Do the BRICs and Emerging Markets Differ in their Agrifood Trade?

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Abstract

This study develops an import demand model to explore the role of income in explaining the trade performance of low, middle and high-income countries with a special emphasis on Brazil, Russia, India and China – the BRIC economies. The study estimates the impact of the growth in per capita income on the trade of agrifood products using data for 52 countries and 20 agrifood products for the years 1990 to 2006. The results suggest that China, Russia and Brazil have more income elastic import demand than other middle-income countries. Conversely, the income elasticities of import demand in India are similar to other low-income countries and for the most part statistically equal to zero.

Keywords: Emerging economies; BRIC economies; Food trade; Income elasticities; Economic growth

1. Introduction

The slow growth in developed economies has focused additional attention on emerging markets that appear to offer more exciting growth prospects. In 2001, Goldman Sachs identified Brazil, Russia, India and China as four emerging markets that would become increasingly important in the world economy and coined the term BRICs to describe them. Wilson and Purushothaman, writing in 2003, when the economies of the BRICs equaled only 15 percent of the G6 (France, Germany, Italy, Japan, United Kingdom, United States) economies, predicted that by 2009 the increase in the GDP of the BRICs would match the increase in the GDP of the G6. Using the most recent projections from the International Monetary Fund, by 2009, the BRIC economies will equal one-third the size of the G6 and the absolute increase in their GDP will match that of the G6 at about US$1.1 trillion. Wilson and Purushothaman (2003) also predicted that: 1) the BRICs will reach one-half the size of the G-6 by 2025; and 2) the Chinese economy will be larger than the Japanese economy by 2015, and larger than the US economy by 2027.[1] However, in spite of the startling economic performance of the BRICs, very little is known about their potential to influence global agrifood trade.

This paper addresses a number of questions that will help in understanding the role of the BRICs in agrifood trade and how they compare to other emerging market economies at similar levels of development. Specifically, we ask: (1) how does economic growth in low-income, middle-income, high-income and the BRIC countries affect global agrifood trade; (2) do the income elasticities of import demand in low-income, middle-income, high-income and the BRIC countries differ by time period; 3) are the income elasticities for imported agrifood products in

[1] China's economy is already larger than Germany's and it is the second largest merchandize exporter behind Germany, having overtaken the US, and the third largest importer (WTO, 2008). All the values given in the study are in US dollars.

the BRICs similar to other economies at the same level of economic development; and (4) are the income elasticities of import demand in the BRICs similar to each other?

The relationship between trade expansion and economic growth has been a subject of considerable debate in the international economics literature. Trade expansion depends on two key factors — income growth and reduced trade costs that include import barriers, communication and transfer costs (Anderson and Wincoop, 2004). Declining protection and communication costs increase the importance of growth in income in expanding global trade. However, the world has witnessed major changes in income growth across the development spectrum. Figure 1 shows that in comparison to other economies, the growth in China's per capita income is phenomenal with the growth rate reaching 11.0 percent in 1990-95 and even its lowest growth rate (6.3 percent in 1985-90) is five times higher than the growth rate achieved by other middle-income economies. In general, the Brazilian economy grows at a slower rate than the other middle-income economies while India grows at a faster rate than Brazil but only slightly faster than other low-income countries. Russia whose economy contracted during 1990-95 reached a growth rate of 6.7 percent during 2000-06. Do these changes in the global economic landscape have the potential to change traditional patterns of global agrifood trade? This is the question raised and investigated in this study.

The article is organized into five sections. A discussion of the theoretical and empirical model follows in the next section. The third section contains a description of the data used in the empirical analysis. The empirical results are explained in the fourth section, followed by the conclusions in the fifth and final section.

