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Export Promotion Policies and the Crowdingout Effect in Developing Countries*

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Critics of export promotion policies have pointed out a fallacy of composition, where what is viable for a small country acting in isolation might not be viable when pursued by a group of countries simultaneously. This paper investigates the crowding-out effect of the fallacy of composition; that is, whether developing countries that specialize in exports of manufactured products compete and crowd out one another's exports. The results of fixed-effects panel estimation suggest that developing countries are not crowding out one another's exports. Instead, they are crowding out Western European countries' exports of manufactured products.

Keywords: fallacy of composition, export promotion policies, crowding out.

JEL classification codes: F13, F42, O24.

I. Introduction

Support for trade liberalization and export promotion policies is grounded in the vision that productivity will rise through technological spillover and increased specialization resulting from the division of labor. Crucial to this vision is the assumption that there is growth of reciprocal demand between trading economies, creating ever-expanding markets for all countries' exports, so that no country needs to fear a demand-side constraint on export growth. The majority of the published empirical literature on trade liberalization indicates a positive relationship between openness and output growth (e.g. Harrison, 1996). However, Rodriguez and Rodrik (2000) claim that there are weaknesses in the literature that support the virtues of openness, so they are skeptical of the negative correlation between trade barriers and economic growth. Rodrik (1999, p. 64) also notes that 'the import substitution policies followed in much of the developing world until the 1980s were quite successful in some regards and their costs have been vastly exaggerated'. Furthermore, during the period of the Washington Consensus, the world and regional growth rates declined, except in China and South Asian countries (Bosworth and Collins, 2003). The deterioration in

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regional growth has rendered trade liberalization and export promotion policies open to challenge.

Critics of export promotion policies for developing countries point out the fallacy of composition hypothesis, where what is viable for one small developing country acting in isolation might not be viable when pursued by a group of developing countries simultaneously. The fallacy of composition hypothesis can be divided into two effects: (i) the price level or terms-of-trade effect and (ii) the crowding-out effect. The terms-of-trade effect takes place when increases in exports by a group of developing countries result in the deterioration of export prices, which could reduce economic welfare. To make matters worse, to make up for the losses from lower prices, export volumes are increased, which moves export prices lower along the supply curve. The crowding-out effect occurs when the lack of demand from industrial countries forces developing countries to displace one another's export shares; that is, export growth for 1 country comes at the expense of another. Therefore, export promotion policies only shift the composition without raising overall growth. The lack of demand from industrial countries might be caused either by protectionist policies induced by high import penetration from developing countries (Cline, 1982) or by macroeconomic factors.

The present paper tests the crowding-out effect of the fallacy of composition hypothesis for a group of developing countries that specialize in exports of manufactured products. The rest of the paper is structured as follows. In Section II, a short review of the fallacy of composition hypothesis is provided. Section III presents empirical evidence examining the possibility of the crowding-out effect, and Section IV draws conclusions.

II. Terms-of-trade Deterioration and the Crowding-out Effect

Bhagwati (1958) is one of the first to demonstrate the possible negative effect of export promotion policies for a country caused by an adverse terms-of-trade effect.¹ He shows that an increase in exports might result in an export-price deterioration that could reduce economic welfare. The welfare impact is more severe if the country relies on a small range of export products. This is particularly important for developing countries that rely on exports of a small range of primary commodities because they would be hard hit if other developing countries start to increase their exports of similar primary commodities. In fact, there has been a consensus that developing countries' primary commodities prices are falling (e.g. Sapsford and Singer, 1998). Hence, it has often been advised that developing countries' terms of trade for manufactured goods. However, developing countries' terms of trade for manufactured products also

^{1.} Before Bhagwati's seminal contribution, several economists had been both concerned with and curious about the then deterioration in the terms of trade of developing countries as a result of decreasing terms of trade in primary products (e.g. Singer, 1950).

show signs of weakness rather than improvement (Sarkar and Singer, 1991), further complicating the matter. In examining the performance of the Dominican Republic's export processing zones, for example, Kaplinsky (1993, p. 1861) shows that by specializing in unskilled labor-intensive products, the Dominican Republic suffered from 'immiserizing' employment growth; that is 'employment growth which is contingent upon wages falling in international purchasing power'. With an increasing number of developing countries specializing in unskilled labor-intensive products, one of the most practical ways to compete is by keeping prices low through paying low wages. The intense competition further reduces developing countries' terms of trade and, in this sense, unskilled labor-intensive manufactured products are similar to primary commodities, which are experiencing a downwards trending terms of trade.²

On the crowding-out effect, Cline (1982, p. 89) illustrates that the East Asian model of export-led growth cannot be generalized because it will result in untenable market penetration, owing to protectionist responses from industrial countries. He concludes:

Elevator salesman must attach a warning label that their product is safe only if not overloaded by too many passengers at one time: advocates of the East Asian model would do well to attach a similar caveat to their prescription.

For the US market, Palley (2003) suggests that the newly industrialized economies (NIE) of East Asia (Hong Kong, Singapore, South Korea and Taiwan) are crowded out by imports from China, and Japan is crowded out by imports from Mexico. He also argues that the entry of China into the world trading system would make it more difficult for other developing countries to grow with export-led growth policies.³ Furthermore, Bhattacharya et al. (2001) suggest that the South Asian and Southeast Asian manufactured exports shares have been negatively affected by the rise of China. They show that the emergence of China reduced other Asian countries' export shares for the period 1994–1996, but not prior to 1994.

The proponents of export promotion policies argue that a fallacy of composition is not a cause for worry because of the development of new and unforeseen markets. They assert that reciprocal demand will ease any capacity constraint and that technological spillovers will help shifting developing countries' comparative advantage. A shift in comparative advantage will change a country's

^{2.} See also Erturk (2001/2002). He argues that one of the causes of the East Asian crisis is the investment boom in East Asia in the early 1990s. As they exited early their niche in labor-intensive products, they created overcapacity to safeguard their position and, hence, reduced export prices for East Asian manufactured products, which ultimately lead to the crisis.

