

The trade structure effects of endogenous regional trade agreements

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Received 18 September 2005; received in revised form 1 February 2007; accepted 21 June 2007

Abstract

This paper formulates an empirical model to estimate the impact of endogenous new regional trade agreement (RTA) membership on trade structure. The likelihood of new RTA membership is influenced by economic fundamentals such as country size, factor endowments, and trade and investment costs. In a sample of country-pairs covering mainly the OECD economies we find a particularly strong effect of endogenous RTAs on intra-industry trade in a difference-in-difference analysis based on matching techniques. The associated trade volume effects are similar to the ones found in previous research on the effects of endogenous RTAs. Overall, this indicates that RTA membership might reduce inter-industry trade not only in relative but also in absolute terms and that the trade volume effect is due to the associated growth in trade within industries.

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Keywords: Regional trade agreements; Intra-industry trade; Endogenous treatment effects

JEL classification: C21; F14; F15

1. Introduction

The voluminous literature on the consequences of regional trade agreements (RTAs) for welfare and trade is one of the central building blocks of research in international economics. While it is well understood theoretically under which conditions positive welfare effects of RTAs arise, empirical research has treated these agreements as exogenous for more than four decades. Implicitly, country-pairs have been viewed as being randomly assigned rather than self-selected into RTAs. Only recently have economists paid attention to endogeneity when analyzing trade volume effects (Baier and Bergstrand, 2007, *in press*; Magee, *in press*). This line of research indicates that (i) RTAs foster bilateral trade on average when controlling for endogeneity and (ii) their exogenous treatment is not justified from an econometric viewpoint and leads to downward biased estimates of their impact on trade volumes.

This paper contributes to the literature in the following ways. First, in contrast to previous work, we use a different methodology and account for the endogeneity of RTA membership by employing matching techniques. Second,

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beyond reassessing the trade volume effects with a new empirical approach to self-selection into RTA membership, we emphasise an effect of RTA formation that has not been considered before. While recent empirical work has stressed the impact of RTAs on welfare, trade diversion versus creation as well as the productivity and employment effects of RTAs (see [Trefler, 2004](#), for an analysis of the Canada–US free trade agreement)¹, it is not yet clear what the associated trade structure effects are. Do RTAs mainly stimulate gains from specialisation as would be reflected in a growth of the share of inter-industry trade? Or do they mainly foster gains associated with scale economies and product differentiation which would show up in a growing share of intra-industry trade? It is surprising that these questions have not yet surfaced in research on the trade effects of RTA formation. In the 1960s, a central issue was whether the formation of the European community between the late 1950s and mid 1960s would (driven by gains from inter-industry specialisation) or would not (due to increased trade within industries) have important distributional consequences through the convergence of wages across countries and lead to an income loss of labour in the capital-abundant economies ([Grubel and Lloyd, 1975](#)).² Given that trade volumes tend to increase if country-pairs self-select into RTAs, what are the associated consequences for trade structure? It is this paper's purpose to study this empirically.

To motivate our empirical analysis, we categorise the major factors steering the welfare effects of RTAs based on existing theoretical work. This forms the basis for an empirical model to estimate the likelihood of self-selecting into RTAs. Our empirical strategy to deal with self-selection rests on difference-in-difference matching techniques based on the idea of “selection on observables”. As will become clear later, this approach is particularly suited for problems where it is hard to identify any outside instruments that are correlated with the treatment variable (in our case, new RTA membership) but uncorrelated with the outcome variable (trade volume or trade structure). To obtain unbiased estimates of the contemporaneous effects, we consider the impact of new RTA membership within a narrowly defined time window around new membership.

For a sample of mainly OECD economies and RTA events since 1970, our estimates suggest that the effect of two countries creating a new RTA is to increase their intra-industry trade shares by about four percentage points. The size of this effect is remarkable as the share of intra-industry trade amounts to about eleven percent on average in the country-sample time span considered. The effects on trade volumes are similar to the lagged treatment effects reported in [Baier and Bergstrand \(in press\)](#), who use a larger sample of countries but different empirical approach. Furthermore, our results show that accounting for self-selection into RTA membership in an appropriate way is quantitatively important. For instance, in our sample of 31 countries we illustrate that the effects of new RTA membership on the change in trade volume are downward biased by about 50% when relying on a simple difference-in-difference estimator instead of using matching techniques. The respective downward bias is even larger for the RTA membership effect on the share of intra-industry trade.

The remainder of the paper is organised as follows. Section 2 provides a review of the relevant literature on endogenous RTA formation and its consequences for trade. Section 3 presents a detailed discussion of the problems of and remedies for self-selection with particular emphasis on matching. There, we also discuss our database and specification of our estimated models. Sections 4 and 5 report the main empirical findings and Section 6 provides an extensive discussion of their robustness. Section 7 concludes with a brief summary of the most important results.

2. Relationship to existing literature

The literature on RTAs is rooted in [Viner's \(1950\)](#) seminal work on *trade creating* and *trade diverting* effects of RTAs. Since then, the welfare effects associated with RTAs have formed a central block of interest in international economics. In particular, the recent wave of new RTA formation has led to a revival of academic research in this area (see [Bagwell and Staiger, 1997](#); [Bond et al., 2004](#)). According to [Baier and Bergstrand \(2004\)](#), the welfare effects of trade liberalisation are influenced by three categories of economic determinants: economic geography, inter-industry trade forces, and intra-industry trade forces.

The importance of *economic geography* factors was clearly articulated in [Krugman \(1991\)](#) and [Frankel, Stein, and Wei \(1995, 1996\)](#). Trade diversion – and, hence, the likelihood of a welfare loss from RTAs – is weaker the more

¹ [Broda and Weinstein \(2006\)](#) estimate a substantial positive welfare effect on US consumers through the increase in the number of imported varieties between 1972 and 2001. They associate the increased relevance of Canada and Mexico as suppliers of varieties to the US economy with formation of the Canada–US free trade agreement in 1989 and formation of the North American Free Trade Agreement (NAFTA) in 1994.

² In this respect, [Krugman \(1981, pp. 959–960\)](#) notes that “much of the expansion of trade in the postwar period has taken place without sizable reallocation of resources or income-distribution effects”, which is “particularly noticeable in the cases of the EEC [European Economic Community] and the North American automobile pact”.

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