2. Empirical model

In developing an import demand model we assume that food and non-food products are separable and food product demand in each country *i* is generated by a representative consumer with a two-stage utility function, weakly separable in subutility indices defined over imported food products (Q_f) and domestically produced food products (Q_h) where $f = 1,\ldots, F$ indexes imported and $h = F+1,\ldots, H$, indexes domestically produced products such that

$$U^i = U\left(u_1^i, \cdots, u_f^i, \cdots, u_{F+1}^i, \cdots, u_h^i, \cdots, u_H^i\right) \tag{1}$$

The subutility index u_h^i is a general function of the quantity consumed of product *h* while the subutility index u_f^i is assumed to have a constant elasticity of substitution (CES) utility function to allow for substitution between differentiated products.

$$U_f^i = \left(\sum_{f=1}^{F} Q_f^{\rho_f}\right)^{1/\rho_f}, 0 < \rho_f < 1, f = 1 \cdots 20 \tag{2}$$

The representative consumer in country *i* allocates food expenditure $E_f^i = \sum_{f=1}^{F} P_f^i Q_f^i$ in the second stage of budgeting and maximizes the CES approximation of preferences subject to this expenditure, generating expenditure functions (equation 3) where P_f^i represents the price of each product in country *i* and Q_f^i represents the demand for product f of country *i*. Approximating food expenditure by per capita income in country *i* ($\bar{I}_i$), demand for a food product is

$$P_f^i Q_f^i = \frac{\left(P_f^i\right)^{\frac{\rho_f}{1-\rho_f}}}{\sum_{f=1}^{F}\left(P_f^i\right)^{\frac{\rho_f}{1-\rho_f}}} \bar{I}_i \tag{3}$$

2.1 Bilateral trade flows

Let $\frac{1}{1-\rho_f} \equiv \sigma_f$ be the elasticity of substitution between any two products within a product sector faced by a consumer in country *i*. Imposing separability between demand for imported and domestically produced agrifood products the value of country *i*'s per capita imports from country *j* in year (*y*) of product *f* (imp_{ijfy}) is given as

$$imp_{ijfy} = \frac{\left(P_{jfy}\, T_{jfy}\right)^{1-\rho_f}}{\sum_{f=1}^{F}\left(P_{jfy}\, T_{jfy}\right)^{1-\rho_f}} \bar{I}_{iy} \tag{4}$$

Equation (4) is product specific but in the empirical model we categorize products by product sector and test the hypotheses by product sector. The seven product sectors are: i) meat; ii) dairy; iii) cereals; iv) vegetables; v) fruits; vi) tea and coffee; and xii) oilseeds.[2] Since the price P_{ijfy} of a product in sector *f* in importing country *i* in year *y* is affected by trade costs, the import price is replaced by $\left(P_{jfy}\, T_{jfy}\right)$using the equality between the import price and the product of the export price and trade costs. Trade costs $\left(T_{jfy}\right)$ are influenced transportation costs that are proxied by the distance between trade partners *i* and *j* ($dist_{ij}$); trade partners sharing a common border (DCB_{ij}) and preferential trade agreements ($DPTA_{ij}$) that approximate the tariff structure between trade partners.

$$lnT_{ijf} = \beta_1 lndist_{ij} + \beta_2 DCB_{ij} + \beta_3 DPTA_{ij} + v_{ij} \tag{5}$$

Taking the logarithm of both sides of equation (4) and substituting for the variables that determineT_{ijf} and simplifying yields

$$lnimp_{ijfy} = \psi_i + \psi_j + \psi_y + \psi_f + \gamma_1 lndist_{ij} + \gamma_2 DCB_{ij} + \gamma_3 DPTA_{ij} + \gamma_4 ln\bar{I}_{iy} + \varepsilon_{ijfy} \tag{6}$$

where $\psi_i, \psi_y$and ψ_f are importing, year and product specific fixed effects included in equation (6) to account for unobserved heterogeneity, including factors like prices and product specific

[2] Detailed information on the products included in each sector is given in the section on data.

characteristics. These factors also include domestic and trade related policies, industry specific border related hindrances, immeasurable product quality characteristics, technical and non-technical barriers to trade, and so on. Therefore, fixed effects provide a solution to unobserved heterogeneity, and this is the reason why these fixed effects are included in the empirical model (Egger, 2002).[3] It is important to mention that γ_4 is the income elasticity showing the proportionate change in the expenditure on the imports of an agrifood product as income changes.

