EXPANSION OF MERCOSUR'S AGRICULTURAL EXPORTS TO THE EU: AN EMPIRICAL ASSESSMENT OF THE TRADE FLOWS

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Abstract. This paper provides new evidence on income and price elasticities of demand for agricultural exports from Mercosur countries to the EU. Econometric models are constructed for eight agricultural commodities – beef, cocoa, coffee, orange juice, poultry, sugar, soya and wheat - exported from Mercosur to the EU. A modelling approach based on the error correction mechanism is used in order to emphasise the importance of the dynamics of trade functions. The results indicate that there is a relatively weak demand response to income and price changes in the EU. However, the results also suggest that relative-price variations affect significantly the demand for Mercosur commodity exports, implying that the exporter's market share is influenced by price competitiveness.

Key words: agricultural trade, European Union, Mercosur, econometric models, cointegration

JEL classification: C22, Q17

1. Introduction

Market access for agricultural goods is one of the main issues of the current EU-Mercosur Free Trade Agreement (FTA) negotiations, which began in April 2000. Both sides were cautiously anticipating a successful conclusion by the year 2004, but the "agricultural knot" remains a huge stumbling bloc on the road to the final agreement. For the EU, agricultural and food products are most vulnerable to competition from Mercosur countries, which are well endowed with natural resources, both land and mineral. Agriculture is also one of the key sectors of Mercosur economies, in spite of the evident success of the manufacturing sector during the last decades.

The European Union (EU), which represents one of the world's largest markets for raw materials and agricultural products, with imports of nearly €67 billion in 2003, is a particularly attractive and very sought-after market for Mercosur exporters. The EU accounts for 35% of all Mercosur agricultural exports to the world. During the period between 1990 to 2003, Mercosur agricultural exports to the EU rose from €7 billion to €11 billion, showing an average annual growth rate of 3.5%. Over the years, Mercosur countries have also managed to increase their market share in the EU quite substantially. On the other hand, EU exports of agricultural products to Mercosur are not significant. Thus, the agricultural trade balance has clearly tilted in favour of Mercosur, with a trade surplus of €10 billion in 2003.

Despite the success in penetrating to the EU market, the Mercosur countries has been concerned with the agricultural protection policy of the EU. The major irritant in EU-Mercosur agricultural trade relations has been the variable levies/tariffs and other discriminatory measures against Mercosur products, such as sugar and beef. Therefore, Mercosur countries have taken a special interest in encouraging the EU to liberalise its trade in agriculture. Mercosur countries hope that with trade liberalisation, the member countries will be able to improve their market access for agricultural products in the EU. The future WTO negotiations under the Doha Development Agenda will provide an important base for extending the process of trade liberalisation.

This study attempts to increase our knowledge of the behavioural relationships underlying agricultural trade flows between Mercosur and the EU. More specifically, the objective is to provide new estimates of short- and long-run elasticities of import and export demand for commodities exported from Mercosur countries to the EU.

The paper consists of five sections and it is organised as follows. Section two lays out the general theoretical and methodological framework employed by the study for modelling the dynamic relationships of commodity trade. Section three explains how the theoretical structures are implemented in dynamic econometric models in practice. Section four presents the empirical results of the estimated models constructed for eight agricultural commodities – beef, cocoa, coffee, orange juice, poultry, sugar, soya, and wheat - exported from Mercosur to the EU. In section five, we present a summary of our main conclusíons.

2. Theoretical and methodological framework

Imperfect competition arising from product differentiation underlies the modelling framework of this study. The estimation of import demand systems is derived from Armington's (1969) model, where it is assumed that the same goods of different origins are imperfect substitutes within an importing country's commodity market. Furthermore, in order to reduce to number of parameters to be estimated, the model assumes a constant elasticity of substitution (CES) for each product pair. Following the model, the importing decision is split into two stages. The solution to the utility maximisation problem for the first level of decision yields the overall demand schedules for commodity imports M of importer j, given a commodity import price P and a level of constant dollar income Y, and is expressed as

$$M_j^d = k_1 Y_j \left(\frac{P_j}{D_j} \right)^{\in_m^p} \tag{1}$$

where k_1 is a constant with expected sign $k_1 > 0$; D is the deflator; and $\in_m^p$ is the price elasticity of import demand for goods M. The income elasticity is equal to unity, a hypothesis that will later be tested.

