refinery	0.13	0.31	–0.95	**0.20**	0.06	0.32	–0.80	–0.44
Chemicals	0.18	0.36	–0.92	**0.19**	–0.08	0.35	–0.76	0.03
Non-Metallic Mineral Products	0.02	0.33	–0.93	**0.20**	–0.07	0.31	–0.82	0.18
Metals	0.14	0.38	–0.93	**0.21**	–0.07	0.39	–0.79	–0.44
Metal products, Machinery and Equipment	0.29	0.34	–0.87	**0.22**	–0.02	0.38	–0.84	–0.35
Manufacturing, n.e.c.	–0.01	0.40	–0.87	**0.23**	0.22	0.32	–0.77	0.01
Country average	0.11	0.40	–0.89	0.18	–0.005	0.37	–0.79	–0.01

Table 6.4. Simple correlations

	All sectors	*Reg.RCA*	*Non reg.RCA*
		corr(y,$marg$)	
Mercosur	0.03	0.11	0.003
Large Partners	0.15	0.23	0.12
Small Partners	0.02	0.02	0.05
		corr(Δy,$\Delta marg$)	
Mercosur	0.13	–0.09	0.25
Large Partners	0.22	0.02	0.41
Small Partners	–0.02	0.00	–0.02

sectors especially. The correlation between growth in industrial output and preferential access displays the highest value for large partners in non-comparative advantage sectors.

From this brief data description, regional integration might have played a role in partner countries' industrial growth and the remaining part of the work is devoted to uncover whether such an effect occurred.

6.5. THE EMPIRICAL STRATEGY

The long-run relationship between industrial output and the formation of MERCOSUR is specified as follows:

$$y_{ijt} = \theta_{ij} + \delta_{ij} t + \beta X_{ijt} + \varphi RTA_{ijt} + \lambda_t + \varepsilon_{ijt} \qquad (6.4)$$

In the equation, y represents country i's industrial output in sector j at time t. RTA, instead, measures the degree of preferential liberalization in terms of preferential access to partners' markets, *marg.* X_{ijt} represents employment and intermediate inputs which are introduced to control for further production determinants. Unfortunately, good quality data on capital stock were not available for all the country–sector pairs and for all the years, so the choice was made not to include it in the specification hinging on the high labour intensity of industrial production in MERCOSUR countries. Finally, θ_{ij} represents country–sector pair fixed effects, $\delta_{ij} t$ is meant to control for heterogeneous time trends and λ_t represents a common time effect to control for cross-section correlation. As shown in Table 6A.2 in the Appendix, the degree of cross-section correlation is not so high that the inclusion of common time effects can be considered enough to control for it.

Table 6A.3 in the Appendix shows summary statistics for the variables used in the empirical analysis. The estimation strategy will proceed by testing for integration and cointegration of the panel time series. The cointegrating relation in Equation (6.4) will first be estimated by means of panel DOLS for MERCOSUR as a whole to reveal the size and direction of the overall long-run effect of integration and, secondly, the same relation will be estimated for the two subgroups of comparative advantage and disadvantage sectors to reveal possible imbalances. A final and complementary exercise will concern the effect of RTA formation on industrial output in non-comparative advantage sectors for large and small partners respectively.

In general, one would expect preferential margins to be positively related to industrial growth: a higher preferential margin $(marg)$, turns into a more favourable access accorded by partners to country i with respect to non-partners. Hence it is supposed to turn into higher industrial growth in country i especially for comparative advantage sectors. Non-comparative advantage sectors for one country are, in general, comparative advantage sectors for another, and if preferential trade liberalization fosters specialization according to regional comparative advantage then one could expect a negative effect from integration in these sectors or at most no effect at all. Furthermore, outside comparative advantage, geography might play a major role and the asymmetric distribution of market size across members might determine a different final outcome for larger and smaller partners respectively.

6.5.1. Testing for Unit Roots and Cointegration

Before turning to the estimation of the long-run relation, the Im et al. (2003) test for unit root was performed for each of the series for MERCOSUR as a whole. Table 6.5 shows that the test fails to reject the null in all the cases, thus providing evidence of integration of order one for the series at hand.

Subsequently, Table 6.6 shows the panel and group cointegration tests developed by Pedroni (1999, 2004). These tests are residual-based tests for the null of non-cointegration and allow for heterogeneous fixed effects, deterministic trends and also for heterogeneous short-run dynamics. The null is rejected by four over seven tests for MERCOSUR as a whole and both for regional RCA and non-RCA sectors. Wagner and Hlouskova (2007) compare various panel cointegration tests in a large-scale simulation study. They found that in general, for the case $T \geq N$, the test type has a larger impact on performance than if the test is computed in a pooled or group-mean fashion and that Pedroni's (2004) test based on ADF regressions performs best,

Table 6.5. Unit root test

Variable	t-bar	cv10	cv5	cv1	W[t-bar]	P-value
y	–1.397	–2.33	–2.38	–2.46	3.469	1
emp	–0.98	–2.33	–2.38	–2.46	6.29	1
interm	–1.158	–2.33	–2.38	–2.46	5.09	1
marg	–1.991	–2.33	–2.38	–2.46	–0.538	0.295
		t-bar test,	N,T =	(48,20)	Obs =	960

Notes: Im et al. (2003) test for unit root. Deterministic components: constant and trend. Augmented by four lags.

Table 6.6. Cointegration test

			coint.relation *y empintermmarg*	
MERCOSUR				
	panel	v-stat	=	–0.42502
	panel	rho-stat	=	1.74698
	panel	pp-stat	=	–9.04046
	panel	adf-stat	=	–8.59343
	group	rho-stat	=	4.52947
	group	pp-stat	=	–8.34638
	group	adf-stat	=	–8.97236
N = 48		T = 20		no. regressors = 3
Reg.RCA sectors				
	panel	v-stat	=	–0.11544
	panel	rho-stat	=	1.04911
	panel	pp-stat	=	–3.9417
	panel	adf-stat	=	–4.04906
	group	rho-stat	=	2.10619
	group	pp-stat	=	–4.26044
	group	adf-stat	=	–5.39368
N= 12		T = 20		no. regressors = 3
Non-reg.RCA sectors				
	panel	v-stat	=	–0.4352
	panel	rho-stat	=	1.22735
	panel	pp-stat	=	–8.66437
	panel	adf-stat	=	–7.80275
	group	rho-stat	=	3.67179
	group	pp-stat	=	–7.77254
	group	adf-stat	=	–8.04707
N = 36		T = 20		no. regressors = 3

whereas all other tests tend to be severely undersized and have very low power in may cases.[5] According to these findings one might interpret the results from Table 6.6 in favour of the existence of a long-run relation between preferential integration, employment, intermediate inputs and industrial output.

Estimation of the cointegrating vector in Equation (6.4) is tackled by means of Panel Dynamic OLS as developed by Kao and Chiang (2000) and Mark and Sul (2003). Here, the inclusion of leads and lags of the first differences of the X_S controls for the endogeneity bias and, although a homogeneous cointegrating vector is estimated, a certain degree of heterogeneity is allowed across groups through heterogeneous fixed effects, time trends and short-run dynamics. The next section shows the results.