Equation (6) is further modified to facilitate hypotheses testing. The study uses data from 1990 to 2006 and to aid in hypothesis testing across time, the data is divided into three time periods: 1990 to 1995, 1996 to 2000 and 2001 to 2006. Dummy variables representing these three time periods are created so D_{90} is one for 1990 to 1995 and zero otherwise; D_{96} is one for 1996 to 2000 and zero otherwise; D_{01} is one for 2001 to 2006 and zero otherwise. The per capita income variable $\bar{I}_{iy}$ in equation (6) is split into lower income economies ($\bar{I}_{LIiy90}$) (excluding India) for the period 1990 to 1995, ($\bar{I}_{LIiy96}$) for the period 1996 to 2000 and ($\bar{I}_{LIiy01}$) for the period 2001 to 2006 by interacting per capita income with the dummy variables representing these regions and time periods as follows

$$\begin{aligned} \bar{I}_{LIiy90} &= \bar{I}_{iy} * D_{LIi} * D_{90} \\ \bar{I}_{LIiy96} &= \bar{I}_{iy} * D_{LIi} * D_{96} \\ \bar{I}_{LIiy01} &= \bar{I}_{iy} * D_{LIi} * D_{01} \end{aligned} \tag{7}$$

where D_{LIi} is one for low income countries and zero otherwise; D_{MIi} is one for middle income countries and zero otherwise. A similar transformation is carried out for middle-income economies (excluding the BRICs); high-income economies; and the individual BRIC nations, giving

[3] It is important to understand that the products in a product sector are not aggregated; each bilateral trade flow of each individual product is included as an observation during estimation.

$$
\begin{aligned}
lnimp_{ijfy} = {} & \psi_i + \psi_j + \psi_y + \psi_f + \gamma_1 lndist_{ij} + \gamma_2 DCB_{ij} + \gamma_3 DPTA_{ij} \\
& + \gamma_4 ln\bar{I}_{LIiy90} + \gamma_5 ln\bar{I}_{LIiy96} + \gamma_6 ln\bar{I}_{LIiy01} + \gamma_7 ln\bar{I}_{MIiy90} + \gamma_8 ln\bar{I}_{MIiy96} \\
& + \gamma_9 ln\bar{I}_{MIiy01} + \gamma_{10} ln\bar{I}_{HIiy90} + \gamma_{11} ln\bar{I}_{HIiy96} + \gamma_{12} ln\bar{I}_{HIiy01} \\
& + \gamma_{13} ln\bar{I}_{BRiy90} + \gamma_{14} ln\bar{I}_{BRiy96} + \gamma_{15} ln\bar{I}_{BRiy01} + \gamma_{16} ln\bar{I}_{RFiy90} \\
& + \gamma_{17} ln\bar{I}_{RFiy96} + \gamma_{18} ln\bar{I}_{RFiy01} + \gamma_{19} ln\bar{I}_{INiy90} + \gamma_{20} ln\bar{I}_{INiy96} \\
& + \gamma_{21} ln\bar{I}_{INiy01} + \gamma_{22} ln\bar{I}_{CHiy90} + \gamma_{23} ln\bar{I}_{CHiy96} + \gamma_{24} ln\bar{I}_{CHiy01} + \varepsilon_{ijfy}
\end{aligned}
\tag{8}
$$

where $\bar{I}$ represents per capita income and subscript *MI* stands for middle-income economies, *HI* for high-income economies, *BR* for Brazil, the *RF* for Russian Federation, *IN* for India, and *CH* for the Peoples Republic of China.

Equation (8) is used to test a number of hypotheses for BRIC and other regions. For example, the hypothesis that the income elasticities of BRIC countries for imported agrifood products are the same for 1996 to 2000 requires testing if $\gamma_{14} = \gamma_{17} = \gamma_{20} = \gamma_{23}$.

3. Data

The trade data come from the United Nations Commodity Trade Statistics database. The study uses value of trade data for 20 agrifood products for the years 1990 to 2006. The data is organized by Standard International Trade Classification, Revision 3, at the 3-digit level. We categorized the SITC codes for the 20 individual products into seven agrifood product sectors: meat, dairy products, cereals, vegetables, fruits, tea and coffee and oilseeds.[4] Gross domestic product (GDP) and per capita GDP data come from the World Bank's World Development Indicators (2008).