Once the level of expenditures Y_j for the imported commodity M has been determined, the solution to the utility maximisation problem of how much of the commodity to purchase from alternative suppliers - let us say an exporter of interest i and its competitors m, which refer each of the n-1 other foreign supplying countries, to market j whose corresponding export prices are P_{ij} and P_{mj} - may be expressed as

$$X_{ij}^d = k_2 M_j \left(\frac{P_{ij}}{P_j} \right)^{\in_x^p} \tag{2}$$

where X_{ij}^d is the quantity of the goods exported from country i to country j, k_2 is a constant; P_{ij} is the price of the goods imported from country i to country j; P_j is the average price of the goods imported to country j; and $\in_x^p$ is the relative-price elasticity of export demand.

The empirical analysis of the study is based on econometric models which capture the dynamics underlying trade and price formation in commodity markets, and it is conducted by means of recently developed econometric concepts. Among these, the so-called 'general to specific approach' advocated by Hendry (1986) is applied in the context of data series whose (non-)stationary properties are investigated. Furthermore, the notion of cointegration (Engle and Granger, 1987) of a set of variables is analysed. The approach follows closely the modelling strategy developed in a series of papers by Davidson *et al*. (1978), Hendry (1986), Lord (1991), Urbain (1992), Banerjee *et al*. (1998) and Niemi (2003).

Given that economic time series often exhibit non-stationary stochastic processes, the econometric specification is conducted in a framework that allows for non-stationary but potentially cointegrated variables. The approach adopted is to convert the dynamic model into error correction formulation, and it is shown that this formulation contains information on both the short-run and long-run properties of the model, with disequilibrium as a process of adjustment to the long-run model. Equations specified in this manner allow the relevant economic theory to enter the formulation of long-run equilibrium in levels while the short-run dynamics of the equation are determined by growth rates.

Since the validity of the error correction specification requires the existence of a long-run relationship or cointegration between the variables concerned, the econometric analysis begins with the tests for the existence of a cointegrating vector. The first step in the analysis of cointegration is to determine the time series properties (*i.e.*, the order of integration) of each variable, whether they have a unit root or not. Tests for unit roots are performed using the augmented Dickey-Fuller univariate

tests. Having established the order of integration of each variable, tests for cointegration are undertaken and the nature of any cointegrating vectors explored. A formal test of cointegration is carried out following the residual-based approach proposed by Engle-Granger (1987) as well as the sequential testing procedure put forward by Perron (1988).

3. Econometric analysis of Mercosur's agricultural exports to the EU

3.1. Data

The econometric analysis of the study is conducted with a sample of annual data which covers Mercosur's major commodity exports to the EU from 1976 to 2003. The analysis uses 4- and 5-digit product-level data based on the Standard International Trade Classification (SITC). For the purpose of this study, the product headings are defined as follows: beef (SITC 0111), cocoa (SITC 072), coffee (SITC 0711), orange juice (SITC 05851), poultry (SITC 0114, 01181), sugar (SITC 0611, 0612), and soya (SITC 08131, 2222) and wheat (SITC 0411, 0412).

Volume and value data on trade flows over the period 1976-2003 are obtained from UN Commodity Trade Statistics Database (UN Comtrade). Volume data is compiled in kilograms, and value data in US dollars. The transaction value is the value at which goods were sold by the exporter, and includes the cost of transportation and insurance, and freight to the frontier of the importing country (c.i.f. valuation).