6.6. RESULTS

Table 6.7 displays the results from the panel DOLS estimation of the long-run relation in Equation (6.4). As stated above, the preferential margin $(marg)$ is used as a measure for RTA and in all of the following tables standard errors are displayed below the coefficients. From this first set of results the preferential margin is related to an increase in industrial output in the long run and the coefficient on preferential margin is larger when allowing for heterogeneous time trends. Since the variables enter the empirical specification in logs, the coefficients can be interpreted as elasticities. Hence for each 1 per cent increase in the preferential margin the long-run level of industrial output increases by about 0.04–0.16 per cent.[6]

As suggested by the theory, the overall effect of preferential access to partners' markets is positive and significant even when controlling for fixed effects, heterogeneous time trends and short-run dynamics. Tables 6A.4 and 6A.5 n the Appendix display the single equation dynamic OLS for comparison and, to ascertain that pooling across groups in the long run does not severely affect the consistency of our estimates in Table 6.7, the last row in both tables reports the group mean estimates of the cointegration vector (6.4) in the spirit of Pedroni (2001): the estimate of the RTA coefficient does not substantially differ from that in Table 6.7, especially when heterogeneous trends are omitted from the specification.

The relation between comparative advantage and RTAs recalled above suggests that the effect of the agreement formation might actually be stronger in those sectors where countries enjoy a comparative advantage with respect to partners in the region. Moreover, if specialization forces are strong enough, the resources could be displaced in favour of these sectors with a reduction in output in the remaining ones. To reveal such possible asymmetric effects from regional integration, and hinging on the evidence on initial regional RCA reported in Table 6.3, Table 6.8 shows the results of the estimation of the cointegrating relation in (6.4) for regional comparative advantage and non-comparative advantage sectors respectively.

Table 6.7. MERCOSUR: panel DOLS estimates of the long-run coefficients

	[1]	[2]	[3]	[4]
ALL	Ordinary	Common Time Effect	Ordinary	Common Time Effect
marg	0.042 **	0.031	0.164 ***	0.163 ***
	0.019	0.026	0.027	0.030
emp	0.108 ***	0.106 ***	0.069 ***	0.076 ***
	0.012	0.012	0.018	0.017
inp	0.655 ***	0.655 ***	0.652 ***	0.654 ***
	0.026	0.025	0.016	0.015
N = 48	T = 20			
Group-specific time trends			yes	yes

Notes:
1. The baseline specification includes group-specific fixed effects. Columns [1] and [3] report results for the exclusion of common time effects, while columns [2] and [4] display results when common time effects are taken into account.
2. *marg* refers to preferential margins applied by partners to sector *j* of country *i*; *emp* refers to employment; *inp* refers to intermediate inputs.
3. Standard errors based on Andrews and Monahan's pre-whitening method are shown below the coefficients.

For the whole group of RCA sectors[7] the upper panel of the table shows that the long-run effect from integration is positive on the whole and the coefficient is actually higher than before, thereby implying for each 1 per cent increase in the preferential margin about a 0.09–0.31 per cent increase in the industrial output.

When turning to regional non-RCA sectors the coefficient on the preferential margin is still positive albeit smaller, implying at most a 0.03–0.08 per cent increase in industrial output for each 1 per cent increase in the preferential margin (lower panel of Table 6.8).[8] More than the size of the effect the interest here is in the difference of the coefficients across groups. To this purpose the Wald statistics shown in the last row reject the equality of coefficients between the two subgroups. Hence there is a significant difference in the size of the effect between the two subgroups.

This result follows the same direction as the implications emerging from the theory: when preferential trade liberalization occurs industrial output is stimulated more in regional comparative advantage sectors, the operating of

Table 6.8. Estimates of the long-run coefficients: Reg.RCA and non-Reg.RCA sectors

	[1]	[2]	[3]	[4]
	Ordinary	Common Time Effect	Ordinary	Common Time Effect
Reg.RCA sectors				
marg	0.125 ***	0.097 **	0.188 ***	0.31 ***
	0.042	0.061	0.059	0.072
emp	0.192 ***	0.167 ***	–0.006	–0.016
	0.036	0.035	0.052	0.047
inp	0.558 ***	0.588 ***	0.496 ***	0.564 ***
	0.049	0.051	0.04	0.037
N = 12	T = 20			
Non-Reg.RCA sectors				
marg	0.033 ***	0.026	0.089 ***	0.078 **
	0.020	0.026	0.03	0.034
emp	0.097 ***	0.096 ***	0.089 ***	0.093 ***
	0.013	0.013	0.019	0.018
inp	0.699 ***	0.694 ***	0.69 ***	0.687 ***
	0.024	0.024	0.017	0.01
N = 36	T = 20			
Chi2(3)	15.66	7.85	20.5	27.2

Notes:

1. The baseline specification includes group-specific fixed effects as in (6.4). Columns [1] and [3] report results for the exclusion of common time effects, while columns [2] and [4] display results of the estimates when common time effects are taken into account.
2. *marg* refers to preferential margins applied by partners to sector *j* of country *i*; *emp* refers to employment; *inp* refers to intermediate inputs.
3. Standard errors based on Andrews and Monahan's pre-whitening method are shown below the coefficients.

geography enhances comparative advantage and determines a path towards increased specialization.

However geography can even play another role: non-comparative advantage sectors in the smaller partners of MERCOSUR especially consist of more advanced sectors where scale economies and backward and forward linkages are particularly important; non-comparative advantage sectors in larger partners are related mainly to more traditional and resource-based goods (Argentina and Brazil, cf. Table 6.3), for which all the countries in the agreement have a natural vocation, and to advanced sectors also (Argentina, cf. Table 6.3), where market size and potential can play a decisive role.[9] Interpreting this evidence and gathering the suggestion from Table 6.3 above, outside comparative advantage sectors the effect from integration might then be different due to the different size of the partners' internal markets. Table 6.9 thus shows the long-run effect from integration respectively for large and small partners: this is positive for Argentina and Brazil on the whole, non-significant or negative at most for Uruguay and Paraguay. The size of the coefficient for larger partners ranges around 0.2[10] and the Wald statistics at the bottom of the table reject the equality of coefficients between the two subgroups of countries at common significance levels.

This result suggests that the relation between industrial output and preferential integration is heterogeneous in the long run between comparative advantage and non-comparative advantage sectors and, within the latter, is asymmetric between large and small partners.[11] In this respect the result is in line with Sanguinetti and Volpe Martincus (2005) in that the agreement helps these countries to re-orient their exports towards the region in sectors with high preferential margins. This rather conflicts with Sanguinetti et al. (2004) in that the diffusion process does not really seem to take place in general for smaller partners.

Finally, the long-run relation is re-estimated with the exclusion of the residual sector Manufacturing, n.e.c. and the results are shown in Table 6A.6 in the Appendix: the panel DOLS estimates are not sensitive at all with respect to the exclusion of these sectors. The same occurs when the Oil refinery sector is removed from the sample. This set of results is not shown here for the sake of brevity although it is available from the author upon request.

6.7. CONCLUSIONS

We studied the long-run relation between the formation of a Regional Trade Area and industrial output. Our investigation concerned the negotiation of a South–South agreement with specific focus on the MERCOSUR agreement. The research set out to ascertain whether there is a positive long-run relation between preferential access to partners' markets and industrial output growth in partner countries. In this respect, the chapter adds to the existing literature, providing evidence on countries' industrial output. Furthermore, allowing for long-run heterogeneity between comparative advantage and disadvantage sectors, the estimate of separate models for the two subgroups helps define whether specialization of countries was fostered more than the diffusion of economic activities.