[4] The meat sector includes two individual products having SITC codes 011(bovine meat) and 012(other meat); the dairy sector 022(milk and cream), 023 (butter) and 024 (cheese and curd); cereals 041(wheat), 042 (rice), 043 (barley), 044 (maize), 045 (other cereals), 046 (wheat meal), 047(cereal meal) and 048(cereal preparation); fruits 058 (preserved fruits) and 059 (fruit juice); vegetables 054(vegetables), 056 (processed vegetables) ; tea and coffee 074 (tea & mate); and oilseed 222(oilseed) and 223(other oilseed).

4. Estimation Results

Table 2 provides the results of estimating equation (8) for the seven agrifood product sectors: i) meat; ii) dairy; iii) cereals; iv) vegetables; v) fruits; vi) tea; and viii) oilseeds. All of the models fit the data well and the explanatory power ranges from 44.3 percent for cereals to 61.7 percent for fruit. The importer, exporter and product-specific fixed effects are statistically significant for all the products while the year-specific fixed effects are statistically insignificant only for cereals. Hence, estimating the model without these fixed effects would have produced biased estimates. Results given in table 1 also show that for the models the coefficients of PTAs,, common borders and distance have the expected signs.

The following discussion is focused on those income elasticities (coefficients) that are statistically significant at a 90 percent or larger significance level. The table shows that the income elasticities of low-income economies and India, for all three time periods, and for almost all agrifood product sectors are statistically insignificant. The only exception is fruit imports where the income elasticity is about 1.2. The income elasticities of middle and high-income countries, China, Russia, and for three (vegetables, fruit and tea) of seven product sectors in Brazil are statistically significant implying that income is an important determinant of trade for these economies. In reviewing these elasticities we concentrate on the 2001-06 time period (which in all cases is illustrative of the elasticity in all time periods). For the middle-income countries only fruit (1.33) has an income elasticity greater than one while four product sectors have income elasticities between 0.7 and 1.0 (dairy (0.99), vegetables (0.86), meat (0.74), tea (0.74)). Cereals (0.51) and oilseeds (0.48) have the most income inelastic import demands. An important difference among the income elasticities of the BRICs and the other middle-income economies is that none of the income elasticities are statistically elastic except in the BRIC

economies. For Russia, growth in imports outpaced growth in income for all of the agrifood products but import demand is statistically elastic only for fruit. In Brazil, the three statistically significant income elasticities are all greater than one (vegetables (1.05), fruit (1.75), tea (1.25)). In China, the import demand elasticities for five of seven product sectors are greater than two (dairy (2.72), cereals (2.05), fruit (2.04), tea (2.52), oilseeds (2.58)) and the sixth is near one (vegetables (1.05)). China's imports of dairy, cereals, fruit, tea and oilseeds are statistically elastic across all three time periods. Hence, the BRIC economies and especially China stand out as potentially different from other economies at the same level of development. Based on this in the next section we test four hypotheses:

- The income elasticity of import demand for low, middle and high-income countries, excluding the BRICs, is constant across time periods.
- The income elasticity of import demand for the individual BRIC countries is constant across time periods.
- The income elasticities of import demand in the BRIC countries are the same as the income elasticities of import demand for other countries at the same level of economic development.
- The income elasticities of import demand in the BRIC countries are the same.

Casual observation of the estimated income elasticities over the three time periods suggests that they are quite similar for the low, middle and high-income countries. The results of a formal test of this hypothesis (equation 8), that $\gamma_4 = \gamma_5 = \gamma_6$ for low-income, $\gamma_7 = \gamma_8 = \gamma_9$ for middle-income and that $\gamma_{10} = \gamma_{11} = \gamma_{12}$ for high-income countries are shown in table 2. For low-income countries the null hypothesis is rejected only for the dairy and tea product sectors. Although not shown in table 2 the hypothesis that the income effects in low-income countries are

jointly equal to zero is rejected only for the dairy, fruit and tea product sectors. Hence our results suggest that with only a few exceptions income growth plays only a limited role in import demand for the low-income countries. For middle-income and high-income countries, the hypothesis of equal income elasticities over time is rejected for 11 of the 14 product sectors, the exceptions being cereals and vegetables in the middle-income and fruit in the high-income countries. The joint hypothesis that all of the income elasticities for middle-income countries are zero is rejected for all seven product sectors and the same is true for the high-income countries.