The unit prices of EU imports (P_{EU}), and unit prices of exports by an individual Mercosur country (P_i), are derived by dividing value by volume. These individual product unit values are subject to an error in measurement. If import declarations are inaccurate, customs data may be incorrect. Scobie and Johnson (1975) have shown that, if the observed value and the volume data contain errors of measurement for actual transactions, the estimated elasticity of substitution will be biased towards zero. Moreover, unit values suffer from the traditional f.o.b./c.i.f. valuation problems. Elasticity estimates are based on c.i.f. prices, which, because they include changes in trade resulting from transportation and distribution costs or from tariffs, do take into account all price differences between suppliers to the ultimate consumer (Lord, 1991). Therefore, in this 'standard' formulation the observed real prices in exporting country *i* assume fixed transfer costs.

The gross domestic product (GDP) index and the consumer price index (CPI) are used as a measure of economic activity (Y_{EU}) and price deflator (D_{EU}) of the EU, respectively. The source of the data is the International Financial statistics database of the International Monetary Fund (IMF).

3.2. Import demand specification

Models such as equation (1) are usually specified in log-linear form by assuming that standard trade theory relates exports and imports to explanatory variables through a multiplicative form which can be derived within a cost minimisation framework (Urbain, 1992). The first-order stochastic difference equation as a logarithmic function of the theoretical relationship in (1) is, therefore, expressed as

$$\ln M_{jt} = \alpha_0 + \alpha_1 \ln Y_{jt} + \alpha_2 \ln Y_{j,t-1} + \alpha_3 \ln\left(\frac{P_j}{D_j}\right)_t + \alpha_4 \ln\left(\frac{P_j}{D_j}\right)_{t-1} + \alpha_5 \ln M_{j,t-1} + v_{1t} \quad (3)$$

where the expected signs are α_1, $\alpha_2 > 0$; α_3, $\alpha_4 < 0$; and $0 < \alpha_5 < 1$. The lags in the model are specified as the maximum to be expected in the light of the nature of import demand and the evidence of previous econometric studies. The maximum lag length for annual time-series data is usually equal to one on the hypothetical basis that economic agents are characterised by one-year planning horizons.

The results of the cointegrating regressions in Appendix A show that demand for commodity imports in the EU market ($\ln M^d_{EU}$) has a steady-state response to the domestic economic activity ($\ln Y_{EU}$), and a transient response to the constant dollar price of imports (*P*/*D*).

Transformation of equation (3) to incorporate an ECM driven by ln Y_{EU} and (ln P_j/D_j) to the equation (3), with an additional lagged variable of ln Y_{EU}, results in the following import demand specification:

$$\Delta \ln M_{jt} = \alpha_0 + \alpha_1 \Delta \ln Y_{jt} + \delta_2 \ln Y_{j,t-1} + \alpha_3 \Delta \ln \left(\frac{P_j}{D_j}\right)_t + \delta_4 \left(\frac{P_j}{D_j}\right)_{t-1} + \delta_5 \ln \left(\frac{M_j}{Y_j}\right)_{t-1} + v_{1t} \quad (4)$$

where $\delta_2 = (\alpha_1 + \alpha_2 + \alpha_5 - 1)$, $\delta_4 = (\alpha_3 + \alpha_4)$, and $\delta_5 = (\alpha_5 - 1)$. The expected signs of the coefficients are $\alpha_1 > 0$, $\delta_2 > \delta_5$, $-1 < \delta_5 < 0$, and $\alpha_3, \delta_4 < 0$. The fifth term of the equation, ln $(M_j/Y_j)_{t-1}$ is called the error correction term, while δ_5 is the feedback coefficient. The error correction term captures the adjustment toward the long-run equilibrium. If δ_5 is statistically significant, it states what proportion of the disequilibrium in $\Delta \ln M_{jt}$ in one period is corrected in the next period.