^{3.} We extend Palley (2003) to include other industrial countries, but Palley's results do not hold for other industrial countries. Instead, the share for all East Asian countries increases or stagnates in other industrial countries.

trade composition, therefore making room for new imports and exports from developing countries on the lower steps of the technological ladder. This is the essence of the 'flying geese' model (Akamatsu, 1962), where countries step onto a higher rung of the technological ladder with the increase in their level of economic development and relieve any adding-up constraint. Dowling and Cheang (2000) and Cutler et al. (2003) provide evidence supporting the sequential pattern of changes in comparative advantage for East Asian exports and show that there is economic development trickle-down from Japan to the NIE and the ASEAN-4.

III. Empirical Analysis

Developing countries investigated in the present study are those in which the shares of manufactured exports in total merchandise exports are greater than 70 percent during 1990–2000 (19 countries). A relatively high share of manufactured exports is chosen because an export-led growth strategy implies that a country relies on a high share of manufactured exports to stimulate its economy.⁴ Hence, if there is any crowding out, it will significantly affect the country's total exports and, consequently, its economic growth.

Bilateral trade data that are used to examine the crowding-out effect are from the Center for International Data at the University of California, Davis.⁵ The period covered is from 1991-2000. We concentrate on manufactured products from Standard International Trade Classification (SITC) groups 6-8, disaggregated at the two-digit level. Developing countries can be roughly divided into two groups based on the composition of their exports. For the South Asian, Latin American and African countries, exports are concentrated in products from SITC groups 65, 84 and 89 (textiles, apparel and clothing, and miscellaneous manufactured products), while for the East Asian NIE, ASEAN, China, and Mexico exports are concentrated in products from SITC groups 65, 84, 89 and 75-77 (office and computer equipment, telecommunication equipment, electrical machinery and appliances). Unlike developing countries, industrial countries' compositions of exports are not concentrated in a few groups of products. The average standard deviation for the export shares from SITC groups 6-8 is 9.8 for the South Asian, Latin American and African countries, 5.8 for the East Asian countries and 3.0 for industrial countries, indicating that the export shares for industrial countries are more evenly distributed relative to developing countries. The uneven distributions for developing countries mean that they are subjected to greater risks of instability because of product cycles. Concentration of exports

5. The data can be downloaded from http://www.internationaldata.org/.

^{4.} The choice of 70 percent as a cut-off point is capricious. We assume that 70 percent of manufactured export share is sufficiently large that it can affect overall exports and, consequently, economic growth. Reducing it to 50 percent adds 5 more countries (South Africa, Brazil, Morocco, Indonesia and Costa Rica) and this does not change the results.

within a few ranges of similar products also highlights the high degree of competition for the export market share for developing countries.

To test for the crowding-out effect, the following standard specification of fixed-effects panel regression is estimated for each of the countries' ten most important export groups from SITC groups 6-8:

$$\Delta S_{k,i,t} = \alpha_k + \beta_1 \Delta S_{k,i,t} + \varepsilon_{k,t} \quad k = 1, 2, \dots, 10, \tag{1}$$

where $\Delta S_{k,i,t}$ denotes the growth (percentage change)⁶ of product *k*'s world export share for country *i* at time *t*, and $\Delta S_{k,j,t}$ denotes the growth of product *k*'s world export share for country *j* (the rival country) at time *t*. Coefficient β_1 indicates whether an increase in a country's world export share is statistically associated with the decline or increase in the other country's growth of world export share. If there is a crowding-out effect, the coefficient β_1 will be negative and statistically significant. A positive coefficient means that country *i*'s growth of export share is matched by its rival country. The top ten exports are used because they account for a significant share of each country's total exports. In addition, because the export shares are concentrated in a few products, using all 26 groups will not improve the overall results. Instead, it only masks the importance of the top exports.

An important note to this method is that because the arithmetic of shares is constrained to sum to 1, the gain for 1 country is by definition the loss of another. Therefore, the loss might be the product of arithmetic rather than quantity crowding out. For example, if China enters the market for product X and takes away the market share of another developing country, then the quantity produced by the losing country might not fall because of an increase in the demand for that product. However, at a disaggregated level the data on quantity is lacking. Although this method cannot measure quantity crowding out, it measures market shares crowding out, and it can concretely indicate no crowding out for developing countries are not crowding out one another, either in absolute quantity or in market share.⁷ Hence, with positive or non-significant coefficients, we can concretely conclude that crowding out is not a cause for concern for developing countries with export-led growth strategies.

To test for crowding out, three sets of fixed-effects panel regressions are first estimated from Equation (1). The first set consists of fixed-effects regressions of individual developing country on individual developing country, the second set

^{6.} The overall results do not change when using either 'percentage change' or 'percentage point difference', but for a small number of cases the significance of the coefficient differs when using different methods. The difference between the two methods is in the way they treat countries with small and large market shares. Using percentage point difference, market share size does not matter, but when using percentage change the market size matters.

^{7.} Quantity exported by both countries might decrease because of lower demand, but it is not a result of crowding out.

	Crowding-out coefficient's sign and significance	Number of case and percentage		
First set of regressions				
Individual developing country	Positive	68 (19.8%)		
on individual developing country	Negative	16 (4.7%)		
	Not significant	258 (75.5%)		
	Total	342		
Second set of regressions				
Individual developing country	Positive	50 (13.2%)		
on individual industrial country	Negative	73 (19.2%)		
	Not significant	257 (67.6%)		
	Total	380		
Third set of regressions				
Individual industrial country	Positive	115 (30.3%)		
on individual industrial country	Negative	74 (19.5%)		
	Not significant	191 (50.2%)		
	Total	380		

Table 1 Summary of regression results for the first three sets of regressions

Note: When the coefficient's sign is indicated as positive or negative, it is statistically significant at the 10% level.

is individual developing country on individual industrial country, and the third set is individual industrial country on individual industrial country.

Next, two other sets of fixed-effects regression are estimated. The fourth set contains a fixed-effects panel of developing countries as a group (all 19 countries) on individual industrial countries, and the fifth set is developing countries as a group on individual developing countries.

Table 1 summarizes the results for the first three sets of regressions (Appendix Tables A1–A3 report the complete results). In the first set of regressions of individual developing country on individual developing country, out of 342 cases, 84 cases (24.6 percent) are statistically significant at the 10-percent level and only in 16 cases are the coefficients negative. In the second set of regressions of individual developing country on individual industrial country, out of 380 cases, 123 cases (32.4 percent) are statistically significant (again at the 10-percent level) and in 73 cases the coefficients are negative. In the third set of regressions on the relationship between industrial countries, out of 380 cases, 189 cases (49.7 percent) are statistically significant, and 74 of the cases are negative.

