

Size of Regional Trade Agreements and Regional Trade Bias

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Abstract

We test the relationship between size of regional trade agreement (RTA) and regional trade bias using a gravity equation on a large sample of 143 countries for the period 1980-2003. We find that regional trade bias declines with the size of the club and that three of the four expanding RTAs have already surpassed their 'optimal' sizes. There is no evidence that RTAs have set protection levels against outsiders non-cooperatively.

Key Words: RTA, regional trade bias, trade flows

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1. Introduction

RTAs have been a prominent feature of the world economy since the creation of the European Economic Community in the late 1950s. Two aspects of this feature are worth noting. The first is the rapid growth and complexity of these arrangements, although quite a few of them are bilateral agreements of small consequence for international trade (Pomfret, 2006, p.42). The second is that several plurilateral RTAs --in Europe, North America, Central America, and South East Asia-- have expanded in size and economic importance. The RTA phenomenon has sparked a growing literature on the role of RTAs in the international trade system (Panagariya, 2000). Our paper intends to address empirically that part of the literature dealing with the relationship between RTA size and regional trade bias and the potential that it may have on trade diversion against outsiders. Our research strategy is to estimate the effects of regional trade bias and external protectionism on bilateral trade flows using the gravity equation (1):

$$\ln(x_{ijt}) = \alpha_0 + \alpha_1 \ln(y_i y_j)_t + \alpha_2 \ln(I_i I_j)_t + \alpha_3 \ln(d_{ij}) + \alpha_4 \text{FEAT}_{ijt} + \beta_1 \text{RTA}_{ijt} + \beta_2 \text{InterRTA}_{ijt} + u_{ijt} \quad (1),$$

where x_{ijt} = the real bilateral trade between country i and country j at time t , y = real gross domestic product, I = real per capita income, d = distance, FEAT = a vector of dummy variables that capture idiosyncratic country characteristics, RTA = dummy variables to indicate if two trading partners belong to the same regional trade agreement, InterRTA = a dummy variable to indicate if two countries belong to different RTA, and u_{ijt} = error term. The vector of dummy variables in FEAT includes year dummy variables and time-invariant factors such as common language, common colonizer, shared land border, and common money; see Fratianni and Kang (2006). The gravity equation has been derived from different models of international trade

(Anderson, 1979; Deardorff, 1998 among others) and used extensively empirically (see, for example, Frankel et al., 1998; Rose, 2000; Anderson and Van Wincoop, 2003).

Our data set consist of 215,500 annual real bilateral trade flows over the period 1980 to 2003. The dataset and data description are available from the Indiana University CIBER Website (<http://www.kelley.iu.edu/ciber/research.cfm>). We identify eleven separate RTAs accounting for 40 percent of world trade: ASEAN (Association of South East Asian Nations), CARICOM (Caribbean Community and Common Market), EU (European Union), NAFTA (North American Free Trade Agreement), ANDEAN (Andean Community of Nations), CACM (Central American Common Market), MERCOSUR (Southern Common Market), PATCRA (Papua New Guinea-Australia Trade and Commercial Relations Agreement), ANZCERTA (the Australia-New Zealand Closer Economic Relations Trade Agreement), SPARTECA (South Pacific Region Trade and Economic Cooperation Agreement), and USIS (the United States-Israel Free Trade Agreement). The first four of the 11 RTAs have expanded since 1980.

The literature generates different implications on the sign and size of β_1 and β_2 . A trade-diverting RTA implies $\beta_1 > 0$ and $\beta_2 < 0$. As RTAs expand, assuming that external tariffs are set non-cooperatively, some of the trade occurring between blocs is diverted to trade inside the blocs (Krugman, 1991); this implies that β_1 becomes more positive and β_2 more negative. If external tariffs are set cooperatively, instead, both β_1 and β_2 can be positive (Krugman, 1993); and the sum of the two coefficients can be rising as a result of a generalized fall in protectionism. In other papers, the size of the RTA is determined endogenously. For example, in both Bond and Syropoulos (1996) and Andriamananjara (1999), the optimal expansion of an RTA occurs short of

encompassing all countries in the world. In Bond and Syropoulos, the expansion is driven by the insiders' welfare level and in Andriamananjara by the insider-firms' profits. Assuming that trade can proxy for welfare or profits, these models predict an inverted U-shaped β_1 in RTA size and a declining β_2 .

2. Findings

OLS estimates of (1), with fixed-year effects, are reported in Table 1. Virtually all coefficients are statistically significant at the 1 percent significance level. Real imports respond positively to real GDP (with a unit elasticity), common border, shared culture (such as language and colonial relationship), and common institutions (such as currency); and negatively to distance. These results are in line with those reported by the literature. For the rest of the paper, we concentrate on the estimates of β_1 and β_2 .

Table 1

The first column of the table shows that positive regional trade bias is present in five of the seven non-expanding RTAs: ANZCERTA and PATCRA have a negative regional trade bias. Different patterns emerge in the four expanding RTAs. For ASEAN and CARICOM, the regional trade bias is positive but declining. The decline for ASEAN occurs when the members go from nine to ten; for CARICOM from 13 to 14. NAFTA has a negative regional bias when the membership is restricted to Canada and the United States, but then the bias becomes positive with the addition of Mexico. For the EU, the bias starts negatively and then peaks in the positive range with ten members. Thus, in three of the four expanding RTAs, the evidence is consistent with the club being too big, as seen from the viewpoint of the incumbents. NAFTA has potential for further expansion.