The long-run dynamic solution of a single-equation system generates a steady-state response in which growth occurs at a constant rate, say g, and all transient responses have disappeared (Currie, 1981, Lord, 1991). With growth rates of domestic economic activity and import demand, $\Delta \ln Y_{jt} = g_1$ and $\Delta \ln M_{jt} = g_2$, respectively, the long-run dynamic equilibrium solution of equation (3), in terms of the original (anti-logarithmic) values of the variable, is

$$M_j = k_1 Y_j^{1-(\delta_2/\delta_5)} \left(P_j / D_j\right)^{-\delta_4/\delta_5} \quad (5)$$

where $k_1 = \exp\{[-\alpha_0 + (1-\alpha_1)g_1]/\delta_5\}$. Equation (5) encompasses the static equilibrium solution when $g_1 = 0$. The income elasticity of import demand is expressed as $\in_m^y = 1 - (\delta_2/\delta_5)$. The price elasticity of import demand is $\in_m^p = -\delta_4/\delta_5$.

3.3. Export demand specification

In terms of the general stochastic difference specification, the export demand relationship in (2) is expressed as

$$\ln X_{ijt}^d = \beta_0 + \beta_1 \ln M_{jt} + \beta_2 \ln M_{j,t-1} + \beta_3 \ln \left(\frac{P_{ij}}{P_j}\right)_t + \beta_4 \ln \left(\frac{P_{ij}}{P_j}\right)_{t-1} + \beta_5 \ln X_{ij,t-1}^d + v_{2t} \quad (6)$$

where the expected signs of the coefficients are $\beta_1, \beta_2 > 0$; $\beta_3, \beta_4 < 0$; and $0 < \beta_5 < 1$. The dynamics for the export demand relationship is assumed to be of relatively small order, and can therefore be restricted to cases where the lagged values of the variables are of one year. The Lagrange multiplier (LM) tests are again performed for omitted higher lagged variables.

The results of the cointegrating regressions suggest that in most cases the demand for exports of a Mercosur country *i* ($\ln X_i^d$) has a steady-state response to the import demand of the EU ($\ln M_{EU}^d$), and a transient response to the relative price of the EU market ($\ln P_i/\ln P_{EU}$). In the second case, demand for exports from country *i* to country *j* (X_{ij}) has a steady-state response both to the import demand (M_j), and to the relative price (P_{ij}/P_j) of that market. In other words, X_{ij}, M_j, P_{ij}/P_j are cointegrated. An ECM is obtained from the cointegration regression of X_{ij} on M_j and P_{ij}/P_j. The following transformation of (6) incorporates an ECM driven by import demand M_j:

$$\Delta \ln X_{ijt}^d = \beta_0 + \beta_1 \Delta \ln M_{jt} + \gamma_2 \Delta \ln \left(\frac{P_{ij}}{P_j}\right)_t + \gamma_3 \ln \left(\frac{P_{ij}}{P_j}\right)_{t-1} + \gamma_4 \ln \left(X_i^d / M_j\right)_{t-1} + v_{2t} \quad (7)$$

where $\gamma_2 = b_3$, $\gamma_3 = (\beta_3 + \beta_4)$, and $\gamma_4 = (\beta_5 - 1)$. The expected signs of the coefficients are $\beta_1, \gamma_2 > 0$, $\gamma_3 < 0$, and $-1 < \gamma_4 < 0$. The relative price term in the foregoing specification have been so transformed

as to nest the 'differences' formulations of the variable in the levels form of the equation. The error correction term, $\gamma_4 \ln (X_{ij}/M_j)_{t-1}$, measures divergences from the long-run equilibrium and corrects for previous non-proportional responses in the long-run dynamic growth of export demand. Since in dynamic equilibrium $\Delta \ln M_{jt} = g_2$, $\Delta \ln X = g_3$ and $\Delta \ln (P_{ij}/P_j)_t = 0$, it follows that the solution of (7), in terms of the original values of the variable, is

$$X_{ij}^{d} = k_2 M\left(P_{ij} / P_j\right)^{-\gamma_3/\gamma_4} \tag{8}$$

where $k_2 = \exp \{[-\beta_0 + (1-\beta_1)g_2]/\gamma_4\}$. Therefore, export demand is assumed to have a unitary elasticity with respect to the level of import demand in the geographic market. The price elasticity of export demand is expressed as $\epsilon_x^p = -\gamma_3/\gamma_4$.