The numbers of statistically significant crowding-out coefficients are relatively few in the first set of regressions. Moreover, the sign of the statistically significant coefficients is mostly positive. These results indicate that on average developing countries are not crowding one another out. Instead, when the coefficient is significant, an increase in the export share is usually matched by other developing countries. In the second set of regressions, the majority of the statistically significant cases have a negative crowding-out coefficient, indicating that, on average, developing countries are crowding out industrial countries, but the percentage of the statistically significant cases is not much higher than that of the first set of regressions. The largest numbers of significant cases are obtained in the third set of regressions. The signs for the crowding-out coefficient are mostly positive, indicating that, on average, industrial countries are not crowding one another out.

Because developing countries' export shares are not negatively affecting one another in the majority of cases, and in the second set of regressions approximately 60 percent of the statistically significant coefficients are negative, the question is whether industrial countries have been negatively affected by an increase in developing countries' share of exports. The fourth and fifth sets of regressions confirm whether developing countries are crowding out industrial countries. In the fourth set of fixed-effects regressions, the crowding-out coefficient will not be statistically significant if developing countries are crowding one another out. This is because, if there is a crowding-out effect, the market share for developing countries as a group should be constant, as they are only displacing one another. If it is positive then an increase or a reduction in the growth of export shares for the group of developing countries is matched by the industrial country. A negative coefficient means that the group of developing countries is displacing the individual industrial country or vice versa. In the fifth set of regressions, the crowding-out coefficient will be negative if developing countries are crowding one another out. A positive coefficient means that any increase or reduction of developing countries' market share as a group is matched by the individual developing country. Tables 2 and 3 report the regression results.

In the fourth set of regressions (Table 2), in 13 cases the crowding-out coefficient is negative and in 11 cases it is statistically significant at the 10-percent level. Out of 7 cases with positive coefficients, 4 are statistically significant. The 4 countries with positive and statistically significant crowding-out coefficients are Ireland, Japan, Canada and Australia. The 11 countries with negative coefficients are the Western European countries. Hence, the results indicate that developing countries are crowding out Western European countries' exports for the period under investigation.

In the fifth set of regressions (Table 3), 2 of the coefficients are negative but only the coefficient for Turkey is statistically significant. Out of the 17 positive coefficients, 7 are statistically significant at the 10-percent level. These results further confirm that developing countries are not crowding one another out. Instead, the gains come at the expense of the Western European countries' export shares.

IV. Conclusion

On the one hand, critics of export promotion policies point out the fallacy of composition, where developing countries specializing in exports of manufactured

Country	Crowding-out coefficient	t-statistic
Australia	0.468*	(1.93)
Austria	-0.125	(-1.04)
Belgium	-0.461*	(-4.21)
Canada	0.271*	(2.25)
Denmark	-0.506*	(-2.75)
Finland	-0.368*	(-2.06)
France	-0.333*	(-4.09)
Germany	-0.464*	(-6.36)
Iceland	2.049	(0.59)
Ireland	0.449*	(1.68)
Italy	-0.302*	(-3.46)
Japan	0.484*	(-4.34)
Netherlands	-0.807*	(-4.25)
New Zealand	0.987	(1.28)
Norway	-0.715*	(-4.20)
Spain	-0.369*	(-2.87)
Sweden	-0.324*	(-2.20)
Switzerland	-0.178*	(-1.66)
UK	-0.181	(-0.98)
USA	0.022	(0.24)

 Table 2
 Regression results for the fourth set of regressions:

 fixed-effects regressions of all developing countries on individual industrial country

Note: * denotes significance at the 10% level.

Country	Crowding-out coefficient	t-statistics
Bangladesh	1.927	(1.50)
China	0.889*	(4.63)
Dominican Republic	1.103	(1.47)
Haiti	1.603	(1.32)
Hong Kong	0.120	(0.71)
India	0.255	(0.91)
Jamaica	11.93*	(2.06)
Malaysia	1.365*	(4.53)
Mauritius	1.056	(1.03)
Mexico	0.257*	(1.80)
Pakistan	-0.177	(-0.63)
Singapore	0.057	(0.34)
South Korea	0.108	(0.57)
Sri Lanka	2.416	(0.20)
Taiwan	0.605*	(3.74)
Thailand	0.879*	(3.80)
the Philippines	1.576*	(4.00)
Tunisia	0.307	(0.71)
Turkey	-0.572*	(-1.78)

Table 3	Regression results for the fifth set of regressions: fixed-effects regressions of all
	developing countries on individual developing country

Note: * denotes significance at the 10% level.

products compete against each other for industrial countries' markets. They argue that export promotion policies take on a zero-sum dimension when adopted by many developing countries simultaneously. On the other hand, proponents of export promotion policies contend that shifting comparative advantage would help ease any capacity constraint because developing countries' climbing up the technological ladder opens up their markets for lower technology products and demand reciprocity will create ever-expanding markets. The estimation results indicate that for the period investigated developing countries are not crowding one another out. Instead, the Western European countries' export shares are crowded out by the growth of developing countries' exports in manufactured products.

Although suggestive of crowding out, it should be stressed that the rapid increase in trade among developing countries might be one of the major reasons why Western European countries are crowded out by developing countries. In other words, it is not that Western European countries' exports have decreased, but developing countries' exports, particularly from the East Asian countries, have increased faster. More importantly, for the period investigated, the evidence suggests that developing countries that specialize in exports of manufactured products are not crowding one another out.

