ELSEVIER
www.elsevier.com/locate/worlddev

CrossMark

World Development Vol. 66, pp. 222–236, 2015
0305-750X/

http://dx.doi.org/10.1016/j.worlddev.2014.08.021

Heterogeneous Effects of Preferential Trade Agreements: How does Partner Similarity Matter?

JUYOUNG CHEONG, DO WON KWAK and KAM KI TANG*
University of Queensland, Australia

Summary. — This paper examines how dissimilarity of partner country characteristics affects the change in trade flows under a preferential trade agreement (PTA). Our results show that the more similar the partner countries are, the larger the increase in intra-bloc trade is under a PTA. Particularly, there is a substantial "development neighborhood premium": the gain for developing countries from a PTA among themselves is about two and a half times that from partnering with industrial countries. Our findings challenge the perception that by becoming more integrated with industrial countries, developing countries could automatically gain access to a much larger and lucrative export market.

Key words — preferential trade agreements, trade creation, gravity model, heterogeneity, similarity

1. INTRODUCTION

Economic integration is well known for its role in economic development, and preferential trade agreements (PTAs) are commonly seen as its catalyst. In fact, PTAs have proliferated in recent decades among developing and developed countries. Their distribution, however, is highly uneven across regions. As of 2007, only 11% of bilateral PTAs were intercontinental (i.e., formed between countries from different continents). If the world is divided based on income into the North (industrial) and the South (developing), the distribution is also askew: North–South PTAs account for fewer than 32% of all bilateral PTAs. [1] In short, there are noticeably fewer PTAs among countries of dissimilar size (GDP), income (per capita GDP), and location.

This landscape of PTAs is, however, changing rapidly and developing countries are crucial to this change. For one, the number of North–South PTAs is rising partly because recently developing countries have shown more interests on reciprocal agreements as opposed to unilateral ones like the Generalized System of Preferences (GSP) (Acharya, Crawford, Maliszewska, & Renard, 2011). As of 2010, 69% of all PTAs either under negotiation or signed are North–South in nature. Furthermore, both developing and industrial countries are looking beyond their own region in forging trade partnerships (Acharya *et al.*, 2011).

As pointed out by Chauffour and Maur (2011), North–South, South–South, and North–North PTAs differ markedly in terms of dynamics. For example, when negotiating a North–South PTA, developing countries are often motivated by the prospect of gaining access to a larger and more affluent export market, while their industrial counterparts may put more emphases on harmonization of regulatory and value norms. Adding to this is the asymmetry in bargaining power which typically results in the smaller/poorer partners being pressured by their larger/richer counterparts to accept unfavorable terms (Perroni & Whalley, 2000). To shed light on what developing countries could gain from their future PTA endeavors, it is useful to take stock of the outcome of past PTAs between countries of differing income, size, and location. To that end, we aim to answer the following research question: *Does (dis)similarity between partner countries affect the gain from a PTA and, if yes, how so?* This question has important policy implications for developing countries because, as stated earlier, there is a perception that developing countries could benefit a lot from being more integrated with industrial countries; however, developing and industrial countries, by definition, are highly dissimilar.

We deploy three empirical strategies to answer the research question. We start by using a stratification approach to examine whether and how dissimilarity in size, income, and location between prospective partner countries may affect their gains from forming a PTA. The stratification approach has the advantage of not imposing any parametric relationship between the PTA effect and a given measure of dissimilarity, but is limited to examining one dimension of dissimilarity at a time. Countries geographically close to each other tend to have similar income and, to a lesser extent, size; as such various dimensions of dissimilarity could be correlated. To allow for such correlation, our second approach is to incorporate multiple interaction terms between the PTA measure and various dissimilarity measures. A corollary of the correlation is that there could be confluence of the impacts arising from various similarities into a "neighborhood premium". Thereby, our third approach is to examine whether a country could enjoy a premium when forming a PTA with another country in its "neighborhood" compared with partnering with an outsider. In this paper we define neighborhood by the North–South division and continents, respectively.

This paper bridges between the development and the international trade literature. There is no short supply of research on the effect of trade on development or growth in general. The idea of trade-led growth has been cemented by influential papers like Dollar (1992), Sachs and Warner (1995), and Frankel and Romer (1999) and epitomized first by the phenomenon of the Asian tigers (Hong Kong, Singapore, South Korea, Taiwan, and China) and then by other emerging

* We are grateful to participants at the 2012 Econometric Society Australasian Meeting and a seminar at the Korea Institute for International Economic Policy. We also thank the editor and three anonymous referees for their valuable comments and suggestions. Any remaining errors are solely our responsibility. Final revision accepted: August 19, 2014.

economies (e.g., India and Brazil). However, this literature is typically not concerned with the effects of specific trade liberalization programs like PTAs, let alone the heterogeneous effects of PTAs among different partnerships. A noticeable exception is Gil-Pareja, Llorca-Vivero, and Martinez-Serrano (2014), who examine how non-reciprocal trade agreements such as GSP impact on the exports of developing countries. As part of the controls, they find that PTAs and Custom Unions[2] have positive effects on the exports of developing countries, but the effects are not always statistically significant depending on model specifications. Our paper differs in that we allow the effects of PTAs to vary according to different types of partnership (e.g., big–small, rich–poor, North–South etc.) and therefore provide deeper insight into the influence of partnership types.