Although the hypothesis of equal income elasticities across time is largely rejected for the middle and high-income countries the absolute difference between the estimated elasticities across time periods are quite small, generally less than 0.1, no matter the absolute size of the estimated elasticity. In no case did a product sector switch from an inferior good to a normal good, nor did product sectors' estimated elasticity switch from elastic to inelastic, or the reverse. So, from a statistical stand point the income elasticities vary across time but from a economic theory stand point the estimates are very similar and consistent across time periods.

Our second hypothesis test is to determine if the income elasticities of the BRIC countries are the same across the three time periods. The hypothesis is rejected about 50 percent of the time: in Brazil for meat, fruit and tea; in China for dairy, cereals and fruit; in Russia for fruit and tea; and in India for dairy, vegetables, fruit and tea (table 2). Again, from an economics point of view the income elasticity estimates for each BRIC nation and product sector are similar and consistent over time.

Our third hypothesis tests if the income elasticities of Brazil, the Russian Federation and China during the three time periods are similar to those for the other middle-income economies. Similarly it is postulated that India's income elasticities for agrifood product sectors are similar

to those for other low-income economies. Table 2 shows that the hypothesis is consistently rejected for all product sectors across all the three time periods for Brazil, Russia and China while India's income elasticities are statistically the same as the elasticities for the other low-income economies for six out of seven product sectors. However, it is important to evaluate in what respect (size or sign) Brazilian, Chinese and Russian income elasticities are different from the other middle-income countries. Table 1 shows that Chinese and Russian income elasticities are higher than those for the other middle-income countries, while Brazilian income elasticities are higher for some product sectors (fruit, vegetables and tea) and lower for others. Hence among the BRIC economies, China and Russia appear to be the important growth markets of the future for all agrifood products and Brazil for a few.

Our final hypothesis tests if the income elasticities in the BRICs are the same. Somewhat surprisingly (given what we have said about India earlier) the hypothesis is accepted for three product sectors (meat, vegetables and fruit) over all three time periods and rejected over all three time periods for the other four product sectors.

5. Conclusion

Reductions in trade barriers and trade costs increase the importance of economic growth in expanding global agrifood trade. Global economic growth in developed countries has slowed since the 1970s, while growth in developing countries has been more rapid. More rapid growth in emerging markets is expected to increase their expenditures on imports of agrifood products. Unfortunately, there has been little empirical work on agrifood import demand in the developing economies and almost none on the importance of the BRIC countries in this trade. In this study, the BRIC economies are separated from the other countries to better analyze their potential for changing global agrifood trade patterns.

The study investigated the role of income in agrifood trade by estimating per capita bilateral trade flows for individual agrifood products categorized into seven product categories from 1990 to 2006 for the BRIC economies, low-income economies (excluding India), middle-income economies (excluding Brazil, Russia and China) and high-income economies. Our results suggest that that income is an important determinant of trade in middle and high-income countries, Brazil, Russia and particularly in China. India appears to be no different than other low-income countries where the income elasticity of import demand is zero in nearly all cases. The income elasticities of import demand are higher in middle-income countries than in high-income countries but only in China and Russia are the elasticity estimates consistently greater than one and only in China are they generally statistically greater than one. Based on our results the proposition that middle-income countries are the agrifood import growth markets of the future has strong support only for China and Russia among the BRIC economies.