Appendix

BGD CHN DOM HKG HTI IND JAM KOR LKA MEX MUS MYS PAKPHL SGP THA TUN TUR TWN BGD 0.305 -0.3190.914 -0.183-0.040-0.0061.274 -0.438-0.5330.034 -1.2900.694 -3.006*0.633 1.480* 1 3.178* 2.164 0.248 (0.17)(-1.05)(0.92)(-1.12)(3.17)(-1.31)(1.22)(-0.44)(0.84)(-1.44)(-0.51)(0.55)-(1.39)(0.52)(-1.94)(0.60)(-1.89)(0.13)CHN 0.000 0.067* 0.507* -0.0060.041 0.002 -0.0430.010 -0.029-0.0030.288* 0.017 0.215* 0.353* 0.607* -0.019 -0.109^{*} 0.193 1 (0.45)(2.24)(5.29)(-0.30)(0.87)(0.50)-(0.46)(0.99)(-0.30)(-1.34)(5.02)(0.81)(3.06)(4.25)(7.33)(-0.43)(-2.63)(1.29)DOM -0.0050.497* -0.014-0.042-0.0010.260 -0.155* 0.193 1 -0.042-0.1300.000 0.059 0.023 0.178 0.175 1.049* 0.089 -0.110(-0.19)(2.43)(-0.25)(-0.50)(0.99)(-2.54)(0.37)(0.87)(3.08)(-0.70)(-0.33)(-0.20)(-1.12)(0.05)(0.31)(0.58)(0.57)(0.44)-0.001-0.228* HKG -0.000.219* 0.028 1 -0.027-0.045-0.042-0.0010.002 -0.011-0.002-0.0120.084 0.077 -0.0480.002 -0.020(-0.90)(2.11)(1.51)(-1.11)(1.39)-(0.83)(-0.67)(-1.48)(-2.77)(0.48)(-0.16)(-0.67)(-0.25)(1.17)(0.92)(-1.46)(0.06)(-0.15)HTI 0.008 -0.0830.004 -0.3021 0.072 -0.0430.130 -0.0301.503* 0.002 0.484 -0.1520.796 -0.7840.303 0.156 -0.2382.157* (0.26)(-0.11)(0.03)(0.64)(0.13)(-0.99)(0.32)(-0.42)(2.07)(0.09)(1.22)(-0.62)(1.59)(-1.40)(0.40)(0.41)(-0.58)(2.40)IND 0.007 -0.115-0.001-0.141*0.032 1 -0.001* 0.200 -0.0060.228 -0.0310.241* -0.072*0.156* 0.112 0.297* -0.266^{*} 0.109 0.402* (2.23)(0.87)(-1.09)(-0.02)(-2.28)(0.83)(-1.79)(1.25)(-0.35)(1.47)(-1.06)(2.61)(-2.63)(0.88)(2.13)(-3.31)(1.11)(1.92)JAM 0.153 -40.88-4.765-3.564-0.121-14.8339.492 3.018 -6.813-0.156-8.6521.587 -1.378-44.04-1.4580.917 -9.955-26.82(0.54)(-1.21)(-0.54)(-0.16)(-0.90)(1.38)(0.98)(-0.43)(-0.27)(-0.38)(0.30)(-0.11)(-1.15)(-0.15)0.28 (-0.55)(-0.70)(-0.12)-0.022-0.040*0.001* -0.122*0.122* 0.182* KOR 0.000 0.048 -0.0210.129* 1 0.023* 0.005 0.018 0.108* 0.008 -0.0160.003 -0.142* (0.42)(-0.30)(-1.85)(0.93)(-0.36)(2.80)(1.92)(2.71)(-2.88)(0.59)(1.99)(1.33)(3.38)(0.08)(-0.57)(0.27)(-3.00)(1.75)LKA -0.002-0.3500.254 -0.567-0.021-0.6860.014 16.793* 1 -6.566-0.1801.168 0.205 4.319 -2.645-6.4060.157 -1.2271.924 (-0.03)(-1.44)(-0.07)(0.21)(-0.17)(-0.10)(-0.29)(0.16)(4.86)(-0.22)(0.30)(0.21)(1.36)(-0.63)(-1.21)(0.10)(-0.53)(0.26)MEX -0.000.092 0.037* 0.062 0.089 0.028 0.000 -0.091-0.0031 0.000 0.069 -0.0180.064 0.043 0.057 0.057 0.111* 0.228* (-0.73)(0.96)(1.72)(1.07)(0.63)(0.10)(-1.21)(-1.43)0.00 (-1.00)(1.60)(0.52)(0.77)(1.65)(2.27)(1.74)-0.0060.079 -0.012-0.295-0.0080.001 -0.3580.001 0.475 0.225 0.004 0.203 0.306 0.981* -0.099-0.1110.173 MUS 0.182 1 (-0.13)(-0.15)(-0.53)(-0.13)(0.85)(0.09)(-1.03)(0.30)(1.14)(0.72)(0.29)(0.79)(0.83)(2.35)(-0.46)(-0.45)(0.27)(0.12)MYS -0.000.881* 0.049* 0.168 0.049 0.169* 0.004 0.039 0.015 0.090 0.007 -0.0280.253* 0.823* 0.908* 0.010 -0.231*0.899* 1 (-0.45)(5.24)(2.10)(0.87)(1.10)(2.34)(0.91)(0.40)(0.97)(0.49)(1.54)(-0.91)(2.39)(5.83)(6.25)(0.19)(-2.94)(4.27)PAK -0.0040.001 -0.033-0.074-0.031-0.086-0.022*-0.0030.000 -0.0330.005 0.021 0.052 -0.0070.020 0.107 -0.0680.195 1 (-0.56)(-0.71)(0.27)0.00 (-0.75)(-1.13)(-0.69)(-1.82)(-0.02)(0.02)(-0.25)(0.86)(0.52)(-0.06)(0.13)(1.59)(-0.97)(1.01)-0.0020.542* -0.0500.018 0.011* 0.354* 0.327 0.663* 0.632* 0.768* -0.0521.303* PHL 0.167 0.062 0.000 -0.001-0.0111 0.101 (-1.05)(2.40)(-1.32)(1.27)(0.87)(0.57)(2.43)(1.78)0.00 (1.29)(-1.29)(3.42)(4.65)(-0.39)(3.61)(-0.17)(4.14)(1.18)-0.115SGP 0.000 -0.0360.054* 0.072 -0.1070.002 0.004 -0.0020.104* 0.006 0.234* -0.0180.003 1 0.152* -0.009-0.030-0.072(1.08)(7.50)(0.49)(-0.38)(2.43)(1.13)(-1.10)(0.04)(-1.30)(-0.55)(2.61)(0.94)(4.76)(-1.39)(0.09)(-1.08)(-0.65)(-0.82)THA -0.0010.303* 0.003 0.060 -0.0330.119* 0.002 0.161 0.018* -0.1070.000 0.462* -0.0170.221* 0.429* -0.063-0.203* 0.768* (-0.84)(2.11)(0.12)(0.73)(-1.42)(1.91)(0.62)(1.24)(3.14)(-0.65)(0.04)(6.23)(-0.65)(4.17)(4.36)(-1.03)(-2.95)(4.61)TUN 0.016 0.090 -0.0200.341* -0.024-0.2510.001 0.049 0.000 0.062 -0.0090.048 0.127* -0.033-0.023-0.175-0.032-0.4471 (1.18)(0.61)(-0.34)(4.12)(-0.79)(-1.62)(1.50)(0.26)(0.08)(0.31)(-0.24)(0.33)(3.06)(-0.31)(-0.13)(-0.87)(-0.28)(-1.41)TUR 0.039* -0.242*-0.054-0.036-0.019-0.0240.000 -0.224-0.0090.004 -0.023*-0.193-0.012-0.035-0.113-0.316*0.048 -0.2111 (-1.98)(4.86)(-1.20)(-0.49)(-0.42)(-0.23)(0.63)(-1.23)(-1.00)(0.02)(-1.98)(-1.63)(-0.36)(-0.43)(-0.76)(-2.07)(0.47)(-0.80)TWN 0.00 0.129* -0.005-0.0090.027 0.059 0.000 0.341* 0.005 -0.0840.013 0.218* 0.003 0.130* 0.237* 0.339* -0.0430.018 1 (0.77)(2.02)(-0.20)(-0.21)(0.96)(1.17)(0.96)(3.82)(0.59)(-0.90)(0.74)(3.32)(0.26)(3.21)(2.78)(4.70)(-1.01)(0.31)