The topic of PTAs is covered more extensively in the international trade literature, though not necessary with a development focus. For instance, Baier and Bergstrand (2004), Michaely (1998), Krishna (1998) and Levy (1997) explains why *ex ante* dissimilar countries have less incentive to form a PTA, but do not tackle the issue of *ex post* gains as in this paper. In fact, although there are many studies on the general trade effects of PTAs (Baier & Bergstrand, 2007, 2009; Eicher, Henn, & Papageorgiou, 2012; Ghosh & Yamarik, 2004; Magee, 2003, 2008), few studies have verified whether the trade creation effect of PTAs depends on the dissimilarity of the partner countries and, if so, how? Among those few exceptions, Baier and Bergstrand (2004) use a computational general equilibrium (CGE) model to show that the gain from a PTA increases when partner countries are more similar in size and location, but less similar in income—in contrast with its effect on general trade flows. Compared with the CGE modeling approach, our approach imposes far fewer assumptions on the empirical models. By estimating many models with various specifications, we show that the conclusions drawn from this paper are robust to the underlying assumptions of individual models. Magee (2008), Eicher and Henn (2011); and Eicher *et al.*, 2012 attempt to distinguish the trade gains from individual PTAs by representing each of them with a distinct dummy variable in their regression. However, unlike the current paper, their approach does not tease out which country characteristics are attributable to the heterogeneous impacts of PTAs, or whether partner similarity enhances or diminishes the trade effect of PTAs.[3] In addition, Magee (2008) and Eicher *et al.* (2012) focus only on major PTAs and, as such, their particular results cannot be generalized to other PTAs. On the contrary, our empirical work is based on a bilateral panel data set covering 216 countries and more than 330 PTAs over 30 years, making our results relevant to most countries in general. One modeling method considered in this paper is similar to Vicard (2011), namely, using interaction terms to capture the heterogeneous effects of PTAs. However, our method is more flexible in that it allows the PTA effect to be nonlinear and asymmetric.

We obtain consistent results from our estimations. First, even without a PTA, countries more similar in size, income, and location trade more than those less similar. Second, while a PTA has an unambiguously positive effect on intra-bloc trade flows, partner countries of greater similarity experience a larger proportional increase in their trade flows. The two findings together imply that, in forming a PTA, partner countries of greater similarity can expect a larger increase in intra-bloc trade flows in terms of both level and proportion. However, we obtain evidence that the latter effect (i.e., dissimilarity on the growth of trade flows after a PTA) dominates the former effect (i.e., dissimilarity on the level of initial trade flows) by far. We also find that the trade impacts of the PTAs formed within the North and within the South are comparable, and markedly larger than those formed across the division. This result suggests that, in terms of trade, developing countries could gain more by becoming more integrated among themselves, compared with becoming more integrated with their industrialized counterparts. Lastly, except for Asia, PTAs formed within a continent have a bigger trade effect than those formed across continents. The Americas have the largest premiums, followed by Europe, then Africa.

The next section describes some stylized facts about the distribution of PTAs by characteristics of partner countries. Section 3 explains the empirical framework. Sections 4 and 5 report the results based on the stratification and interaction term approaches, respectively. Conclusions follow in Section 6.

2. THE STYLIZED FACTS

Our data set covers 216 countries from 1980 to 2009.[4] The data on nominal bilateral trade flows are from the International Monetary Fund's (IMF's) Direction of Trade Statistics and they are deflated by 2000 US GDP deflator. The data on nominal GDP are from the Penn World Table (PWT). The PTA and GATT/WTO membership data are from the World Trade Organization (WTO). Our measure of PTA includes customs unions and free trade agreements.

Figure 1 shows the distributions of the bilateral import data stratified into 10 strata based on partner countries' dissimilarity. Panels 1(a) and 1(b) show the distributions based on size dissimilarity as measured by $SD_{ijt} \equiv (Y_{it} - Y_{jt})/(Y_{it} + Y_{jt})$, where Y is real GDP measured in PPP-based constant 2000 US dollars. The measure is scale-independent and bounded between -1 and $+1$, with the value of zero indicating identical sizes between two countries. Panel 1(a) shows the distribution of all country-pairs, and 1(b) shows the distribution of country-pairs with a PTA. The number above each bar is the percentage of observations for each stratum out of the sample. The distribution of country-pairs is more centered in 1(b) than in 1(a), meaning that country-pairs with a PTA tend to be of more similar size compared with those without a PTA.

Panels 1(c) and 1(d) show the distributions based on income dissimilarity measured by $ID_{ijt} \equiv (y_{it} - y_{jt})/(y_{it} + y_{jt})$, where y is real GDP per capita measured in PPP-based constant 2000 US dollars. ID_{ijt} is also bounded between -1 and $+1$. Again, the two panels show the distributions of all country-pairs and of those with a PTA respectively. Compared with the case of size dissimilarity, the distribution of country-pairs with a PTA is even more concentrated among those of similar income levels.

Lastly, panels 1(e) and 1(f) report the distribution based on locational dissimilarity measured by $LD_{ij} \equiv d_{ij}/d_{max}$,[5] where d_{ij} is the geographical distance in kilometers (km) between the most populated cities in i and j as of 2004, and d_{max} is equal to 20,037 km—the maximum distance between any two points on the Earth. LD_{ij} is bounded between 0 and 1. A smaller number for LD_{ij} indicates that the two countries are geographically closer, implying not only lower transportation costs between them, but possibly tighter cultural ties and more similar climate and natural endowments. The distribution in panel 1(f) is much more skewed toward the left than that in 1(e), suggesting that countries with a PTA tend to be geographically more proximate to each other than those without.

To sum up, Figure 1 establishes the stylized facts that countries with a PTA are in general more similar in income and location and, to a lesser extent, size, compared to countries without a PTA.