Table 6.9. Estimates of the lon-run coefficients: non-reg. RCA sectors, large and small partners

	[1]		[2]		[3]		[4]	
	Ordinary		Common Time Effect		Ordinary		Common Time Effect	
Large partners								
marg	0.218	***	0.182	***	0.256	***	0.221	***
	0.04		0.047		0.035		0.047	
emp	0.227	***	0.206	***	0.014		0.021	
	0.037		0.038		0.052		0.053	
inp	0.567	***	0.569	***	0.618	***	0.62	***
	0.03		0.027		0.02		0.02	
N = 17	T = 20							
Small partners								
marg	0.03		0.04		–0.114		–0.091	**
	0.034		0.04		0.039		0.043	
emp	0.105	***	0.106	***	0.149		0.15	***
	0.015		0.014		0.018		0.017	
inp	0.784	***	0.786	***	0.749		0.752	***
	0.041		0.039		0.019		0.018	
N = 19	T = 20							
Chi2(3)	15.66		7.85		20.5		27.2	

Notes:

1. The baseline specification includes group-specific fixed effects as in (6.4). Columns [1] and [3] report results for the exclusion of common time effects, while columns [2] and [4] display results of the estimates when common time effects are taken into account.
2. *marg* refers to preferential margins applied by partners to sector *j* of country *i*; *emp* refers to employment; *inp* refers to intermediate inputs.
3. Standard errors based on Andrews and Monahan's Pre-whitening method are shown below the coefficients.

The overall relation between integration and industrial output is positive and significant: the improved market size emerging from the agreement goes together with the expansion of output, thus confirming the general view on preferential trade area formations (Puga and Venables, 1998). When considering the possibility of a different size of the effect for RCA and non-RCA sectors the first group enjoys a significantly higher long-run growth effect from integration than the second: specialization in the original RCA sectors appears to be fostered more than the expansion of output in non-RCA sectors. Finally, a heterogeneous long-run response is also recorded in non-

RCA sectors between large and small partners: larger partners enjoy on the whole a significantly higher increase in industrial output due to preferential integration. These results are robust to the exclusion of some of the sectors and to alternative sub-sampling.

From the above analysis two main implications emerge. A more general one concerns the negotiation of a South–South agreement with important asymmetries in terms of market size and a determinant similarity in comparative advantage: the combination of geography and comparative advantage is likely to make even slight initial differences more harsh in the long run. The slow diffusion of manufacturing from one country to another might even get stacked in larger partners when geography engenders comparative advantage (Puga and Venables, 1998; Beherens et al. 2007). The results from the above empirical exercise can thus be interpreted as confirmation of the theories previously discussed.

Secondly, the above evidence directly refers to MERCOSUR and suggests the need for adequate structural measures to help smaller countries in developing and improving skills to attract new sectors. This is a very important step to accomplish for the final goal of balanced industrial growth across partners.

APPENDIX

Table 6A.1. Data and sources

Variable	Measure	Source
Gross sectoral production	ISIC rev.2 3 digit	1. Argentina: PADI (ECLAC) 1985–2004
		2. Brazil: PADI (ECLAC) 1985–2003 + IBGE 2004
		3. Paraguay: PADI (ECLAC) 1985–1994+Banco Central de Paraguay
		4. Uruguay: PADI (ECLAC) 1985–2001 + INEC 2002–2004
Sector employment	ISIC rev.2 3 digit	5. Argentina: PADI (ECLAC) 1985–2004
		6. Brazil: PADI (ECLAC) 1985–2003 + IBGE 2004
		7. Paraguay: PADI (ECLAC) 1985–1994+ Ministry of Finance 1991–2001
		8. Uruguay: PADI (ECLAC) 1985–2001 + INEC 2002–2004
Preferential and *mfn* tariffs		9. Argentina: Aladi 1985–2004
		10. Brazil: Aladi 1985–2004
		11. Paraguay: Aladi 1985–2004
		12. Uruguay: Aladi 1985–2004

Table 6A.2. Cross-section correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	1.00	0.40	–0.50	0.00	–0.1	0.4	0.4	0.1	0.500	0.2	0.3	0.1	0.1	–0.5	0.1	0.4	0.1	–0.4	0.3	–0.4	0.1	0.0	0.3	0.3
2	0.40	1.00	–0.20	–0.20	0.2	0.0	0.2	0.3	0.400	0.4	–0.1	–0.2	0.2	–0.3	0.1	0.1	0.0	0.0	–0.1	0.0	–0.2	–0.3	0.4	0.2
3	–0.50	–0.20	1.00	–0.60	–0.1	–0.3	–0.1	–0.2	0.100	–0.5	–0.2	0.5	–0.1	0.6	0.2	–0.3	0.1	0.0	0.1	0.8	0.2	–0.4	–0.6	0.4
4	0.00	–0.20	–0.60	1.00	0.1	0.0	–0.1	0.3	–0.500	0.1	0.1	–0.4	–0.2	–0.3	–0.2	0.1	0.0	0.1	0.1	–0.5	0.4	0.4	0.2	–0.5
5	–0.10	0.20	–0.10	0.10	1.0	0.3	–0.6	0.7	–0.100	0.3	0.5	0.2	0.5	0.0	0.4	0.2	0.4	0.6	–0.3	0.2	–0.3	0.5	0.4	0.1
6	0.40	0.00	–0.30	0.00	0.3	1.0	0.3	0.2	0.500	–0.1	0.6	0.2	–0.1	–0.1	0.1	0.1	0.0	0.1	–0.4	0.0	–0.3	0.0	0.2	0.3
7	0.40	0.20	–0.10	–0.10	–0.6	0.3	1.0	–0.3	0.300	–0.4	–0.3	–0.2	0.0	–0.3	–0.4	–0.1	–0.2	–0.6	0.3	–0.2	0.2	–0.5	–0.2	0.0
8	0.10	0.30	–0.20	0.30	0.7	0.2	–0.3	1.0	–0.200	0.1	0.7	0.3	0.4	0.0	0.0	0.0	0.2	0.4	0.0	0.1	0.1	0.4	0.4	0.1
9	0.50	0.40	0.10	–0.50	–0.1	0.5	0.3	–0.2	1.000	0.1	0.3	0.3	–0.2	–0.1	0.3	0.0	–0.1	–0.2	–0.3	0.2	–0.3	–0.6	–0.1	0.8
10	0.20	0.40	–0.50	0.10	0.3	–0.1	–0.4	0.1	0.100	1.0	0.0	–0.2	0.3	–0.2	0.0	0.3	–0.1	0.3	–0.4	–0.2	–0.6	0.3	0.6	–0.1
11	0.30	–0.10	–0.20	0.10	0.5	0.6	–0.3	0.7	0.300	0.0	1.0	0.5	0.0	0.0	0.2	0.0	0.2	0.4	–0.2	0.1	0.0	0.2	0.1	0.6
12	0.10	–0.20	0.50	–0.40	0.2	0.2	–0.2	0.3	0.300	–0.2	0.5	1.0	0.0	0.6	0.1	–0.3	0.1	0.0	0.2	0.4	0.0	0.0	–0.2	0.6
13	0.10	0.20	–0.10	–0.20	0.5	–0.1	0.0	0.4	–0.200	0.3	0.0	0.0	1.0	–0.1	0.0	0.5	0.3	0.1	0.2	0.1	–0.2	0.4	0.3	–0.2
14	–0.50	–0.30	0.60	–0.30	0.0	–0.1	–0.3	0.0	–0.100	–0.2	0.0	0.6	–0.1	1.0	–0.1	–0.5	–0.2	0.3	0.1	0.5	0.1	0.0	–0.2	0.1
15	0.10	0.10	0.20	–0.20	0.4	0.1	–0.4	0.0	0.300	0.0	0.2	0.1	0.0	–0.1	1.0	0.5	0.8	0.3	–0.1	0.2	0.0	0.2	0.1	0.4
16	0.40	0.10	–0.30	0.10	0.2	0.1	–0.1	0.0	0.000	0.3	0.0	–0.3	0.5	–0.5	0.5	1.0	0.7	0.1	0.2	–0.2	0.0	0.6	0.4	–0.1
17	0.10	0.00	0.10	0.00	0.4	0.0	–0.2	0.2	–0.100	–0.1	0.2	0.1	0.3	–0.2	0.8	0.7	1.0	0.3	0.3	–0.1	0.3	0.6	0.2	0.1
18	–0.40	0.00	0.00	0.10	0.6	0.1	–0.6	0.4	–0.200	0.3	0.4	0.0	0.1	0.3	0.3	0.1	0.3	1.0	–0.4	0.2	–0.1	0.5	0.3	0.1
19	0.30	–0.10	0.10	0.10	–0.3	–0.4	0.3	0.0	–0.300	–0.4	–0.2	0.2	0.2	0.1	–0.1	0.2	0.3	–0.4	1.0	–0.2	0.8	0.2	–0.2	–0.1
20	–0.40	0.00	0.80	–0.50	0.2	0.0	–0.2	0.1	0.200	–0.2	0.1	0.4	0.1	0.5	0.2	–0.2	–0.1	0.2	–0.2	1.0	–0.1	–0.3	–0.3	0.4
21	0.10	–0.20	0.20	0.40	–0.3	–0.3	0.2	0.1	–0.300	–0.6	0.0	0.0	–0.2	0.1	0.0	0.0	0.3	–0.1	0.8	–0.1	1.0	0.2	–0.3	0.0
22	0.00	–0.30	–0.40	0.40	0.5	0.0	–0.5	0.4	–0.600	0.3	0.2	0.0	0.4	0.0	0.2	0.6	0.6	0.5	0.2	–0.3	0.2	1.0	0.6	–0.4
23	0.30	0.40	–0.60	0.20	0.4	0.2	–0.2	0.4	–0.100	0.6	0.1	–0.2	0.3	–0.2	0.1	0.4	0.2	0.3	–0.2	–0.3	–0.3	0.6	1.0	–0.3
24	0.30	0.20	0.40	–0.50	0.1	0.3	0.0	0.1	0.800	–0.1	0.6	0.6	–0.2	0.1	0.4	–0.1	0.1	0.1	–0.1	0.4	0.0	–0.4	–0.3	1.0