Table A1 Crowding-out effect: developing countries on developing countries (first set of regressions)

Notes: The rows are for country *i* and the columns are for country *j*. For example, the coefficient in the first row and the second column in Table A1 reports the effect of Chinese exports on Bangladesh' top ten exports. * denotes significance at the 10% level. *t*-statistics are given in parentheses. See http://worldatlas.com/aatlas/ctycodes.htm for a list of country names corresponding to the three-letter country codes.

Table A2 Crowding-out effect: developing countries on industrial countries (second set of regressions)

	AUS	AUT	BEL	CAN	CHE	DEU	DNK	ESP	FIN	FRA	GBR	IRL	ISL	ITA	JPN	NLD	NOR	NZL	SWE	USA
BGD	0.091	5.827*	0.244	0.988	-2.948	1.261	1.559	0.616	-0.217	0.403	4.913*	-0.977	0.190	5.119*	-1.585	1.041	0.160	-0.416	-0.234	-1.804
	(0.07)	(2.65)	(0.24)	(0.53)	(-1.31)	(0.44)	(0.89)	(0.40)	(-0.23)	(0.15)	(1.88)	(-0.98)	(0.84)	(2.04)	(-0.72)	(0.64)	(0.34)	(-0.98)	(-0.15)	(-0.65)
CHN	0.110*	-0.059	-0.153*	0.273*	0.114	-0.652*	-0.178*	-0.275*	-0.001	-0.289*	-0.378*	-0.059	0.013*		0.440*	-0.215*	-0.029	0.071*	-0.174*	0.456
	(1.99)	(-0.47)	(-2.91)	(2.63)	(0.94)	(-4.91)	(-1.86)	(-3.01)	(-0.02)	(-1.99)	(-2.81)	(-0.98)	(2.77)	(-3.00)	(4.04)	(-2.80)	(-1.13)	(3.92)	(-2.14)	(2.92)
DOM	-0.379	0.243	-0.104	0.833*	0.455	-0.599	0.078	0.304	0.100	0.164	-0.016	-0.147	-0.012	-0.481	0.800*	0.066	-0.074	0.079	-0.194	1.392
	(-1.52)	(0.49)	(-0.56)	(2.32)	(1.06)	(-1.16)	(0.25)	(0.90)	(0.54)	(0.33)	(-0.03)	(-0.74)	(-0.42)	(-0.82)	(2.11)	(0.23)	(-0.85)	(1.01)	(-0.65)	(2.82)
HKG	-0.027	-0.005	-0.024	0.000	0.043	-0.175	0.000	0.097	-0.022	-0.094	0.034	-0.010	-0.008	-0.046	0.106	-0.162*	-0.022	-0.016	-0.179*	0.072
	(-0.48)	(-0.05)	(-0.25)	0.00	(0.38)	(-1.27)	0.00	(1.52)	(-0.47)	(-0.72)	(0.29)	(-0.14)	(-1.08)	(-0.40)	(0.91)	(-2.53)	(-0.70)	(-0.92)	(-2.39)	(0.51)
HTI	0.015	-0.608	-0.617	-0.616	-1.052	0.688	-0.576	-1.115	-0.221	-0.931	-0.449	-0.719*	0.034	-0.794	1.305	-0.577	0.389	0.270*	0.051	0.000
	(0.03)	(-0.70)	(-0.67)	(-0.96)	(-0.99)	(0.58)	(-0.80)	(-1.29)	(-0.54)	(-0.94)	(-0.45)	(-1.70)	(1.28)	(-0.65)	(1.66)	(-0.96)	(1.50)	(1.87)	(0.08)	0.00
IND	0.135	-0.015	-0.723*	0.573*	-0.006	-0.513*	-0.463*	-0.020	-0.022	-0.518*	-0.116	-0.160	0.024	-0.245	0.245	-0.361*	0.004	0.164*	-0.151	0.223
	(0.88)	(-0.06)	(-3.21)	(2.89)	(-0.02)	(-1.75)	(-2.72)	(-0.08)	(-0.21)	(-1.87)	(-0.41)	(-1.32)	(1.53)	(-0.78)	(1.05)	(-2.45)	(0.06)	(4.69)	(-0.91)	(0.90)
JAM	2.323	44.369	66.885	-4.595	11.753	40.081	14.843	-7.563	1.380	54.196	3.378	7.097	-0.082	24.387	-5.718	28.690	2.664	-3.682	-3.211	-57.52
	(0.09)	(1.10)	(1.29)	(-0.07)	(0.32)	(0.59)	(0.48)	(-0.13)	(0.07)	(0.63)	(0.08)	(0.23)	(-0.02)	(0.45)	(-0.10)	(0.70)	(0.13)	(-0.35)	(-0.09)	(-0.69)
KOR	-0.113	-0.421*	0.022	0.398*	-0.253*	-0.452*	0.095	-0.420*	-0.094*	-0.467*	-0.057	0.145*	0.001	0.062	0.011	-0.280*	-0.114*	-0.001	-0.242*	-0.41
	(-1.43)	(-3.96)	(0.14)	(2.40)	(-2.45)	(-2.40)	(1.05)	(-2.73)	(-1.71)	(-1.90)	(-0.46)	(1.77)	(0.10)	(0.40)	(0.06)	(-2.61)	(-1.99)	(-0.05)	(-2.56)	(-1.93
LKA	2.469	-9.046	1.518	-3.811	1.429	-0.817	-1.596	-7.262	1.130	2.161	-3.656	0.921	-0.343	-7.719	5.289	-2.116	-0.520	0.132	0.380	-3.81