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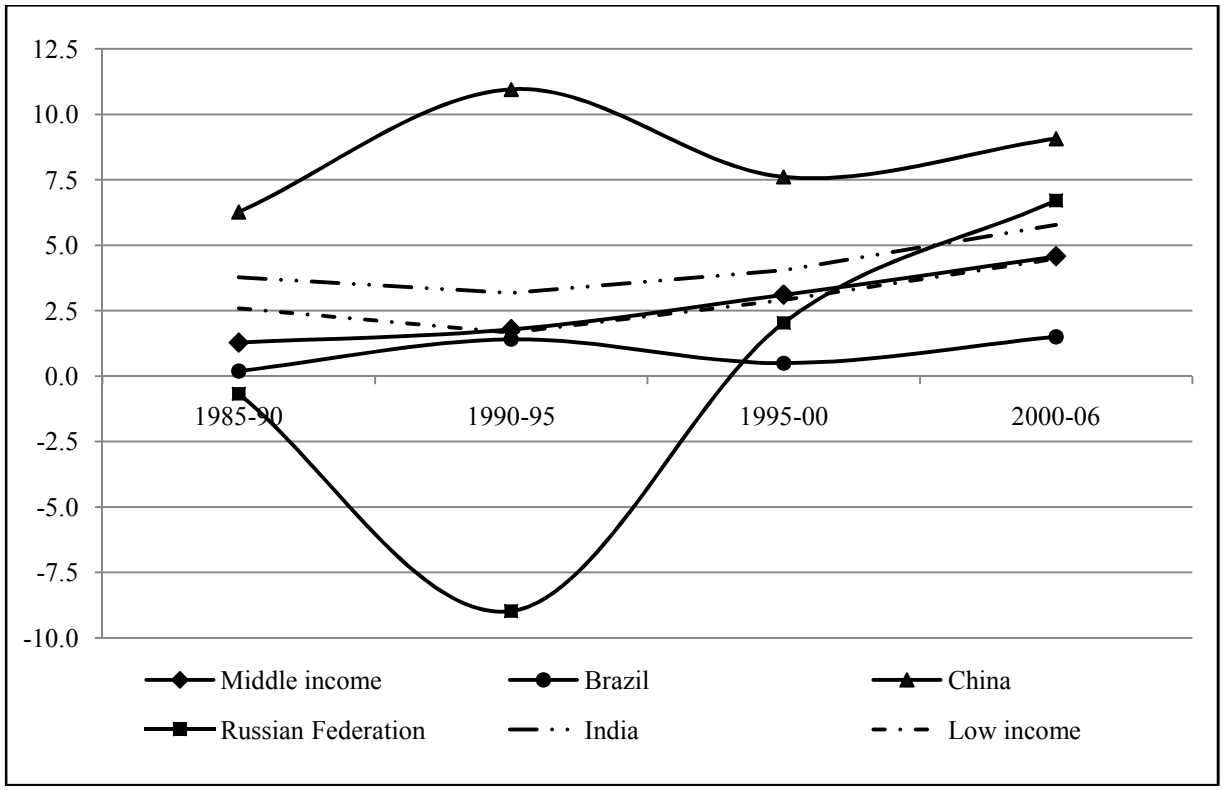

Figure 1: Per capita GDP growth in BRIC, middle-income and low-income economies (%)

Table 1: Regression results for agrifood products imports (real 2000 US dollars) using least squares