The second column of the table breaks down the regional trade between old and new members of the club; the table reports the results only for the EU. In the EU10, the regional trade bias among the old nine members, conditional on the 10th member (Greece), translates into 13 percent more trade than not being in the club ($\exp(0.1224)=1.13$). The entry of Greece adds 37 percent more trade ($\exp(0.3184)=1.37$) between Greece and the old members relative to not being in the club. Since the interaction among old members represents 80 percent of the observations, while the interaction between old members and Greece account for 20 percent of the observations, we obtain that the total regional trade bias in the EU10 is approximately 18 percent. Similar reasoning applies to EU12 and EU15. Portugal and Spain add a positive regional trade bias in their interaction with the old ten members, but this bias is compensated by an opposite bias of the old members interacting among themselves and of Portugal interacting with Spain. Austria, Finland, and Sweden also add a positive regional trade bias in their interaction with the old 12 members and with one another, but this bias is compensated by the negative bias of the old 12 members interacting among themselves. In sum, as the club expands old members lose some of the positive regional trade bias to new members. The total bias depends on these opposing forces: the size of β_1 peaks at EU10.

The migration of positive regional trade bias from old to new members holds also for ASEAN and CARICOM; the estimation is not shown but is available upon request. In ASEAN10, the regional trade bias among the old nine members, conditional on the 10th member (Cambodia), is 241 percent and is approximately half of the bias without Cambodia. The entry of the latter into the club adds a 230 percent regional bias but its weight in the club is very small. The result is a sharp reduction in the overall trade bias of ASEAN10 with respect to ASEAN9. Similarly, in

CARICOM14, the 13 old members, conditional on the 14th member (Haiti), experience a sharp reduction in the regional bias relative to CARICOM 13; the marginal impact on the club's trade bias of Haiti, furthermore, is statistically not different from zero. Consequently, the total regional bias falls in CARICOM14 relative to CARICOM13.

The positive and statistically significant estimate of β_2 is consistent with the hypothesis that RTAs set external tariffs cooperatively. GATT, the WTO, and multilateral rounds have played a role in the global reduction of tariff rates and non-tariff barriers. This result is not consistent with the view that RTAs are stumbling blocs to freer trade.

3. Conclusions

We have tested the relationship between RTA size and regional trade bias using a gravity equation on a large sample of 143 countries for the period 1980-2003. The critical result is that regional trade bias declines with the size of the club. Seen from the perspective of the incumbents, three of the four expanding RTAs have already surpassed their 'optimal' size. This could result not only from strategic trade considerations, but also from the rising cost of decision-making as the club expands. We have also evidence that RTAs have set protection levels against non-members cooperatively rather than non-cooperatively.

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Table 1: The expansion of RTAs and International Trade, 1980-2003

Dependent variable: real bilateral imports	(1)	(2)
Intercept	-27.9238	-27.9272
Log of real expenditure	0.8941	0.8943
Log of real per capita exp.	0.1211	0.1210
Log of distance	-1.0449	-1.0453
Common border	0.4608	0.4637
Common language	0.3404	0.3404
Common colonizer	0.7457	0.7456
Colonial relationship	1.4067	1.4067
Common currency	0.5004	0.5025
InterRTA	0.2425	0.2425
ANDEAN	0.9007	0.8987
ANZCERTA	-1.4888	-1.4895
CACM	1.9923	1.9902
MERCOSUR	0.9500	0.9469
PATCRA	-1.5986	-1.5991
SPARTECA	3.8335	3.8338
USIS	1.3274	1.3268
ASEAN6(1968-1995)	2.1635	2.1623
ASEAN7(1996-1997)	2.2888	2.2875
ASEAN9(1998)	2.0187	2.0175
ASEAN10(1999-2003)	1.2252	1.2242
CARICOM11(1974-1983)	3.2958	3.2964
CARICOM12(1984-1995)	2.5867	2.5872
CARICOM13(1996-1998)	3.3517	3.3521
CARICOM14(1999-2003)	1.8371	1.8373
NAFTA2(1989-1993)	-0.4288	0.4245
NAFTA3(1994-2003)	0.7676	0.7643
EU9(1973-1980)	-0.2119	-0.2138
EU10(1981-1985)	0.1730	
EU12(1986-1994)	0.0219**	
EU15(1995-2003)	-0.0012	
EU10: within EU9(1981-1985)		0.1224
EU10: EU9 & Greece(1981-1985)		0.3184
EU12: within EU10(1986-1994)		-0.0482*
EU12: EU10 & [Portugal, Spain](1986-1994)		0.1616
EU12: within Portugal and Spain(1986-1994)		-0.3191
EU15: Within EU12(1995-2003)		-0.1122
EU15: EU12 & [Austria, Sweden, Finland](1995-2003)		0.1384
EU15: within Austria, Sweden, Finland(1995-2003)		0.2774
Obs.	215,500	215,500
R ²	0.6139	0.6139

Notes: Years of expansion of the RTAs are obtained from the websites of the RTAs and of the WTO. "EU10: within EU9" refers to bilateral flows among the old nine EU members; "EU10: EU9 & Greece" refers to bilateral flows between each of the nine old members and Greece. Similar reasoning applies to further expansions of the EU. All coefficients are significant at the 1% level, unless noted otherwise. * indicates that the coefficient is significant at 10% level; ** indicates that the coefficient is not significant at 10% level. All models include fixed-year effects, which are not reported.