Table 6A.2. Continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	0.40	0.10	0.20	–0.30	–0.5	–0.5	0.4	–0.4	0.200	–0.2	–0.3	0.1	0.1	–0.2	–0.1	0.1	0.0	–0.6	0.6	–0.2	0.2	–0.3	–0.5	0.3
26	0.20	0.40	0.20	–0.50	–0.2	–0.5	–0.1	0.0	0.200	0.3	0.0	0.2	0.2	0.0	–0.1	0.0	–0.1	–0.1	0.1	0.2	–0.1	–0.3	–0.2	0.5
27	0.30	–0.10	–0.10	–0.20	0.2	0.5	–0.1	0.2	0.300	0.1	0.5	0.7	0.0	0.4	–0.1	–0.2	–0.1	0.1	0.0	–0.2	–0.2	0.2	0.2	0.3
28	–0.50	–0.50	0.20	0.20	–0.1	–0.1	–0.1	–0.4	–0.100	–0.3	–0.2	–0.1	–0.5	0.3	0.2	–0.3	0.0	0.1	0.0	0.0	0.3	–0.1	–0.6	0.0
29	–0.20	0.10	0.30	–0.40	–0.4	–0.1	0.1	–0.3	0.200	–0.1	–0.3	–0.1	–0.2	0.0	–0.3	–0.4	–0.6	–0.4	–0.4	0.4	–0.4	–0.7	–0.1	0.1
30	–0.20	–0.40	0.00	0.40	–0.1	0.2	–0.1	–0.2	0.000	–0.2	0.1	0.0	–0.7	0.2	0.3	–0.2	0.2	0.1	0.0	–0.2	0.3	0.1	0.0	–0.1
31	0.70	–0.10	–0.40	0.10	–0.1	0.5	0.3	–0.1	0.400	0.0	0.2	0.0	0.0	–0.5	0.3	0.6	0.1	–0.4	0.1	–0.2	0.0	0.1	0.3	0.1
32	0.10	–0.10	0.10	–0.10	–0.2	0.5	0.1	–0.3	0.400	–0.2	0.0	0.2	–0.6	0.2	0.2	–0.3	–0.2	–0.3	–0.2	0.0	0.0	–0.2	0.1	0.1
33	–0.50	–0.60	0.60	–0.20	–0.3	–0.3	–0.5	–0.3	–0.100	–0.1	0.0	0.4	–0.4	0.6	0.2	–0.2	0.1	0.2	0.0	0.4	0.1	0.0	–0.3	0.2
34	–0.30	0.00	0.40	–0.50	0.3	0.0	–0.6	0.1	0.100	0.3	0.2	0.6	0.1	0.6	0.3	–0.1	0.2	0.5	–0.2	0.3	–0.4	0.3	0.2	0.3
35	0.40	0.50	–0.50	0.30	0.0	0.3	0.2	0.1	0.400	0.1	0.2	–0.1	–0.5	–0.4	–0.1	–0.2	–0.3	–0.1	–0.2	–0.4	–0.1	–0.3	0.2	0.2
36	–0.50	–0.40	0.50	–0.20	–0.2	–0.5	–0.4	–0.3	–0.200	0.0	–0.2	0.1	–0.2	0.6	0.2	–0.1	0.0	0.4	0.0	0.5	0.1	0.1	–0.3	0.1
37	0.40	0.30	–0.10	–0.40	–0.5	0.3	0.8	–0.4	0.500	–0.3	–0.3	0.0	–0.2	–0.2	–0.3	–0.2	–0.4	–0.8	0.1	–0.2	–0.1	–0.6	–0.1	0.0
38	0.10	0.00	–0.10	0.30	–0.2	–0.5	–0.3	–0.1	–0.200	0.4	0.0	0.0	–0.2	0.2	–0.1	0.1	0.1	0.3	0.4	–0.2	0.4	0.3	0.1	0.0
39	0.20	–0.20	–0.20	0.10	–0.2	–0.1	0.0	0.2	–0.300	0.0	0.3	0.4	0.1	0.2	–0.6	–0.3	–0.3	0.0	0.3	–0.3	0.1	0.2	–0.1	0.0
40	–0.20	0.00	–0.20	0.50	–0.3	–0.5	0.0	0.1	–0.500	0.0	–0.2	–0.2	–0.2	0.2	–0.7	–0.5	–0.6	–0.1	0.3	–0.3	0.3	0.0	0.0	–0.4
41	0.00	–0.10	0.20	–0.30	0.2	0.6	0.1	0.2	0.300	–0.2	0.3	0.1	0.1	–0.1	0.1	0.0	–0.2	0.0	–0.5	0.6	–0.3	–0.3	0.1	0.3
42	0.00	0.20	–0.30	–0.20	0.3	0.2	–0.2	0.2	0.100	0.6	0.2	0.2	0.2	0.0	–0.3	–0.2	–0.4	0.1	–0.5	–0.1	–0.8	0.1	0.5	–0.1
43	0.10	–0.40	–0.40	0.70	0.2	0.3	0.0	0.3	–0.200	–0.3	0.5	–0.2	–0.2	–0.3	–0.1	0.1	0.0	0.1	0.0	–0.2	0.3	0.1	–0.1	–0.1
44	0.20	0.20	0.00	0.00	–0.3	0.0	0.6	0.0	0.000	–0.6	–0.2	–0.1	–0.1	–0.2	–0.4	–0.3	–0.4	–0.7	0.3	–0.1	0.3	–0.4	–0.2	–0.1
45	–0.10	0.00	0.30	–0.20	–0.3	–0.4	0.0	–0.3	0.100	–0.1	–0.2	0.4	–0.4	0.3	–0.1	–0.5	–0.2	–0.2	0.3	–0.2	0.1	–0.3	–0.5	0.3
46	0.30	0.20	–0.60	–0.10	0.1	0.3	0.0	0.2	0.200	0.3	0.4	0.0	0.0	–0.3	–0.3	–0.1	–0.2	0.1	–0.4	–0.5	–0.5	0.0	0.2	0.2
47	0.40	0.60	–0.20	–0.40	0.2	0.1	0.1	–0.1	0.500	0.3	–0.1	–0.2	0.3	–0.7	0.5	0.5	0.4	–0.2	–0.2	–0.1	–0.4	–0.2	0.2	0.3
48	0.10	0.50	–0.10	–0.40	–0.3	0.1	0.5	–0.4	0.300	0.2	–0.6	–0.3	0.0	–0.2	–0.3	–0.2	–0.4	–0.4	–0.3	–0.1	–0.5	–0.5	0.2	–0.2