Variable	Meat	Dairy	Cereals	Vegetables	Fruits	Tea	Oilseed
Log of Distance	-0.824***	-0.992***	-0.919***	-1.277***	-0.937***	-0.899***	-0.964***
	(0.035)	(0.027)	(0.019)	(0.019)	(0.019)	(0.032)	(0.029)
Common Border	1.156***	1.159***	0.785***	0.767***	1.027***	1.268***	0.538***
	(0.077)	(0.061)	(0.045)	(0.054)	(0.054)	(0.089)	(0.078)
PTA	1.363***	1.343***	0.908***	0.413***	0.577***	0.195**	0.370***
	(0.071)	(0.056)	(0.040)	(0.040)	(0.043)	(0.074)	(0.062)
Income Elasticity of:							
Low-income countries - 1990 to 1995	0.218	-0.708	-0.384	0.0338	1.233**	-0.278	1.529
	(1.18)	(0.59)	(0.55)	(0.59)	(0.60)	(0.88)	(1.31)
Low-income countries - 1996 to 2000	0.139	-0.776	-0.438	-0.00894	1.212**	-0.272	1.540
	(1.17)	(0.59)	(0.54)	(0.58)	(0.60)	(0.88)	(1.30)
Low-income countries - 2001 to 2006	0.109	-0.717	-0.410	0.000642	1.262**	-0.187	1.563
	(1.16)	(0.58)	(0.54)	(0.58)	(0.59)	(0.87)	(1.28)
Middle-income countries - 1990 to1995	0.881***	0.953***	0.501***	0.865***	1.266***	0.583***	0.359**
	(0.19)	(0.12)	(0.095)	(0.094)	(0.10)	(0.16)	(0.15)
Middle-income countries - 1996 to 2000	0.778***	0.929***	0.475***	0.855***	1.255***	0.606***	0.428**
	(0.19)	(0.13)	(0.095)	(0.094)	(0.10)	(0.16)	(0.15)
Middle-income countries - 2001 to 2006	0.744***	0.990***	0.514***	0.858***	1.330***	0.697***	0.476**
	(0.19)	(0.12)	(0.095)	(0.094)	(0.10)	(0.16)	(0.15)
High-income countries - 1990 to 1995	0.464**	0.557***	0.668***	0.715***	0.658***	1.009***	0.451**
	(0.20)	(0.15)	(0.11)	(0.10)	(0.11)	(0.18)	(0.17)
High-income countries - 1996 to 2000	0.390*	0.552***	0.652***	0.699***	0.654***	1.030***	0.498**
	(0.20)	(0.16)	(0.11)	(0.10)	(0.11)	(0.18)	(0.17)
High-income countries - 2001 to 2006	0.361*	0.625***	0.705***	0.713***	0.736***	1.117***	0.551**
	(0.21)	(0.16)	(0.11)	(0.11)	(0.11)	(0.19)	(0.17)
Brazil - 1990 to 1995	0.643	0.499	0.382	1.056**	1.695***	1.128**	-0.242
	(0.63)	(0.39)	(0.39)	(0.36)	(0.36)	(0.56)	(0.57)
Brazil - 1996 to 2000	0.535	0.484	0.350	1.049**	1.696***	1.162**	-0.199
	(0.62)	(0.38)	(0.39)	(0.36)	(0.35)	(0.55)	(0.56)
Brazil - 2001 to 2006	0.473	0.501	0.383	1.045**	1.747***	1.247**	-0.166
	(0.63)	(0.38)	(0.39)	(0.36)	(0.35)	(0.56)	(0.57)
Russian Federation - 1995 to 2000	1.410***	1.315***	1.291***	1.019***	1.599***	1.273**	1.408**
	(0.37)	(0.28)	(0.26)	(0.30)	(0.24)	(0.43)	(0.44)
Russian Federation - 2001 to 2006	1.375***	1.371***	1.304***	0.998***	1.676***	1.344**	1.431***
	(0.36)	(0.28)	(0.25)	(0.29)	(0.23)	(0.43)	(0.43)
India - 1990 to 1995	0.957	0.912	1.302	-0.198	0.568	-1.156	-2.245
	(1.60)	(0.76)	(0.84)	(0.83)	(0.74)	(1.06)	(1.57)
India - 1996 to 2000	0.870	0.849	1.277	-0.272	0.614	-1.123	-2.180