	(0.76)	(-1.54)	(0.56)	(-0.73)	(0.24)	(-0.11)	(-0.32)	(-1.53)	(0.42)	(0.27)	(-0.46)	(0.29)	(-0.61)	(-1.04)	(0.86)	(-0.52)	(0.41)	(0.13)	(0.09)	(0.46)
MEX	0.070	0.350*	-0.103	0.168	-0.110	-0.142	0.015	-0.008	0.025	-0.119	-0.013	-0.064	0.005	-0.134	-0.006	-0.084	0.066*	0.027	0.189*	-0.00
	(1.11)	(3.01)	(-0.88)	(1.41)	(-0.84)	(-0.85)	(0.16)	(-0.08)	(0.42)	(-0.70)	(-0.09)	(-0.86)	(1.43)	(-0.89)	(-0.05)	(-0.92)	(1.70)	(1.35)	(2.17)	(-0.01)
MUS	-0.072	0.671	0.908*	-0.182	0.305	-0.154	-0.317	-0.041	-0.238	-0.285	0.498	0.094	0.003	0.077	-0.594	0.209	-0.005	-0.021	-0.568	-0.24
	(-0.24)	(1.20)	(1.74)	(-0.38)	(0.57)	(-0.21)	(-0.71)	(-0.13)	(-1.00)	(-0.39)	(0.80)	(0.22)	(0.08)	(0.13)	(-1.12)	(0.60)	(-0.03)	(-0.21)	(-1.44)	(-0.35)
MYS	0.156*	-0.447*	-0.867*	0.479*	-0.285	-1.267*	-0.562*	-0.650*	0.130	-1.079*	-0.649*	-0.427*	0.020*		0.442*	-0.543*	-0.069	0.163*	-0.253*	0.53
	(1.99)	(-2.25)	(-5.21)	(2.55)	(-1.21)	(-5.68)	(-3.50)	(-4.05)	(1.30)	(-5.26)	(-3.26)	(-4.25)	(2.81)	(-2.84)	(2.57)	(-4.41)	(-1.07)	(5.94)	(-1.73)	(-2.06)
PAK	-0.111	0.125	-0.088	-0.283*	-0.195	-0.281	-0.016	-0.019	0.005	-0.178	-0.441*	-0.060	0.005	0.052	0.027	-0.098	0.065*	-0.033	-0.049	0.33
	(-1.14)	(0.67)	(-1.11)	(-1.88)	(-1.08)	(-1.28)	(-0.11)	(-0.14)	(0.07)	(-0.83)	(-2.16)	(-0.73)	(0.65)	(0.22)	(0.17)	(-0.75)	(1.77)	(-1.03)	(-0.39)	(1.63)
PHL	0.249	-0.721*	-0.286	0.636*	-0.367	-1.178*	-0.485*	-0.298	-0.236	-0.717	-0.306	-0.025	0.006	-0.856*	0.415	-0.638*	0.027	0.177*	0.027	0.692
	(1.29)	(-2.27)	(-0.91)	(2.07)	(-1.13)	(-2.60)	(-1.79)	(-1.47)	(-1.66)	(-1.44)	(-0.69)	(-0.13)	(0.40)	(-2.48)	(1.25)	(-2.82)	(0.29)	(-3.37)	(0.11)	(1.50)
SGP	0.040	0.106	-0.429*	-0.049	0.109	-0.251	-0.107	0.079	0.059	-0.513*	-0.008	-0.039	0.005	-0.027	0.516*	-0.201*	-0.163	0.114*	0.264*	-0.17
	(0.56)	(0.98)	(-3.61)	(-0.32)	(1.13)	(-1.37)	(-1.32)	(0.68)	(1.07)	(-2.51)	(-0.07)	(-0.48)	(0.87)	(-0.18)	(3.57)	(-1.90)	(-1.55)	(5.28)	(2.85)	(-0.81)
THA	0.229*	-0.483*	-0.484*	0.416*	0.135	-1.097*	-0.302*	-0.434*	-0.057	-0.847*	-0.358*	-0.227*	0.012*		0.702*	-0.428*		0.110*	-0.282*	0.50
	(2.63)	(-3.05)	(-2.89)	(2.58)	(0.76)	(-5.55)	(-2.37)	(-3.07)	(-0.68)	(-4.01)	(-1.83)	(-2.09)	(2.24)	(-2.70)	(3.77)	(-3.98)	(-1.08)	(4.36)	(-2.35)	(2.16)
TUN	-0.103	0.774*	-0.064	0.107	0.517	0.308	0.188	-0.569*	0.030	0.288	-0.409	0.063	0.020	0.606	-0.060	0.140	0.060	-0.006	0.065	-0.14
	(-0.49)	(2.51)	(-0.45)	(0.40)	(1.56)	(0.80)	(0.78)	(-2.06)	(0.21)	(0.76)	(-1.03)	(0.44)	(0.87)	(1.41)	(-0.18)	(0.67)	(0.86)	(-0.09)	(0.27)	(-0.39)
TUR	-0.079	0.408	0.555*	-0.253	-0.563*	0.624*	0.260	0.657*	0.028	1.083*	0.269	0.205	-0.007	0.977*		0.391*	0.094	-0.067	0.186	-0.53
	(-0.60)	(1.69)	(2.11)	(-1.03)	(-2.14)	(1.92)	(1.45)	(3.13)	(0.23)	(3.44)	(0.99)	(1.28)	(-0.97)	(3.15)	(-1.74)	(2.48)	(1.20)	(-1.57)	(1.00)	(-1.75
ΓWN	0.182*	-0.203	-0.558*	0.185	-0.214	-0.952*	-0.301*	-0.470*	-0.050	-0.941*	-0.683*	-0.228*	0.005	-0.549*	0.670*	-0.431*	-0.085*	0.102*	-0.120	0.50
	(1.89)	(-1.32)	(-4.93)	(1.35)	(-1.34)	(-5.76)	(-2.64)	(-3.51)	(-0.73)	(-6.22)	(-3.92)	(-2.35)	(0.47)	(-2.99)	(5.08)	(-4.77)	(-1.96)	(5.17)	(-1.15)	(2.87

Notes: * denotes significance at the 10% level. t-statistics are given in parentheses. See http://worldatlas.com/aatlas/ctycodes.htm for a list of country names corresponding to the three-letter country codes.