Table 6A.2. Continued

	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
1	0.04	0.00	0.00	0.00	0.00	–0.3	0.00	–0.3	0.00	–0.2	0.00	0.00	0.00	0.00	0.00	0.00	–0.4	–0.2	–0.2	0.00	0.00	0.00	0.00	0.00
2	0.04	1.00	0.00	–0.4	0.00	–0.7	–0.2	–0.5	0.00	0.00	–0.1	0.00	–0.1	0.00	0.00	0.00	–0.1	0.00	–0.4	–0.1	0.00	0.00	0.00	0.00
3	0.00	0.00	1.00	0.00	–0.2	0.00	0.00	0.00	0.00	0.00	0.00	–0.1	0.00	0.00	0.00	–0.1	0.00	0.00	–0.1	–0.1	0.00	0.00	–0.2	–0.1
4	0.00	–0.4	0.00	1.00	–0.3	0.00	–0.3	0.00	0.00	0.00	–0.1	0.00	–0.2	0.00	–0.1	0.00	–0.4	–0.5	0.00	–0.2	0.00	–0.2	–0.3	–0.3
5	0.00	0.00	–0.2	–0.3	1.00	–0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	–0.4	–0.1	0.00	0.00	0.00	–0.2	0.00	–0.1	0.00	0.00	0.00
6	–0.30	–0.7	0.00	0.00	–0.3	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	–0.2	0.00	–0.2	–0.2	0.00	–0.2	0.00	–0.2	–0.3	–0.2
7	0.01	–0.2	0.00	–0.3	0.00	0.00	1.00	0.00	–0.2	–0.4	0.00	–0.3	0.00	–0.1	–0.2	–0.4	0.00	–0.1	0.00	0.00	–0.4	–0.1	0.00	–0.1
8	–0.30	–0.5	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	–0.1	0.00	–0.3	–0.3	–0.1	0.00	0.00	–0.1	0.00	0.00	–0.2	–0.1	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	–0.2	0.00	1.00	0.00	–0.5	0.01	–0.3	0.00	0.00	0.00	0.00	–0.1	–0.3	–0.4	0.00	–0.4	–0.4	–0.3
10	–0.20	0.00	0.00	0.00	0.00	0.00	–0.4	0.00	0.00	1.00	–0.2	0.00	–0.3	0.00	0.00	–0.2	0.00	0.00	–0.5	–0.5	0.00	0.00	0.00	–0.1
11	0.00	–0.1	0.00	–0.1	0.00	0.00	0.00	0.00	–0.5	–0.2	1.00	–0.4	0.00	0.00	0.00	0.00	–0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	–0.1	0.00	0.00	0.00	–0.3	–0.1	0.01	0.00	–0.4	1.00	–0.5	0.00	0.00	0.00	–0.2	–0.3	–0.2	–0.6	0.00	–0.4	–0.4	–0.4
13	0.03	–0.1	0.00	–0.2	0.00	0.00	0.00	0.00	–0.3	–0.3	0.00	–0.5	1.00	–0.4	–0.1	0.00	0.00	0.00	–0.3	0.00	0.00	0.00	0.00	0.00
14	0.01	0.00	0.00	0.00	–0.4	0.00	–0.1	–0.3	0.00	0.00	0.00	0.00	–0.4	1.00	0.00	0.00	–0.7	–0.1	–0.1	–0.5	0.00	–0.1	–0.3	–0.4
15	0.01	0.00	0.00	–0.1	–0.1	–0.2	–0.2	–0.3	0.00	0.00	0.00	0.00	–0.1	0.00	1.00	0.00	–0.3	0.00	0.00	0.00	0.00	0.00	–0.5	–0.3
16	0.01	0.00	–0.1	0.00	0.00	0.00	–0.4	–0.1	0.00	–0.2	0.00	0.00	0.00	0.00	0.00	1.00	–0.5	0.00	0.00	0.00	0.00	0.00	–0.6	0.00
17	–0.40	–0.1	0.00	–0.4	0.00	–0.2	0.00	0.00	0.00	0.00	–0.1	–0.2	0.00	–0.7	–0.3	–0.5	1.00	0.00	0.00	0.00	–0.6	0.00	0.00	0.00
18	–0.20	0.00	0.00	–0.5	0.00	–0.2	–0.1	0.00	–0.1	0.00	0.00	–0.3	0.00	–0.1	0.00	0.00	0.00	1.00	–0.3	–0.1	0.00	0.00	0.00	0.00
19	–0.20	–0.4	–0.1	0.00	–0.2	0.00	0.00	–0.1	–0.3	–0.5	0.00	–0.2	–0.3	–0.1	0.00	0.00	0.00	–0.3	1.00	0.00	–0.3	0.00	–0.2	–0.6
20	0.02	–0.1	–0.1	–0.2	0.00	–0.2	0.00	0.00	–0.4	–0.5	0.00	–0.6	0.00	–0.5	0.00	0.00	0.00	–0.1	0.00	1.00	0.00	0.00	0.00	0.00
21	0.04	0.00	0.00	0.00	–0.1	0.00	–0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	–0.6	0.00	–0.3	0.00	1.00	0.00	–0.1	0.00
22	0.00	0.00	0.00	–0.2	0.00	–0.2	–0.1	–0.2	–0.4	0.00	0.00	–0.4	0.00	–0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
23	0.02	0.00	–0.2	–0.3	0.00	–0.3	0.00	–0.1	–0.4	0.00	0.00	–0.4	0.00	–0.3	–0.5	–0.6	0.00	0.00	–0.2	0.00	–0.1	0.00	1.00	0.00
24	0.01	0.00	-0.1	-0.3	0.00	-0.2	-0.1	0.00	-0.3	-0.1	0.00	-0.4	0.00	-0.4	-0.3	0.00	0.00	0.00	-0.6	0.00	0.00	0.00	0.00	1.00