Where the long-run response between the export demand of a country *i* and imports of its trading partner *j* is not necessarily proportional, an additional term (explanatory variable for imports of a country *j* lagged by one period) is introduced into the equation (6).

The foundations of the error correction model (ECM) specification, used in equations (4) and (8), rest on the seminal work of Sargan (1964). The ECM specification can be derived as a simple reparameterisation of a general autoregressive distributed lag (ADL) model. The idea of incorporating the dynamic adjustment to steady-state targets in the form of error-correction terms, suggested by Sargan and developed by Hendry and Anderson (1977) and Davidson et al. (1978), among others, offers the possibility of revealing information about both short-run and long-run relationships.

4. Estimation results

4.1. The import demand functions

The short- and long-run responsiveness of agricultural commodity imports to changes in incomes and own-prices in the EU are summarised in Table 1. Coefficient signs and magnitudes are acceptable in terms of a priori expectations. The models also track the sizes and the directions of changes in the volume of EU agricultural imports fairly well. Considering that the equation explains the rate of changes in the import volumes, the R^2 values ranging from 0.42 to 0.67 can be considered quite satisfactory.

The results for own-prices elasticities indicate that they are statistically different from zero in six out of the eight commodities, and, of these, one is significant at the 1% level, two at the 5% level, and three at the 10% level. The estimated income elasticities have expected positive signs and are significantly different from zero at the 10% level in the equation for all commodities, excluding sugar. All the coefficients of the lagged error-correction terms appear highly significant at 1-percent level. Therefore, the deviation from the equilibrium level of the import demand due to random shocks represents a significant determinant of its short-run dynamic behaviour.

The coefficient estimates on the own-price terms confirm the expectation that demand for commodity imports in the EU is relatively inelastic with respect to price. The price elasticities range from -0.05 to -0.54 in the short-run, and from -0.09 to -0.62 in the long run. The policy implication of this fact is that exchange rate policies and commercial policy intervention measures in the form of tariff and non-tariff barriers to trade would not be very effective in changing the quantity of imports demanded. Soya oil has the largest long-run price elasticity (≅-0.62) and the remaining five have elasticities less than 0.5 in absolute terms. Coffee has the lowest long-run price elasticity (≅-0.09).

Beef and sugar did not show the expected sign of price elasticity, though neither was statistically significant. Beef and especially sugar are highly protected agricultural products in the EU internal markets. The standard tariffs and additional import duties for sugar are so prohibitive that almost all sugar imports are from developing countries that receive preferential treatment from the EU. Thus, price and income elasticity estimation for sugar may be an impossible task.

Table 1. Short-run and long-run elasticities of import demand in the EU for selected commodities.

Commodity	Price elasticity		Income elasticity	
	Short-run	Long-run	Short-run	Long-run
Beef	-	-	-	0.17
Cocoa	-0.12	-0.27	0.39	0.49
Coffee	-0.05	-0.09	0.09	0.12
Orange juice	-	-0.33	0.67	1.00
Poultry	-0.25	-0.33	-	0.85
Soya	-0.54	-0.62	-	1.17
Sugar	-	-	-	-
Wheat	-	-0,38	-	0.27

Note: - Not significant at the 10% level

The long-run income elasticities are in a range between 0.12 for coffee and 1.17 for soya. Orange juice is found to have a unitary elasticity with respect to income. Poultry has income elasticity close to unity, and beef, cocoa and wheat have elasticities significantly less than unity. The large differences in the income elasticity have implications for sales by exporters. Soya imports have been sensitive to income changes. Thus, soya exports have a considerably stronger growth potential in the EU than other commodities, because of a strong response of buyers in the EU to improvements in their real income.