Table A3 Crowding-out effect: industrial countries on industrial countries (third set of regressions)

	AUS	AUT	BEL	CAN	CHE	DEU	DNK	ESP	FIN	FRA	GBR	IRL	ISL	ITA	JPN	NLD	NOR	NZL	SWE	USA
AUS	1	-0.222	-0.302	0.356*	-0.278	-0.588*	-0.229	-0.226	0.026	-0.654*	0.003	0.105	0.007	-0.252	-0.102	-0.248*	-0.105	0.022	0.089	0.025
		(-1.15)	(-1.38)	(1.86)	(-1.30)	(-2.08)	(-1.33)	(-1.30)	(0.18)	(-2.50)	(0.01)	(0.91)	(0.51)	(-0.94)	(-0.44)	(-1.94)	(-0.65)	(0.58)	(0.48)	(0.10)
AUT	-0.035	1	0.257*	-0.104	0.062	0.394*	0.195*	0.187*	0.081	0.391*	0.065	-0.011	-0.001	0.290*	-0.183*	0.051	0.123	-0.017	0.172*	-0.059
	(-0.72)		2.61	(-1.01)	(0.53)	(2.72)	(2.59)	(2.19)	(1.18)	(3.09)	(0.55)	(-0.16)	(-0.26)	(2.13)	(-1.75)	(0.69)	(1.64)	(-1.04)	(1.95)	(-0.44)
BEL	-0.125*	0.246*	1	-0.152	0.172	0.620*	0.362*	0.389*	0.103	0.719*	0.420*	0.020	-0.011	0.301*	-0.577*	0.286*	0.252*	-0.099*	0.119	-0.447*
	(-2.19)	(2.44)		(-1.48)	(1.51)	(4.57)	(4.50)	(4.08)	(1.35)	(6.72)	(3.57)	(0.33)	(-1.58)	(2.16)	(-5.64)	(4.71)	(3.19)	(-6.34)	(1.30)	(-3.69)
CAN	0.028	-0.062	-0.001	1	-0.067	-0.049	-0.052	-0.162*	0.024	-0.009	-0.174*	0.058	0.003	-0.105	0.089	-0.029	0.006	0.027	0.003	-0.068
	(0.61)	(-0.86)	(-0.01)		(-1.03)	(-0.38)	(-0.93)	(-1.88)	(0.65)	(-0.06)	(-2.28)	(1.20)	(0.84)	(-1.10)	(0.81)	(-0.41)	(0.08)	(1.64)	(0.05)	(-0.45)
CHE	-0.127*	0.145	0.175*	0.068	1	0.318*	0.159*	-0.048	-0.066	0.158	0.167	0.068	-0.012	0.039	-0.145	0.055	0.104	0.007	-0.121	-0.319*
	(-2.17)	(1.40)	(1.97)	(0.79)		(2.13)	(1.81)	(-0.76)	(-1.10)	(1.32)	(1.55)	(1.12)	(-1.55)	(0.35)	(-1.46)	(0.82)	(1.64)	(0.43)	(-1.20)	(-2.64)
DEU	-0.120*	0.234*	0.385*	-0.138*	0.116	1	0.258*	0.313*	-0.001	0.672*	0.275*	0.135*	-0.004*	0.446*	-0.479*	0.329*	0.258*	-0.058*	0.211	-0.440*
	(-2.40)	(3.04)	(7.82)	(-1.92)	(1.45)		(5.12)	(6.72)	(-0.01)	(9.74)	(2.89)	(2.46)	(-1.84)	(4.83)	(-8.16)	(7.09)	(5.10)	(-5.66)	(3.26)	(-4.69)
DNK	-0.062	0.164	0.574*	-0.458*	0.405*	0.930*	1	0.297*	-0.006	0.786*	0.425*	0.366*	-0.011*	0.715*	-0.351*	0.230*	0.098*	-0.100*	0.328	-0.382*
	(-0.82)	(0.99)	(4.89)	(-3.45)	(2.39)	(5.46)		(2.96)	(-0.09)	(5.00)	(2.81)	(4.29)	(-3.19)	(4.02)	(-2.68)	(2.23)	(2.26)	(-4.69)	(3.26)	(-2.14)
ESP	-0.113	0.066	0.107	-0.400*	0.082	0.140	-0.039	1	0.066	0.619*	0.175*	0.062	-0.015*	0.476*	-0.330*	0.053	0.220*	-0.014	0.226	-0.236
	(-2.17)	(0.84)	(0.94)	(-3.82)	(1.12)	(1.03)	(-0.61)		(1.60)	(3.93)	(2.14)	(1.11)	(-2.04)	(5.13)	(-2.72)	(0.73)	(2.61)	(-0.67)	(3.25)	(-1.68)
FIN	-0.029	0.169	-0.020	0.038	-0.023	0.494*	0.008	0.324*	1	0.168	0.169	0.035	0.015*	0.639*	-0.229	0.137	0.390*	-0.004	0.519	-0.258
	(-0.37)	(0.98)	(-0.12)	(0.22)	(-0.14)	(2.11)	(0.06)	(2.43)		(0.79)	(0.89)	(0.39)	(3.23)	(3.11)	(-1.38)	(1.20)	(3.51)	(-0.14)	(4.07)	(-1.24)
FRA	-0.090*	0.145*	0.282*	-0.010	0.078	0.502*	0.115*	0.236*	0.057*	1	0.108*	0.090*	-0.004	0.057	-0.329*	0.243*	0.209*	-0.051*	0.077	-0.352*
	(-2.52)	(2.78)	(4.66)	(-0.13)	(1.59)	(6.67)	(2.93)	(3.94)	(2.06)		(1.87)	(2.36)	(1.47)	(0.79)	(-4.28)	(5.12)	(4.18)	(-4.43)	(1.60)	(-3.63)