Variable	Meat	Dairy	Cereals	Vegetables	Fruits	Tea	Oilseed
	(1.58)	(0.75)	(0.83)	(0.82)	(0.73)	(1.06)	(1.55)
India - 2001 to 2006	0.866	0.942	1.288	-0.214	0.728	-1.005	-2.131
	(1.56)	(0.74)	(0.82)	(0.81)	(0.72)	(1.04)	(1.53)
China - 1990 to 1995	0.748	2.781***	2.151***	1.053*	2.001***	2.503**	2.569**
	(0.75)	(0.61)	(0.62)	(0.59)	(0.53)	(0.84)	(1.01)
China - 1996 to 2000	0.712	2.680***	2.075***	1.044*	1.965***	2.475**	2.592**
	(0.74)	(0.60)	(0.61)	(0.57)	(0.51)	(0.82)	(0.98)
China - 2001 to 2006	0.678	2.717***	2.054***	1.046*	2.042***	2.522**	2.579**
	(0.72)	(0.58)	(0.59)	(0.56)	(0.50)	(0.80)	(0.96)
Fixed Effects							
Importers	55.6***	65.2***	74.4***	90.0***	116.0***	55.0***	45.3***
Exporters	131.1***	244.7***	312.1***	647.7***	385.2***	197.3***	197.93***
Year	1.1	4.1***	12.5***	2.9***	4.94***	2.32**	4.1***
Product	155.9***	1546.4***	1885.6***	684.4***	572.9***		2638.0***
Summary Statistics							
# Observations	16262	28365	63048	38091	34227	12922	21505
Adj: R-Squared	0.561	0.572	0.443	0.616	0.617	0.592	0.495
F-Statistics	2340.8***	262.8***	392.5***	513.4***	440.7***	148.2***	157.2***

Note: Heteroskedasticity-consistent standard errors are given in parentheses. *, ** and *** denote variables significant at 0.1, 0.05 and 0.001 levels, respectively.

Table 2: Test of the Hypotheses (F-Test)

Hypothesis	Meat	Dairy	Cereals	Vegetables	Fruits	Tea	Oilseed
Income elasticities of Brazil, Russia and China are the same as other middle-income countries							
Brazil - 1990 to 1995	11.59***	29.58***	14.15***	45.78***	83.65***	8.5**	2.87**
Brazil - 1996 to 2000	8.81**	27.37***	12.66***	44.19***	81.74***	9.2***	3.99**
Brazil - 2001 to 2006	7.99**	31.89***	15.01***	45.02***	93.14***	11.94***	4.97**
China - 1990 to 1995	11.54***	37.89***	19.24***	43.63***	80.33***	10.73***	5.81**
China - 1996 to 2000	8.86***	35.37***	17.67***	42.09***	78.34***	11.37***	7.12**
China - 2001 to 2006	8.09**	40.41***	20.02***	43.12***	90.12***	14.17***	8.18**
Russian Federation - 1995 to 2000	14.95***	36.21***	23.89***	45.71***	91.27***	11.16***	8.63**
Russian Federation - 2001 to 2006	14.05***	41.89***	26.75***	46.6***	105.12***	14.27***	9.92***
Income elasticities of India are the same as other lower-income countries							
India - 1990 to 1995	0.19	1.47	1.47	0.03	2.37*	0.63	1.72
India - 1996 to 2000	0.16	1.55	1.53	0.05	2.39*	0.61	1.71
India - 2001 to 2006	0.16	1.61	1.54	0.03	2.74*	0.48	1.72
Income elasticities of BRIC economies are the same over the selected time periods							
Brazil, China and India - 1990-1995	0.02	5.16**	3.03**	1.01	1.32	3.73**	4.33**
Brazil, Russia, China and India - 1996-2000	0.63	3.47**	2.33*	0.79	0.81	2.49*	4.1**
Brazil, Russia, China and India - 2001-2006	0.66	3.61**	2.22*	0.73	0.77	2.47*	4.08**
Income elasticities of BRIC economies are the same over the selected time periods							
Brazil	8.62**	0.27	1.44	0.14	3.91**	6.08**	2.36
India	1.78	5.75**	0.39	5.21**	16.13***	6.7**	2.17
Russian Federation	0.76	4.64**	0.37	0.9	13.18***	3.81*	0.43
China	0.94	5.73**	4.23**	0.06	6.36***	0.89	0.2
Income elasticities of low, middle and high-income economies are the same over the selected time periods							
Low-Income countries	1.96	3.13**	2.05	1.54	2.02	3.04**	0.27
Middle-income countries	5.5**	2.57*	1.65	0.12	6.82**	5.41**	5.43**
High-income countries	3.82**	5.92**	3.98**	0.4	11.61***	6.37**	5.04**

Note: *, ** and *** denote variables significant at 0.1, 0.05 and 0.001 levels, respectively.