Table 6A.2. Continued

	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
25	0.04	0.00	0.00	0.00	0.00	–0.3	0.00	–0.3	0.00	–0.2	0.00	0.00	0.00	0.00	0.00	0.00	–0.4	–0.2	–0.2	0.00	0.00	0.00	0.00	0.00
26	0.04	1.00	0.00	–0.4	0.00	–0.7	–0.2	–0.5	0.00	0.00	–0.1	0.00	–0.1	0.00	0.00	0.00	–0.1	0.00	–0.4	–0.1	0.00	0.00	0.00	0.00
27	0.00	0.00	1.00	0.00	–0.2	0.00	0.00	0.00	0.00	0.00	0.00	–0.1	0.00	0.00	0.00	–0.1	0.00	0.00	–0.1	–0.1	0.00	0.00	–0.2	–0.1
28	0.00	–0.4	0.00	1.00	–0.3	0.00	–0.3	0.00	0.00	0.00	–0.1	0.00	–0.2	0.00	–0.1	0.00	–0.4	–0.5	0.00	–0.2	0.00	–0.2	–0.3	–0.3
29	0.00	0.00	–0.2	–0.3	1.00	–0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	–0.4	–0.1	0.00	0.00	0.00	–0.2	0.00	–0.1	0.00	0.00	0.00
30	–0.30	–0.7	0.00	0.00	–0.3	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	–0.2	0.00	–0.2	–0.2	0.00	–0.2	0.00	–0.2	–0.3	–0.2
31	0.01	–0.2	0.00	–0.3	0.00	0.00	1.00	0.00	–0.2	–0.4	0.00	–0.3	0.00	–0.1	–0.2	–0.4	0.00	–0.1	0.00	0.00	–0.4	–0.1	0.00	–0.1
32	–0.30	–0.5	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	–0.1	0.00	–0.3	–0.3	–0.1	0.00	0.00	–0.1	0.00	0.00	–0.2	–0.1	0.00
33	0.00	0.00	0.00	0.00	0.00	0.00	–0.2	0.00	1.00	0.00	–0.5	0.01	–0.3	0.00	0.00	0.00	0.00	–0.1	–0.3	–0.4	0.00	–0.4	–0.4	–0.3
34	–0.20	0.00	0.00	0.00	0.00	0.00	–0.4	0.00	0.00	1.00	–0.2	0.00	–0.3	0.00	0.00	–0.2	0.00	0.00	–0.5	–0.5	0.00	0.00	0.00	–0.1
35	0.00	–0.1	0.00	–0.1	0.00	0.00	0.00	0.00	–0.5	–0.2	1.00	–0.4	0.00	0.00	0.00	0.00	–0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	–0.1	0.00	0.00	0.00	–0.3	–0.1	0.01	0.00	–0.4	1.00	–0.5	0.00	0.00	0.00	–0.2	–0.3	–0.2	–0.6	0.00	–0.4	–0.4	–0.4
37	0.03	–0.1	0.00	–0.2	0.00	0.00	0.00	0.00	–0.3	–0.3	0.00	–0.5	1.00	–0.4	–0.1	0.00	0.00	0.00	–0.3	0.00	0.00	0.00	0.00	0.00
38	0.01	0.00	0.00	0.00	–0.4	0.00	–0.1	–0.3	0.00	0.00	0.00	0.00	–0.4	1.00	0.00	0.00	–0.7	–0.1	–0.1	–0.5	0.00	–0.1	–0.3	–0.4
39	0.01	0.00	0.00	–0.1	–0.1	–0.2	–0.2	–0.3	0.00	0.00	0.00	0.00	–0.1	0.00	1.00	0.00	–0.3	0.00	0.00	0.00	0.00	0.00	–0.5	–0.3
40	0.01	0.00	–0.1	0.00	0.00	0.00	–0.4	–0.1	0.00	–0.2	0.00	0.00	0.00	0.00	0.00	1.00	–0.5	0.00	0.00	0.00	0.00	0.00	–0.6	0.00
41	–0.40	–0.1	0.00	–0.4	0.00	–0.2	0.00	0.00	0.00	0.00	–0.1	–0.2	0.00	–0.7	–0.3	–0.5	1.00	0.00	0.00	0.00	–0.6	0.00	0.00	0.00
42	–0.20	0.00	0.00	–0.5	0.00	–0.2	–0.1	0.00	–0.1	0.00	0.00	–0.3	0.00	–0.1	0.00	0.00	0.00	1.00	–0.3	–0.1	0.00	0.00	0.00	0.00
43	–0.20	–0.4	–0.1	0.00	–0.2	0.00	0.00	–0.1	–0.3	–0.5	0.00	–0.2	–0.3	–0.1	0.00	0.00	0.00	–0.3	1.00	0.00	–0.3	0.00	–0.2	–0.6
44	0.02	–0.1	–0.1	–0.2	0.00	–0.2	0.00	0.00	–0.4	–0.5	0.00	–0.6	0.00	–0.5	0.00	0.00	0.00	–0.1	0.00	1.00	0.00	0.00	0.00	0.00
45	0.04	0.00	0.00	0.00	–0.1	0.00	–0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	–0.6	0.00	–0.3	0.00	1.00	0.00	–0.1	0.00
46	0.00	0.00	0.00	–0.2	0.00	–0.2	–0.1	–0.2	–0.4	0.00	0.00	–0.4	0.00	–0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
47	0.02	0.00	–0.2	–0.3	0.00	–0.3	0.00	–0.1	–0.4	0.00	0.00	–0.4	0.00	–0.3	–0.5	–0.6	0.00	0.00	–0.2	0.00	–0.1	0.00	1.00	0.00
48	0.01	0.00	–0.1	–0.3	0.00	–0.2	–0.1	0.00	–0.3	–0.1	0.00	–0.4	0.00	–0.4	–0.3	0.00	0.00	0.00	–0.6	0.00	0.00	0.00	0.00	1.00

Table 6A.3. Summary statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
	overall	6.71	2.26	1.91	11.86	N = 960
y	between		2.27	2.17	10.91	n = 48
	within		0.26	3.07	7.75	T = 20
	overall	9.65	2.35	1.39	14.41	N = 960
emp	between		2.32	5.57	14.1	n = 48
	within		0.5	5.21	10.97	T = 20
	overall	6.08	2.34	1.09	11.86	N = 960
imp	between		2.34	1.36	10.24	n = 48
	within		0.37	2.41	7.9	T = 20
	overall	0.42	0.29	0	0.69	N = 960
marg	between		0.02	0.38	0.45	n = 48
	within		0.29	–0.03	0.73	T = 20