GBR	-0.242*	-0.097	-0.065	-0.223	-0.007	-0.018	0.082	0.168	0.001	0.249	1	0.154*	-0.006	0.489*	-0.789*	-0.220*	-0.218*	-0.045*	0.025	-0.305
	(-3.74)	(-0.95)	(-0.48)	(-1.53)	(-0.07)	(-0.10)	(1.01)	(1.45)	(0.03)	(1.10)		(2.05)	(-1.15)	(3.85)	(-5.71)	(-2.22)	(-2.11)	(-1.81)	(0.26)	(-1.47)
IRL	-0.354*	-0.191	0.137	0.236	-0.028	0.288	0.050	0.202	0.105	0.797*	0.356*	1	-0.024	0.606*	-0.506*	-0.057	-0.004	-0.041	0.310*	-1.019*
	(-3.65)	(-1.25)	(0.68)	(1.06)	(-0.20)	(1.09)	(0.40)	(1.10)	(1.34)	(2.53)	(2.19)		(-1.61)	(3.13)	(-2.17)	(-0.39)	(-0.02)	(-1.09)	(2.24)	(-3.42)
ISL	2.428	-0.587	-6.001*	4.243	-0.588	-4.772	-0.718	-2.630	1.660	-5.592	-3.242	-2.528*	1	-2.725	5.234*	-0.234	3.663*	1.760*	-1.900	2.543
	(1.45)	(-0.27)	(-2.34)	(1.34)	(-0.31)	(-1.31)	(-0.47)	(-1.08)	(1.56)	(-1.39)	(-1.45)	(-1.85)		(-0.92)	(1.83)	(-0.10)	(1.70)	(3.57)	(-0.97)	(-0.68)
ITA	0.028	0.163*	0.323*	-0.156	-0.016	0.612*	0.362*	0.480*	0.091*	0.523*	0.380*	0.161*	-0.005	1	-0.434*	0.265*	0.073*	-0.058*	0.200*	-0.360*
	(0.54)	(1.87)	(4.19)	(-2.01)	(-0.16)	(6.69)	(5.15)	(7.64)	(2.33)	(5.78)	(4.25)	(3.24)	(-1.47)		(-6.61)	(5.54)	(3.02)	(-4.77)	(3.39)	(-4.01)
JPN	0.025	-0.155	-0.404*	0.078	-0.007	-0.812*	-0.229*	-0.280*	-0.054	-0.683*	-0.645*	-0.160*	0.006*	-0.566*	1	-0.296	-0.296*	0.058*	-0.350*	0.120
	(0.46)	(-1.54)	(-5.22)	(0.80)	(-0.07)	(-7.30)	(-3.23)	(-4.05)	(-0.84)	(-6.47)	(-6.48)	(-2.46)	(2.10)	(-4.92)		(-4.42)	(-4.54)	(3.79)	(-4.63)	(0.86)
NLD	-0.165*	0.241	0.650*	-0.163	0.442*	1.251*	0.407*	0.237*	0.028	1.261*	0.494*	0.178*	0.007	0.476*	-0.691*	1	0.173	-0.102*	0.265*	-1.021*
	(-2.11)	(1.45)	(4.56)	(-1.09)	(2.37)	(6.16)	(2.88)	(2.15)	(0.30)	(8.08)	(2.45)	(1.78)	(0.70)	(2.65)	(-3.97)		(1.59)	(-4.13)	(1.87)	(-4.74)
NOR	0.138*	0.299*	0.123	0.093	0.335*	0.890*	-0.078	0.288*	0.222*	0.788*	-0.228*	0.026	0.009	0.029	-0.291*	0.424*	1	0.018	0.098	-0.134
	(1.95)	(2.68)	(0.84)	(0.54)	(3.45)	(5.09)	(-0.93)	(2.35)	(4.02)	(3.67)	(-1.95)	(0.33)	(1.65)	(0.18)	(-1.85)	(4.13)		(0.62)	(0.94)	(-0.64)
NZL	0.383	0.398	-3.250*	1.292*	0.202	-0.968	-1.112*	-0.142	0.093	-3.032*	-1.147*	-0.479*	0.058	-1.116*	3.248*	-0.702	-0.010	1	0.470	1.374*
	(1.20)	(0.88)	(-6.57)	(1.95)	(0.52)	(-1.24)	(-3.59)	(-0.22)	(0.41)	(-3.60)	(-2.49)	(-1.74)	(1.09)	(-1.84)	(6.47)	(-1.63)	(-0.02)		(1.13)	(1.82)
SWE	-0.036	0.268*	0.330*	-0.058	-0.013	0.719*	0.257*	0.314*	0.297*	0.426*	0.440*	0.224*	-0.003	0.805*	-0.516*	0.219*	0.146	-0.050*	1	-0.218
	(-0.59)	(1.95)	(2.68)	(-0.45)	(-0.09)	(4.21)	(2.74)	(3.01)	(3.68)	(2.65)	(3.16)	(2.90)	(-0.72)	(5.36)	(-4.33)	(2.45)	(1.56)	(-2.49)		(-1.33)
USA	0.074*	-0.054	-0.031	-0.003	-0.131*	-0.359*	-0.051	-0.141*	-0.089*	-0.437*	-0.085	-0.130*	0.001	-0.144*	0.021	-0.131*	-0.062	0.021	-0.066	1
	(2.07)	(-0.99)	(-0.46)	(-0.03)	(-2.76)	(-4.26)	(-1.22)	(-2.45)	(-3.41)	(-4.39)	(-1.48)	(-3.50)	(0.50)	(-2.05)	(0.26)	(-2.50)	(-1.16)	(1.64)	(-1.36)	

Notes: * denotes significance at the 10% level. t-statistics are given in parentheses. See http://worldatlas.com/aatlas/ctycodes.htm for a list of country names corresponding to the three-letter country codes.

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