The high income elasticity of soya is supported by a strong demand for its use as an ingredient in compound animal feed. The level of demand for compound feeds depends on the livestock industry, and the livestock industry depends in turn on the level of demand for meat and other livestock products.

Overall, the results suggest that agricultural commodity imports of the EU are not very sensitive to income changes and are considered necessary goods in the sense that demand increases slower than economic activity goes up. This means a relatively weak growth potential for the selected commodities in the EU market. At the same token, imports of these commodities are not susceptible to larger swings of demand during business cycles, either. The trade-weighted average long-run income elasticity of import demand across commodities is relatively low (≅0.53).

The findings are consistent with the earlier studies. The low income and price elasticity of demand for primary commodities have been recorded in many studies covering a wide range of commodities.

The coefficients on the error correction terms in the import demand relationships measure adjustment towards the long-run relationship between import volumes, economic activity, and prices. In the case of cocoa and coffee, the coefficients of the error correction terms are close to unity in absolute terms. This fact reflects the relatively quick response of EU importers to changes in income and prices, i.e. it does not take a great deal of time for import demand to resume its long-term equilibrium growth path when a short-run disequilibrium arises between import demand and income. Nevertheless, importers of beef and poultry adjust to income and price changes relatively slowly.

4.2. The export demand functions

The elasticity estimates of export demand equations for the major commodity exports of Mercosur to the EU are reported in Table 2. The signs and magnitudes of the estimated coefficients are broadly in line with theoretical expectations. Relative prices and error correction terms are strongly significant with an adjustment coefficients ranging from –0.16 to -0.65. Furthermore, the models explain the changes in the volume of Mercosur agricultural exports to the EU rather accurately. Goodness of fits is acceptable with an R^2 in a range between 0.37 and 0.73. The models also pick up quite well the turning points and rapid rises in export demand.

As expected, relative price movements affect significantly the trade flows of all commodities, implying that exporter's market share has been influenced by price competitiveness. Relative prices are statistically different from zero in 8 out of the 11 trade flows, and, of these, two are significant at

the 1% level, two at the 5% level, and four at the 10% level. The three exceptions are the export demand for poultry and sugar from Brazil, and wheat from Argentina where the relative price coefficient did not result in statistically significant estimate.

Table 2. Dynamic equilibrium solutions of export demand functions for selected commodities from Mercosur into the EU.

Commodity Exporter	Relative price elasticity of export demand		Response to changes in the level of EU imports	
	Short-run	Long-run	Short-run	Long-run
Beef				
Argentina	-	-1.67	0.54	0.87
Brazil	-1.47	-3.78	-	1.60
Uruguay	-0.46	-0.68	0.89	1.00
Cocoa				
Brazil	-0.37	-0.51	-	1.00
Coffee				
Brazil	-0.70	-1.93	0.76	1.00
Orange juice				
Brazil	-	-3.45	1.34	2.74
Poultry				
Brazil	-	-	-	1.00
Soya				
Brazil	-0.87	-1.06	0.78	1.00
Paraguay	-	-0.25	1.11	1.00
Sugar				
Brazil	-	-	0.99	1.00
Wheat				
Argentina	-	-	-	1.00

Note: - Not significant at the 10% level

The sizes of relative price coefficients, of course, differ by commodity as well as by source of supply in each commodity. The short-run relative price elasticity of export demand range from –0.37 to -1.47, and the long-run elasticity from -0.51 to -3.78. In other words, there is a great deal of variation in the export performance between different commodities and among individual Mercosur countries. Therefore, care should be exercised in generalisations about the price elasticities of demand for the region's commodity exports.