Table 6A.4. Group-specific dynamic OLS

Eq	marg	S.E.	S.E Param	emp	S.E. Param	S.E Andrews	inp	S.E. Param	S.E Andrews
ARG									
Meat	0.00	0.03	0.00	–0.12	0.03	0.00	0.07	0.06	0.00
Drinks and Tobacco	0.06	0.23	0.03	0.05	0.18	0.03	–0.12	0.14	0.02
Apparel and Textiles	0.03	0.09	0.01	0.03	0.08	0.01	0.05	0.04	0.00
Leather and Footwear	0.01	0.00	0.00	0.02	0.00	0.00	0.05	0.00	0.00
Wood	0.02	0.02	0.00	–0.11	0.03	0.00	0.05	0.05	0.00
Paper and Paper Products	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
Oil Refinery	0.04	0.07	0.01	0.05	0.09	0.01	–0.02	0.06	0.01
Chemicals	–0.22	0.02	0.00	–0.05	0.02	0.00	0.07	0.05	0.00
Non-Metallic Mineral Products	0.03	0.12	0.01	0.03	0.13	0.01	0.03	0.12	0.01
Metals	–1.86	0.36	0.04	–1.00	0.20	0.04	0.11	0.22	0.04
Metal products, Machinery and Eq.	–0.77	0.10	0.02	–0.73	0.10	0.02	0.06	0.06	0.01
Manufacturing, n.e.c.	0.09	0.18	0.07	0.11	0.19	0.04	–0.14	0.10	0.04
BRA									
Meat	–0.06	0.00	0.00	–0.52	0.01	0.00	0.04	0.00	0.00
Drinks and Tobacco	–0.43	0.06	0.01	–0.68	0.11	0.02	0.01	0.05	0.01
Apparel and Textiles	0.04	0.01	0.01	0.02	0.01	0.01	0.02	0.00	0.00
Leather and Footwear	–0.92	0.01	0.01	–0.26	0.00	0.00	0.00	0.00	0.00
Wood	0.06	0.11	0.02	0.08	0.13	0.03	0.03	0.02	0.00
Paper and Paper Products	–0.93	0.09	0.02	–2.61	0.16	0.04	0.00	0.04	0.01
Oil Refinery	–0.52	0.08	0.01	–0.78	0.08	0.01	0.02	0.06	0.01
Chemicals	–0.51	0.05	0.01	–1.15	0.10	0.02	0.02	0.02	0.00
Non-Metallic Mineral Products	–1.06	0.05	0.00	–1.80	0.05	0.00	0.00	0.02	0.00
Metals	–0.47	0.05	0.01	–0.81	0.08	0.01	0.03	0.03	0.00
Metal products, Machinery and Eq.	0.03	0.08	0.01	0.03	0.08	0.02	0.04	0.02	0.00
Manufacturing, n.e.c.	–0.33	0.09	0.03	–0.37	0.13	0.05	0.01	0.05	0.01
PRY									
Meat	0.01	0.02	0.00	0.00	0.01	0.00	0.05	0.03	0.00
Drinks and Tobacco	0.03	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00
Apparel and Textiles	0.00	0.06	0.01	0.00	0.02	0.00	0.06	0.07	0.01
Leather and Footwear	0.00	0.03	0.00	0.00	0.01	0.00	0.04	0.04	0.01
Wood	0.02	0.01	0.00	0.01	0.02	0.00	0.03	0.04	0.00
Paper and Paper Products	0.05	0.01	0.01	–0.10	0.00	0.00	0.03	0.00	0.00
Oil Refinery	0.02	0.02	0.02	–0.01	0.00	0.00	0.03	0.01	0.01
Chemicals	0.03	0.08	0.01	–0.23	0.06	0.01	0.04	0.04	0.00
Non-Metallic Mineral Products	0.03	0.10	0.01	–0.20	0.09	0.01	0.07	0.18	0.02
Metals	0.03	0.04	0.01	0.01	0.03	0.00	0.09	0.05	0.01
Metal products, Machinery and Eq.	–0.26	0.00	0.00	–0.34	0.00	0.00	0.04	0.00	0.00
Manufacturing, n.e.c.	–0.27	0.19	0.02	0.00	0.05	0.01	0.03	0.02	0.00
URY									
Meat	0.00	0.02	0.00	0.00	0.02	0.00	0.06	0.04	0.00
Drinks and Tobacco	–0.25	0.06	0.00	0.00	0.03	0.00	0.07	0.07	0.01
Apparel and Textiles	–0.07	0.03	0.00	–0.05	0.05	0.00	0.05	0.06	0.00
Leather and Footwear	–0.15	0.00	0.00	–0.02	0.00	0.00	0.06	0.00	0.00
Wood	–0.07	0.05	0.00	0.00	0.02	0.00	0.05	0.06	0.01
Paper and Paper Products	0.01	0.02	0.00	0.01	0.02	0.00	0.05	0.06	0.01
Oil Refinery	0.01	0.02	0.00	0.02	0.02	0.00	0.06	0.01	0.00
Chemicals	–0.07	0.03	0.00	0.00	0.06	0.00	0.06	0.10	0.01
Non-Metallic Mineral Products	0.00	0.01	0.00	0.00	0.01	0.00	0.08	0.04	0.00
Metals	–0.17	0.00	0.00	0.03	0.01	0.01	0.05	0.00	0.00
Metal products, Machinery and Eq.	–0.44	0.02	0.00	0.00	0.02	0.00	0.04	0.05	0.01
Manufacturing, n.e.c.	0.05	0.07	0.02	0.00	0.02	0.00	–0.07	0.05	0.01
Group Mean	0.00	***		–0.07	***		0.05	***	

Table 6A.5. Group-specific dynamic OLS – heterogeneous time trend

Eq	marg	S.E.	S.E Param	emp	S.E. Param	S.E Andrews	inp	S.E. Param	S.E Andrews
			ARG						
Meat	–0.19	–7.88	0.02	0.25	6.02	0.04	1.07	0.83	0.02
Drinks and Tobacco	1.17	4.31	0.27	1.99	7.94	0.25	–0.19	2.22	0.16
Apparel and Textiles	0.60	3.29	0.18	0.31	1.70	0.18	0.65	0.06	0.06
Leather and Footwear	0.15	3.53	0.04	0.27	21.08	0.01	0.74	0.02	0.02
Wood	0.03	0.18	0.18	0.19	0.75	0.26	1.00	1.34	0.08
Paper and Paper Products	0.18	6.32	0.03	0.00	0.03	0.04	0.91	0.04	0.04
Oil Refinery	–0.34	–4.52	0.08	0.04	0.63	0.07	0.80	0.07	0.07
Chemicals	–0.21	0.01	0.01	0.12	6.88	0.02	1.26	0.02	0.01
Non-Metallic Mineral Products	0.11	0.89	0.12	0.67	5.33	0.13	0.48	2.33	0.11
Metals	–0.18	–0.36	0.51	0.68	2.17	0.31	1.68	0.30	0.29
Metal products, Machinery and Eq.	–0.85	–7.25	0.12	–0.20	–1.18	0.17	1.23	1.15	0.09
Manufacturing, n.e.c.	1.38	3.89	0.36	3.80	8.24	0.46	–0.38	1.74	0.20
			BRA						
Meat	–0.44	–3.50	0.13	–0.54	–7.66	0.07	0.39	0.07	0.07
Drinks and Tobacco	–0.58	–1.92	0.30	–0.65	–1.89	0.35	0.13	0.87	0.15
Apparel and Textiles	0.56	3.29	0.17	–0.03	–0.18	0.14	0.35	0.87	0.08
Leather and Footwear	–0.36	–3.93	0.09	–0.31	–8.41	0.04	0.27	0.04	0.03
Wood	2.16	10.54	0.21	1.36	7.35	0.19	0.83	0.04	0.04
Paper and Paper Products	–0.95	–3.40	0.28	–2.55	–4.27	0.60	0.04	0.80	0.12
Oil Refinery	–0.47	–3.27	0.14	–1.02	–5.18	0.20	0.27	0.09	0.08
Chemicals	–0.98	0.08	0.08	–0.93	–7.73	0.12	0.02	0.03	0.03
Non-Metallic Mineral Products	–0.96	1.21	0.09	–1.75	–1.17	0.08	0.08	0.50	0.04
Metals	–0.49	–4.58	0.11	–1.02	–4.41	0.23	0.46	0.79	0.07
Metal products, Machinery and Eq.	0.34	1.90	0.18	0.16	0.58	0.27	0.61	0.08	0.07
Manufacturing, n.e.c.	–0.11	–0.30	0.37	1.23	1.08	1.14	0.02	0.76	0.16
			PRY						
Meat	0.18	3.45	0.05	0.03	4.71	0.01	0.74	0.05	0.05
Drinks and Tobacco	0.14	5.67	0.02	0.10	16.67	0.01	0.34	0.02	0.01
Apparel and Textiles	1.19	1.35	0.88	–0.13	–1.22	0.11	1.05	2.06	0.22
Leather and Footwear	0.59	25.57	0.02	–0.11	0.01	0.01	–0.09	0.03	0.03
Wood	–1.32	–3.75	0.35	0.60	5.63	0.11	–0.79	3.39	0.25
Paper and Paper Products	0.65	4.93	0.13	–0.20	–3.14	0.07	0.25	0.06	0.06
Oil Refinery	–0.04	–0.13	0.29	0.10	1.61	0.06	0.59	0.09	0.08
Chemicals	0.78	3.91	0.20	–0.19	–2.41	0.08	0.40	0.90	0.08
Non-Metallic Mineral Products	0.46	2.81	0.16	–0.24	–1.84	0.13	1.45	4.20	0.31
Metals	0.77	7.14	0.11	0.00	0.11	0.04	1.43	0.10	0.10
Metal products, Machinery and Eq.	–0.02	–0.32	0.06	–0.43	–7.78	0.06	0.67	0.03	0.03
Manufacturing, n.e.c.	–0.08	–0.32	0.25	0.17	2.44	0.07	0.52	0.35	0.03
			URY						
Meat	0.03	1.32	0.02	–0.01	–0.30	0.02	0.97	1.27	0.07
Drinks and Tobacco	–0.30	–4.70	0.06	0.05	1.39	0.04	1.38	1.35	0.09
Apparel and Textiles	–0.34	–6.84	0.05	0.50	4.78	0.10	0.73	0.08	0.08
Leather and Footwear	–0.23	0.01	0.01	–0.02	0.00	0.00	0.87	0.01	0.01
Wood	–0.43	–1.72	0.25	0.12	1.40	0.08	1.27	1.81	0.15
Paper and Paper Products	–0.09	–7.42	0.01	0.29	23.92	0.01	1.33	0.0	0.03
Oil Refinery	0.21	3.67	0.06	0.29	15.83	0.02	0.82	0.26	0.02
Chemicals	–0.03	–0.86	0.04	–0.02	–0.31	0.06	1.02	1.94	0.11
Non-Metallic Mineral Products	0.07	6.09	0.01	0.02	2.63	0.01	1.57	0.64	0.02
Metals	–0.08	–0.90	0.09	0.43	4.25	0.10	0.71	0.88	0.10
Metal products, Machinery and Eq.	0.01	0.13	0.05	–0.33	–9.34	0.04	0.86	0.72	0.05
Manufacturing, n.e.c.	1.21	2.29	0.53	0.01	0.06	0.20	–0.13	2.13	0.34
Group Mean	0.06 ***			0.06 ***			0.64 ***		

Table 6A.6. Panel OLS – exclusion of machinery, n.e.c.

	[1] Ordinary		[2] Common Time Effect		[3] Ordinary		[4] Common Time Effect	
				ALL				
marg	0.051	***	0.042	**	0.156	***	0.157	***
	0.019		0.024		0.026		0.03	
emp	0.117	***	0.116	***	0.05	***	0.058	***
	0.012		0.012		0.018		0.018	
inp	0.683	***	0.684	***	0.667	***	0.669	***
	0.02		0.02		0.017		0.016	
N = 44	T = 20							
				Reg. RCA sectors				
marg	0.131	***	0.101	**	0.224	***	0.319	***
	0.036		0.048		0.058		0.075	
emp	0.168	***	0.142	***	–0.018		–0.023	
	0.029		0.028		0.05		0.047	
inp	0.638	***	0.668	***	0.535	***	0.586	***
	0.034		0.036		0.04		0.037	
N = 11	T = 20							
				Non–reg.RCA sectors				
marg	0.036	**	0.03		0.084	***	0.077	**
	0.021		0.028		0.03		0.034	
emp	0.11	***	0.11	***	0.066	***	0.071	***
	0.014		0.014		0.019		0.018	
inp	0.699	***	0.697	***	0.701	***	0.699	***
	0.024		0.025		0.018		0.018	
N = 33	T = 20							
				Large partners				
marg	0.218	***	0.186	***	0.237	***	0.207	***
	0.04		0.047		0.032		0.046	
emp	0.217	***	0.196	***	–0.01		–0.005	
	0.036		0.037		0.05		0.052	
inp	0.56	***	0.565	***	0.609	***	0.616	***
	0.03		0.028		0.021		0.021	
N = 16	T = 20							
				Small partners				
marg	0.031		0.041		–0.075	**	–0.057	
	0.037		0.047		0.043		0.045	
emp	0.122	***	0.121	***	0.114	***	0.117	***
	0.016		0.016		0.019		0.016	
inp	0.795	***	0.796	***	0.797	***	0.793	***
	0.044		0.044		0.02		0.017	
N = 17	T = 20							

NOTES

1. 1) factor market competition (the higher the share of industry in a country the higher the wages, hence the lower the profitability); 2) product market competition (the higher the share of industry, the lower the output prices, hence the lower the profitability).
2. 1) forward linkages due to better and cheaper inputs in locations with more firms; 2) backward linkages due to the possibility of higher sales and more firms in countries with higher industrialization.
3. The correspondence between CNAP and ISIC rev. 2 is available from the author upon request.
4. Even in more advanced sectors with respect to smaller partners.
5. The panel ADF test hit rates between 0.9 and 0.95 for many of the experiments with the exceptions occurring mainly T=10 and, while the group ADF test is generally a little more oversized than its pooled counterpart, the panel ADF test is least affected by the non-baseline experiments considered, such as cross-section correlation and cross unit cointegration.
6. Actually the log transformation of the preferential margin is calculated as $\ln(1+marg)$ in order to avoid missing values. Thus the coefficients from the estimates need to be divided by $(1+\overline{m})$ where $\overline{m}$ corresponds to the mean of *marg*. In the case of Table 6.7, $(1+\overline{m})=1.59$, consequently the effects from integration with and without heterogeneous trends correspond to 0.025 and 0.10, respectively.
7. These are the sectors in bold in Table 6.3 in Section 6.4 above.
8. For both groups $(1+\overline{m})=1.6$, the coefficient for the RCA sectors then corresponds to 0.06–0.19 and to 0.02–0.05 for the remaining sectors.
9. To give an example, the distance between Brazil and Paraguay in Machinery and Equipment is not as short as the distance between the two in Meat.
10. Again here $(1+\overline{m})=1.6$, which corrects the estimates to 0.12 for the larger partners and –0.06 for the smaller ones.
11. We even tried to split the sample of non-regional comparative advantage sectors by country but the general result of Table 6.9 is not really affected. Another exercise was to split the sample of comparative advantage sectors between large (Brazil) and small partners, the general result not changing substantially.

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