The observed differences in relative-price coefficients by trade flow reflect the dynamic aspect of the EU agricultural trade, in which particular trade flows rise and fall with price competition. Among the trade flows under examination, the export demand for Paraguayn soya is the least sensitive to relative price changes, followed by Brazilian coffee exports. In contrast, the relative-price coefficients of Brazilian beef and orange juice exports are exceptionally large, -3.78 and -3.45, respectively.

These findings, combined with the result of import price elasticity in Table 2, indicate that, although agricultural imports are relatively insensitive to price changes on a commodity basis, once the total amount to be spent for imports of a commodity is determined then the EU importers seek cheaper products, so that price competition among suppliers is inevitable. On the other hand, the sharp contrast of relative price coefficients in the same commodity justifies the assumption that importers distinguish agricultural products by place of production, even though the products are called by a common commodity name.

The adjustment of export demand from one level of foreign import demand to another is determined by the error correction term. The error correction terms for all the trade flow equations are strongly significant with an adjustment coefficient showing wide variations from –0.16 to -0.65. Among the small feedback coefficients that of cocoa exports from Brazil deserve attention. The

estimated coefficients, -0.16, imply a very slow adjustment towards the estimated equilibrium state. It takes over 10 years for this trade flow to adjust to 90% of its new steady-state solutions.

In contrast, exports of Brazilian beef, coffee and soya plus Argentinean beef, have the coefficients of the error correction terms above 0.5 in absolute terms. This fact reflects a relatively quick response of exports to changes in the level of EU imports and relative price, i.e. it does not take a great deal of time for export demand to resume its long-term equilibrium growth path when a short-run disequilibrium arises between export demand and import demand. For example, it takes only three periods for Brazilian coffee exports to the EU to adjust to 90% of its new steady-state solutions.

The estimation results also confirm the assumption that export demand for commodities from Mercosur has, in general, more or less proportional response to changes in the level of EU import. Therefore, at given relative-price levels, any increase or decrease in commodity imports by the EU would be reflected in an almost equivalent percentage change in its demand for exports from Mercosur countries. In other words, the market share of the country does not change unless relative prices change in homothetic demand.

However, if the estimated coefficient of the import response variable is significantly greater than unity, it is a good indication for an exporting country that its exports can expand more than others and its share increase as EU market grows. Among the selected commodity trade flows, orange juice and beef from Brazil have clearly more than proportional response to changes in the level of EU imports.

5. Concluding remarks

This paper has attempted to apply a reasonably flexible data determined, dynamic model to estimate the short-run and long-run effects of changes in income and prices on agricultural commodity trade between Mercosur and the EU. Therefore, a modelling approach based on the error correction mechanism (ECM) was used in order to emphasise the importance of dynamics of trade functions. Application of a series of diagnostic tests supported the use of this approach. Econometric models were constructed for eight agricultural commodities – beef, cocoa, coffee, orange juice, poultry, sugar, soya and wheat - exported from Mercosur to the EU.

The results for the estimated import demand functions suggest that there is a relatively weak demand response to income changes in the EU. The results also demonstrate the inelastic nature of price responses in the EU demand for the imported commodities. The policy implication of this fact is that trade policy measures in the form of tariff and non-tariff barriers are not very significant in changing the quantity of imports demanded.

In the case of beef and sugar, imports would likely increase far more than those of any other commodity if import protection is abolished. However, due to the high level of protection, which distorts import demand responses, we were not able to get statistically significant price elasticity estimates for beef and sugar.

The coefficient estimates of the export demand functions indicate that relative-price variations affect significantly the demand for Mercosur commodity exports by the EU, implying that exporter's market share is influenced by price competitiveness. Furthermore, the sharp contrast of relative price coefficients in the same commodity across countries justifies the assumption that importers distinguish agricultural products by place of production, even though the products are called by a common commodity name.

The estimated models of this study can be used to assess the results of trade policies on commodity trade between Mercosur and the EU. Hence, a fruitful avenue for future research would be an analysis of how different governments' regulations affect the volume of trade and what kind of welfare effects such regulations might have.

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